REGULAR MEETING
AGENDA
CITY OF CREVE COEUR
CITY COUNCIL
300 NORTH NEW BALLAS RD
APRIL 8, 2024
7:00 PM

ZOOM MEETING INFORMATION

1. **Members of the public may access live audio and/or video by accessing the following:**

   https://us02web.zoom.us/j/83432408921

   1 312 626 6799
   Webinar ID: 834 3240 8921

CALL TO ORDER

PLEDGE OF ALLEGIANCE

ROLL CALL

COMMENTS FROM THE GENERAL PUBLIC An opportunity for members of the public to address the City Council regarding issues or concerns not already on the agenda for this meeting. Those wishing to speak will be asked to limit comments to three minutes and to complete a speaker card.

PUBLIC HEARING

2. **Public Hearing- FY2025 - FY2029 Capital Improvement Program**
   Summary: Staff will present the five-year Captial Improvement Program that is proposed for FY2025 - FY2029.

ACCEPTANCE OF THE AGENDA

ANNOUNCEMENTS

The City Council meets the 2nd and 4th Monday of each month
6:00 p.m. - 7:00 p.m. - Work Session
7:00 p.m. - Regular Meeting of the City Council

The next regular meeting of the City Council will be held on Wednesday April 24, 2024 at 7:00 p.m.

CONSENT AGENDA

3. **Approval of March 25, 2024, City Council Work Session Minutes**

REGULAR MEETING
AGENDA
CITY OF CREVE COEUR
CITY COUNCIL
300 NORTH NEW BALLAS RD
APRIL 8, 2024
7:00 PM

4. **Approval of March 25, 2024, City Council Regular Meeting Minutes**

BILLS PAYABLE REPORT

For information only: Invoices Paid Listing 3/21/24-3/31/24

UNFINISHED BUSINESS

5. **Bill No. 6112- An Ordinance designating a certain tract of land in the City of Creve Coeur, Missouri, as a Blighted Area; approving the Olia Village Development Plan; approving a Master Redevelopment Agreement in connection with the Development Plan; and authorizing the City to enter into certain agreements and take certain other actions in connection therewith. Final Reading and Passage.**
   Summary: The Ordinance approves a Redevelopment Agreement for the Olia Village Development in connection with real property tax abatement under Chapter 353.

   Members of the public may access Exhibit A. Development Plan

6. **Bill No. 6113- An Ordinance Approving an amended petition for the creation of a Community Improvement District; establishing the Olia Village Community Improvement District as a political subdivision of the State of Missouri; and authorizing the City to enter into certain agreements and take certain other actions in connection therewith. Final Reading and Passage.**
   Summary: The Ordinance approves an amended petition to create a Community Improvement District in connection with the Olia Village Development

7. **Bill No. 6114- An Ordinance authorizing the City of Creve Coeur, Missouri, to issue its Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024, for the purpose of providing funds to pay the costs of acquiring, constructing and improving an Industrial Development Project in the City; approving a plan for the project; and authorizing the City to enter into certain agreements and take certain other actions in connection therewith. Final Reading and Passage.**
   Summary: Ordinance authorizing issuance of Chapter 100 bonds in connection with the Olia Village Development

8. **Bill No. 6115- An Ordinance making amendments to Chapter 125, Boards,**

Commissions and Committees. Final Reading and Passage.
Summary: Staff recommends changing the term expiration of the Audit Committee to align with the other current boards, commissions and committees and making the necessary updates due to the dissolution of the Employee Pension Board of Trustees on March 1, 2024.

9. **Bill No. 6116- An Ordinance of the City Council of the City of Creve Coeur, Missouri authorizing the execution of a Transportation Alternatives Program (TAP) Program Agreement with the Missouri Highways and Transportation Commission to enable the City to construct the Fernview Sidewalk Improvements Project - Phase 1. Final Reading and Passage.**
Summary: City staff recommends that the City Council authorize a Transportation Alternatives Program agreement with MoDOT for phase 1 of the Fernview Drive sidewalk project.

10. **Bill No. 6117- An Ordinance Amending the Adopted 2024 Enterprise Fund, Parks & Stormwater Fund, Capital Fund, Sewer Lateral Fund, Public Safety Fund, General Fund and City Employees Retirement Fund Budgets of the City of Creve Coeur by Authorizing Additional Appropriations to each of these Fund Budgets. Final Reading and Passage.**
Summary: The proposed ordinance amends the identified budgets to authorize an additional $2.4M appropriation for the previously approved cost of living adjustment (COLA) to the Legacy Pension Plan before moving the plan administration to Missouri Local Government Employees Retirement System (LAGERS) and to account for that previously approved transfer.

NEW BUSINESS

11. **Bill No. 6118- An Ordinance authorizing a New Conditional Use Permit for EquipmentShare at 1121 N. Warson Road within the North Warson Business Center, zoned LI- Light Industrial District. First Reading.**
Summary: Jeffrey Williams, of EquipmentShare, has submitted an application for a Conditional Use Permit for a tool rental center at 1121 North Warson Road in the "LI" Light Industrial Zoning District. The 17,835 square foot space within the existing building will be used to store EquipmentShare's Tool Division inventory of tools and light equipment for rent. The hours will be from 7:00 AM to 5:00 PM Monday through Friday with 10 employees at the busiest shift. No exterior changes are proposed. Under Section 405.380, Table A of the Zoning Code,

NAICS 532310 General Rental Centers, requires the issuance of a conditional use permit in the "LI" zoning district subject to the recommendation of the Planning and Zoning Commission and approval of the City Council. The Planning and Zoning Commission recommended approval at the April 1, 2024 meeting.

12. **Bill No. 6119 - An Ordinance amending the Personnel Policy and Procedures Manual of the City of Creve Coeur and amending related ordinances. First Reading.**
Summary: The proposed ordinance provides amendments to the Personnel Manual related to recent changes in current laws

13. **Resolution No. 1715- A Resolution of the City Council of the City of Creve Coeur, Missouri, Adopting the Five-Year Capital Improvement Program for the City for Fiscal Years 2025 through 2029.**
Summary: The draft Capital Improvement Program for FY25-29 has been reviewed by the City Council, Stormwater Committee, Parks and Historic Preservation, Finance Committee and Planning and Zoning Commission, and is ready for consideration by the City Council for adoption.

14. **Resolution No. 1716 - A Resolution of the City Council to adopt the Watershed Management Plan for the City of Creve Coeur.**
Summary: The Watershed Management Plan (WMP) is a planning tool that will help City staff, the Stormwater Committee, and the City Council make informed, engineering-based decisions for selecting the projects that will be included in the City's five-year Capital Improvement Plan (CIP). The Stormwater Committee and City staff recommend that the City Council adopt the Watershed Management Plan dated April 2024.

15. **Resolution No. 1717- A Resolution to amend Resolution Nos. 907, 992, and 1498 adopting the Citizen's Guide to Advisory Boards, Commissions, and Committees for the City of Creve Coeur.**
Summary: Staff has reviewed the Citizen Guide and recommends updates.

APPOINTMENTS

16. **Energy and Environment Committee Appointment**

BUSINESS FROM MAYOR AND CITY COUNCIL

REGULAR MEETING
AGENDA
CITY OF CREVE COEUR
CITY COUNCIL
300 NORTH NEW BALLAS RD
APRIL 8, 2024
7:00 PM

17. ***Council Liaison Reports***

BUSINESS FROM CITY ADMINISTRATOR

18. **Demolition of the residential structure located at 1030 North Lindbergh Blvd.**
    Summary: PW Staff recommends the demolition of the residential structure located on city property at 1030 N. Lindbergh Blvd. Restoration will include grading, installation of an electric and water hook-up, black PVC coated chain link fence and gates, and planting a row of Green-X arborvitaes to screen the lot from N. Lindbergh Blvd.

19. **Planning and Zoning Update**
    Summary: City staff will provide an update on recent applications and other planning and zoning matters.

ADJOURNMENT

Pursuant to Section 610.022 RSMo., the City Council could, at any time during the meeting, vote to close the public meeting and move to closed session to discuss matters relating to litigation, legal actions and/or communications from the City Attorney as provided under Section 610.021(1) RSMo. and/or personnel matters under Section 610.021(13) RSMo. And/or employee matters under Section 610.021(3) RSMo. and/or real estate matters under Section 610.021(2) or other matters as permitted by Chapter 610.

Posted by: _____

Date/Time posted: _____

REGULAR MEETING
AGENDA
CITY OF CREVE COEUR
CITY COUNCIL
300 NORTH NEW BALLAS RD
APRIL 8, 2024
7:00 PM

If you need special accommodations to attend a meeting, services may be arranged by contacting the Office of the City Administrator in advance.

WORK SESSION MEETING
MINUTES
CITY OF CREVE COEUR
CITY COUNCIL
300 NORTH NEW BALLAS RD
MARCH 25, 2024
6:30 PM

CALL TO ORDER

A work session meeting of the City Council of the City of Creve Coeur was called to order by Mayor Robert Hoffman at the City Council Chamber, 300 North New Ballas Rd, City of Creve Coeur Government Center, Creve Coeur, MO 63141 on Monday, March 25, 2024, at 6:30 PM.

ROLL CALL

Mayor Robert Hoffman
Council Member, Ward 1 Mark Manlin
Council Member, Ward 1 Heather Silverman
Council Member, Ward 2 Tim Carney - via Zoom
Council Member, Ward 2 Nicole Greer
Council Member, Ward 3 Sari Neudorf
Council Member, Ward 3 David Hoffman
Council Member, Ward 4 Joseph Martinich
Council Member, Ward 4 Dan Tierney

Staff Present: City Administrator Mark Perkins, City Attorney Carl Lumley, Director of Community Development Jason Jaggi, Director of Finance Lori Obermoeller, Director of Public Works Jim Heines, Assistant Director of Public Works/City Engineer Steven Berecz, Chief of Police Jeffrey Hartman, and City Clerk Kellie Henke.

DISCUSSION ITEMS

1. Approval of March 11, 2024 City Council Joint Work Session Minutes

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 1 Silverman
SECONDER: Council Member Ward 4 Tierney
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried.

2. FY2025-FY2029 Capital Improvement Program Follow Up

City Administrator Mark Perkins summarized the projects funded by the Parks and Stormwater Fund, including potential work in Lake School Park. Projects include the addition of a new playground, possible parking lot expansion, and a new tennis and pickleball center. The large amount budgeted is a placeholder at this point.

Mr. Perkins stated the 39 North Connection to Centennial Trail would be funded by the Parks and Stormwater Fund and added that staff is actively seeking matching grant opportunities.

Mr. Perkins stated the Parks and Stormwater Fund includes the revenue from the sale of Fountain Park, but these funds have not been appropriated. Council Member Martinich stated the funds could be used to develop the trail.

Mr. Perkins stated outside funding sources for parks and stormwater improvements include Metropolitan St. Louis Sewer District (MSD) operations, maintenance, and construction improvements (OMCI) reimbursement program. Mr. Perkins stated, depending on the results of MSD's propositions at the upcoming collection, OMCI funding may be impacted.

Mr. Perkins stated a Public Hearing for the FY2025-FY2029 Capital Improvement Program will be held on April 8, 2024 at 7:00 p.m.

ADJOURNMENT

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 1 Manlin
SECONDER: Council Member Ward 1 Silverman
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried.

The meeting adjourned at 6:44 p.m.

Submitted by:

Kellie Henke
City Clerk

Dr. Robert Hoffman
Mayor

DRAFT

REGULAR MEETING
MINUTES
CITY OF CREVE COEUR
CITY COUNCIL
300 NORTH NEW BALLAS RD
MARCH 25, 2024
7:00 PM

CALL TO ORDER

A regular meeting of the City Council of the City of Creve Coeur was called to order by Mayor Robert Hoffman at the City Council Chamber, 300 North New Ballas Rd, City of Creve Coeur Government Center, Creve Coeur, MO 63141 on Monday, March 25, 2024, at 7:00 PM.

PLEDGE OF ALLEGIANCE

Mayor Hoffman led the Pledge of Allegiance.

Mayor Hoffman asked for a moment of silence in remembrance of Peggy Vickroy. Ms. Vickroy was the first female Council Member and female Mayor for the City of Creve Coeur.

ROLL CALL

Mayor Robert Hoffman
Council Member, Ward 1 Mark Manlin
Council Member, Ward 1 Heather Silverman
Council Member, Ward 2 Tim Carney-via Zoom
Council Member, Ward 2 Nicole Greer
Council Member, Ward 3 Sari Neudorf
Council Member, Ward 3 David Hoffman
Council Member, Ward 4 Joseph Martinich
Council Member, Ward 4 Dan Tierney

Staff Present: City Administrator Mark Perkins, City Attorney Carl Lumley, Director of Community Development Jason Jaggi, Director of Finance Lori Obermoeller, Director of Public Works Jim Heines, Assistant Director of Public Works/City Engineer Steven Berecz, Chief of Police Jeffrey Hartman, Information Systems Coordinator Chris Tumbarello, and City Clerk Kellie Henke.

COMMENTS FROM THE GENERAL PUBLIC

No one requested to speak.

PUBLIC HEARING

1. **Consideration of a development plan pursuant to Chapter 353 of the Revised Statutes of Missouri**

DRAFT

2. Consideration for the Creation of a Community Improvement District pursuant to the CID Act

Due to the significant overlap of subject matter, the two public hearings were called and held simultaneously.

Court reporter swore in City Administrator Mark Perkins, the Olia Village Leadership Team and City Consultants from Gilmore & Bell and PGAV Planners.

Matt Pfund, of Jack Matthews Development, provided an overview of Olia Village and discussed the opportunities and challenges of the development (See Exhibit A).

Mr. Pfund stated the project requires financial incentives to offset the extraordinary costs, and without it, the project could not proceed.

Shayla Meehan, of Steadfast City, discussed the Chapter 353 plan created as required per the City's Municipal Code. Ms. Meehan provided an overview of the blight analysis, consisting of insanitary and unsafe conditions, deteriorations of site improvements, endangerment to life and property by fire and other causes, and economic liability. Ms. Meehan discussed the extraordinary costs associated with the project and the estimated real property taxes to be paid with abatement as requested.

Robert Klahr, of Armstrong Teasdale, provided an overview of the proposed Community Improvement District ("CID"), to fund the extraordinary costs of development and a Transportation Development District ("TDD"), to fund road improvements. Mr. Khlar stated the property owner requests a sales and use tax exemption on construction materials for the site work through Chapter 100.

Lindsey Evans, of PGAV Planners, provided an overview of the Olia Village Tax Impact Statement (See Exhibit B) and summarized the real property tax revenue estimates for no-build and build-abatement scenarios for the Ladue School District, Creve Coeur Fire District, and the City of Creve Coeur. Ms. Meehan stated the projected new revenue for the Ladue School District would cover the estimated costs for new student enrollment.

Mayor Hoffman reiterated that with the abatement in place, revenue would result in a net gain.

Mark Grimm, of Gilmore & Bell, summarized the proposed Olia Village Authorizing Ordinances: Chapter 353, CID, and Chapter 100 (See Exhibit C). Mr. Grimm discussed the Master Redevelopment Agreement required for Chapter 353, and summarized development requirements, incentives, and performance guarantees.

Mayor Hoffman opened the floor for comments from the general public.

Court reporter swore in all speakers from the general public.

Glenn Wilen, resident of 4 Spoede Acres, spoke in opposition of the proposed financial incentives request and asked the City Council to consider a build scenario with no abatements.

Brett Berger, resident of 10 Winfield Pointe Lane, spoke in support of the development, but in opposition of the proposed financial incentives request.

Pati Trout, resident of 309 South Mosley Road, spoke in opposition of the proposed financial incentives request and asked the City Council to consider not designating the area as blighted.

David Caldwell, resident of 257 Brooktrail Court, read a statement in opposition of the financial incentives request (See Exhibit D).

Raphael Schein, resident of 4 Winfield Pointe Lane, spoke in opposition of the financial incentives request.

Gene Rovak, resident of 766 Gascogne Drive, read a statement in opposition of both the financial incentives request and designation of blighted area (See Exhibit E).

Barry Glantz, resident of 6 Shardue Lane, former Mayor of the City of Creve Coeur, and part of the project leadership team, spoke in support of the development and the proposed financial incentives request.

Linda Rezny, resident of 104 Graeser Acres, shared her concerns regarding the potential revenue that could be generated for the Ladue School District without the abatement and spoke in opposition of the proposed financial incentives request.

Andrew Lowenthal, resident of 722 Gascogne Drive, spoke in opposition of the proposed financial incentives request.

Alfred Rosenfeld, resident of 158 South Graeser Road, spoke in opposition of the designation of blighted area and shared his concerns regarding revenue bonds.

Court reporter swore in Rex Couture, resident of 13042 Gallagher Road, who spoke in opposition of the proposed financial incentives request and blighted area designation.

No one online requested to speak.

There being no further comments from the public, City Attorney Carl Lumley presented exhibits for the record and the public hearing was closed.

ACCEPTANCE OF THE AGENDA

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 1 Silverman
SECONDER: Council Member Ward 4 Tierney
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried.

ANNOUNCEMENTS

The City Council meets the 2nd and 4th Monday of each month
6:00 p.m. - 7:00 p.m. - Work Session
7:00 p.m. - Regular Meeting of the City Council

Monday, April 8, 2024 at 7:00 P.M. - Future Public Hearing for FY2025-FY2029 Capital Improvement Program

CONSENT AGENDA

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 2 Greer
SECONDER: Council Member Ward 1 Silverman
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried.

3. **Approval of March 11, 2024 City Council Regular Meeting Minutes**

REGULAR MEETING
MINUTES
CITY OF CREVE COEUR
CITY COUNCIL
300 NORTH NEW BALLAS RD
MARCH 25, 2024
7:00 PM

BILLS PAYABLE REPORT

For information only: Invoices Paid Listing 03-07-24 to 03-20-24

UNFINISHED BUSINESS

4. **Bill No. 6110- An Ordinance authorizing a new Conditional Use Permit for Truck Depot St. Louis at 1107 N. Warson Road within the North Warson Business Center, zoned LI- Light Industrial District. Final Reading and Passage.**

City Clerk read Bill No. 6110 for the final time.

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 2 Greer
SECONDER: Council Member Ward 1 Silverman
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried. Bill No. 6110 becomes Ordinance No. 5883.

5. **Bill No. 6111 - An Ordinance of the City Council of the City of Creve Coeur, Missouri authorizing the execution of a Transportation Alternatives Program (TAP) Grant supplemental agreement with the Missouri Highways and Transportation Commission to enable the City to construct the New Ballas Road Sidewalk Improvement Project - Phase 3. Final Reading and Passage.**

City Clerk read Bill No. 6111 for the final time.

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 3 Hoffman
SECONDER: Council Member Ward 1 Silverman
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried. Bill No. 6111 becomes Ordinance No. 5884.

NEW BUSINESS

6. **Bill No. 6112- An Ordinance designating a certain tract of land in the City of Creve Coeur, Missouri, as a Blighted Area; approving the Olia Village Development Plan; approving a Master Redevelopment Agreement in connection with the Development Plan; and authorizing the City to enter into certain agreements and take certain other actions in connection therewith. First Reading.**

City Clerk read Bill No. 6112 for the first time.

City Administrator Mark Perkins stated a document will be created and shared with the Council and posted on the City's website for the public that addresses the public comments and questions expressed during the Public Hearing.

7. **Bill No. 6113- An Ordinance Approving an amended petition for the creation of a Community Improvement District; establishing the Olia Village Community Improvement District as a political subdivision of the State of Missouri; and authorizing the City to enter into certain agreements and take certain other actions in connection therewith. First Reading.**

City Clerk read Bill No. 6113 for the first time.

Glenn Wilen, resident of 4 Spoede Acres, clarified that the proposed Ordinance reflects the Olive Village Project as its currently proposed and that the next meeting would be an up or down vote. Mayor Hoffman confirmed.

8. **Bill No. 6114- An Ordinance authorizing the City of Creve Coeur, Missouri, to issue its Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024, for the purpose of providing funds to pay the costs of acquiring, constructing and improving an Industrial Development Project in the City; approving a plan for the project; and authorizing the City to enter into certain agreements and take certain other actions in connection therewith. First Reading.**

City Clerk read Bill No. 6114 for the first time.

9. **Bill No. 6115- An Ordinance making amendments to Chapter 125, Boards, Commissions and Committees. First Reading.**

City Clerk read Bill No. 6115 for the first time.

City Administrator Mark Perkins stated the amendments are a result of the recent dissolution of the Employee Pension Board of Trustees.

City Attorney Carl Lumley stated the Bill also changes the term expiration date for the Audit Committee to June 30 of the applicable year so that the committee terms align with the other current Boards, Commissions and Committees.

10. **Bill No. 6116- An Ordinance of the City Council of the City of Creve Coeur, Missouri authorizing the execution of a Transportation Alternatives Program (TAP) Program Agreement with the Missouri Highways and Transportation Commission to enable the City to construct the Fernview Sidewalk Improvements Project - Phase 1. First Reading.**

City Clerk read Bill No. 6116 for the first time.

Assistant Director of Public Works/ City Engineer Steven Berecz provided an overview of the agreement with the Missouri Department of Transportation (MoDOT) for the Transportation Alternatives Program (TAP) grant for the Fernview sidewalk improvement project and stated construction would likely begin in the Spring of 2026.

11. **Bill No. 6117- An Ordinance Amending the Adopted 2024 Enterprise Fund, Parks & Stormwater Fund, Capital Fund, Sewer Lateral Fund, Public Safety Fund, General Fund and City Employees Retirement Fund Budgets of the City of Creve Coeur by Authorizing Additional Appropriations to each of these Fund Budgets. First Reading.**

City Clerk read Bill No. 6117 for the first time.

Director of Finance Lori Obermoeller provided an overview of the amendment and stated it would authorize the previously anticipated $2.4 million dollar appropriation in order to provide a cost-of-living adjustment (COLA) to the Legacy Pension Plan before moving the plan administration to Missouri Local Government Employees Retirement System (LAGERS). Mr. Obermoeller stated the amendment also includes a final payment to LAGERS, which would close out the City Employees Retirement Fund. Ms. Obermoeller stated these matters were not addressed in the budget as it

was approved before the pension decisions were made last fall.

12. Resolution No. 1714 - A Resolution of the City Council of the City of Creve Coeur, Missouri, authorizing the execution of a contract with Thouvenot, Wade & Moerchen, Inc., to include engineering services related to the Fernview Drive Sidewalk Project - Phase 1 for the not-to-exceed amount of $117,301.40.

City Clerk read Resolution No. 1714.

Assistant Director of Public Works/ City Engineer Steven Berecz provided an overview of the contract, which relates to the previous matter on the agenda.

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 1 Silverman
SECONDER: Council Member Ward 2 Greer
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried.

BUSINESS FROM MAYOR AND CITY COUNCIL

13. Council Liaison Reports

Council Member Hoffman stated the Horticulture, Ecology, and Beautification Committee will be hosting this year's Arbor Day Event on Sunday, April 21, 2024, from 1:00 p.m. to 3:00 p.m. at the Creve Coeur Government Center - Multi-Purpose Room.

Council Member Greer stated the Economic Development Committee recently met to discuss the nominees for the 2023 City of Creve Coeur Business Awards and recommendations from the committee will be forthcoming.

BUSINESS FROM CITY ADMINISTRATOR

14. City Council April Meeting Schedule

Council Member Manlin made a motion, seconded by Council Member Greer, to move the regularly scheduled meeting from April 22, 2024, to Wednesday, April 24, 2024, in observance of Passover.

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 1 Manlin
SECONDER: Council Member Ward 2 Greer
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried.

ADJOURNMENT

RESULT: APPROVED (UNANIMOUS)
MOVER: Council Member Ward 2 Greer
SECONDER: Council Member Ward 1 Silverman
AYES: Manlin, Greer, Hoffman, Tierney, Martinich, Carney, Neudorf, Silverman

The vote on the motion being 8 ayes and 0 nays, motion carried.

The meeting adjourned at 8:31 p.m.

Submitted by:

Kellie Henke
City Clerk

Dr. Robert Hoffman
Mayor

DRAFT

Exhibit A



OLIA VILLAGE

THE HEART OF CREVE COEUR

CITY COUNCIL 03.25.2024

EXCITING OPPORTUNITY

- UPSCALE LIVE-WORK-PLAY DESTINATION
- IMPORTANT COMPONENT OF THE 39N DISTRICT
- WALKABLE, URBAN, MIXED-USE MAIN STREET
- UPSCALE ARCHITECTURE & STRUCTURED PARKING
- MILES OF PEDESTRIAN PATHS, PUBLIC SPACES, IMPROVED INTERSECTIONS, 30 ACRES OF GREENSPACE AND REDUCED STORMWATER IMPACT

DEVELOPMENT THAT ACHIEVES THE GOALS OF THE '23-'25 CREVE COEUR STRATEGIC PLAN





CHALLENGES AND OPPORTUNITIES

- CITY OF ST LOUIS WATER CONDUITS
- TRAFFIC
  - PAVILLION DRIVE ALIGNMENT
  - LINDBERGH CLOVERLEAF
  - OLD OLIVE INTERSECTION
- REPURPOSE EXISTING CAMPUS BUILDINGS TO REDUCE DEMOLITION & SAVE HISTORIC STRUCTURES
- SUBSTANTIAL STRUCTURED PARKING TO REDUCE LARGE PAVED AREAS
- ALL NEW UTILITY INFRASTRUCTURE
- ZONING TO STEP DOWN DENSITIES & USES ALONG RESIDENTIAL AREAS
- TOPOGRAPHY
- ACCOMMODATE STORMWATER THROUGH THE SITE FROM SURROUNDING AREAS



STATUS

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103-2833

404 NATIONWIDE PERMIT

CITY OF CREVE COEUR, MO 1949
city of CREVE COEUR
300 North New Ballas Road • Creve Coeur, Missouri 63141
(314) 872-2500/872-2501 • Fax (314) 872-2505 • Relay MO 1-800-735-2966
www.creve-coeur.org

PRELIMINARY PLAT

MoDOT
Missouri Department of Transportation

September 26, 2023

TRAFFIC IMPACT STUDY

Crawford, Murphy & Tilly
Gateway Tower
One Memorial Dr, Suite 500
St Louis, MO 63102
<< *Transmitted via email>>*

RE: Traffic Impact Study (TIS) Re

Greetings,

Thank you for submitting your finalize
the Olia Village development in Creve
evaluation. We've reviewed the study

- MoDOT traffic concurs with the
- MoDOT traffic advises the developer to continue their collabora
follow state standards with consideration to any state highway s
modifications and improvements.

r comments, you may contact me via

Traffic Studies Specialist
Missouri Department of Transportation

MoDOT
Our mission is to provide a world-class t
innovative, reliable, and dedicated to a
www.modot.org

MISSOURI DEPARTMENT OF NATURAL RESOURCES

July 13, 2023

Matthew Pfund
Jack Matthew's Development
3925 Blackburn Road
Edwardsville, IL 62025

RE: MVS-2023-00048/CES003097 in St. L

thew Pfund:

souri Department of Natural Resour
or Clean Water Act (CWA) Section
ny the U.S. Army Corps of Engine
Commercial and Institutional Develo

osed project does not meet the state
cation; therefore, an individual WQ
pattern, profile, and dimension, inc
channel width, shall be maintained as much

The proposed work concerns a 95 acre devel
and residential buildings. Impacts filling 590
Monsanto Sunswept Creek, and a 0.1 acre s

The proposed project is located in Section 1
County, Missouri. Approximate coordinates

rce
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PO Box 176, Jefferson City, MO 65102-0176 • dnr.mo.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

CITY OF CREVE COEUR, MO 1949

MISSOURI DEPARTMENT OF NATURAL RESOURCES

esearch Office
istrict With a Site
liminary Plat for the

eviewed and
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velopment plan

showing the
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nsideration and vote

t Ordinance is met
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cil on the rezoning

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cts.

9th at 7:00 PM. You o
and to answer any

872-2501 as soon as
urned to the Planning

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

- 18 MONTHS OF PLANNING & COORDINATION – TO GET THE DETAILS RIGHT
- LARGE TEAM OF EXPERTS ON ALL SIDES
- PLAN REQUIRES INCENTIVES TO OFFSET EXTRAORDINARY COSTS & THE PROJECT CAN NOT PROCEED WITHOUT
- NEGOTIATED INCENTIVE PLAN THAT –
  - ZERO UP-FRONT PUBLIC INVESTMENT
  - MAINTAINS CURRENT TAX REVENUE TO ALL DISTRICTS
  - ONLY PRODUCES INCENTIVE ASSISTANCE BY AND WHEN THE PROJECT IS SUCCESSFUL

REDEVELOPMENT PLAN

Steadfast City completed a Chapter 353 Plan in accordance to Article II Section 400.100 of the City of Creve Coeur's Municipal Code

- Design Plan
- Project Phases
- Unit Specification – Availability
- Buildings for Demolition / Rehabilitation
- New Construction
- Open Space and Other Amenities
- Zoning Changes
- Street Changes
- Utility Changes
- Tax Abatement
- Financing
- Management
- Qualifications

BLIGHT ANALYSIS

INSANITARY OR UNSAFE CONDITIONS

- Water Damage, Flooding, & Storm Water Seepage
- Asbestos
- Site Circulation Safety & Ground Subsidence
- Damage to Utility Lines

DETERIORATION OF SITE IMPROVEMENTS

- Steam Utility System
- Roadways & Curbing













BLIGHT ANALYSIS

ENDANGER LIFE OR PROPERTY BY FIRE AND OTHER CAUSES

- Utility Access
- HVAC & Fire Suppression
- Trespassing & Crime





ECONOMIC LIABILITY

- Business Environmental Risk
- Trespassing & Crime
- Equalized Assessed Value (EAV) History

Year	Redevelopment Area Assessed Value	CityPlace Assessed Value	Citywide Commercial Assessed Value	Annual CPI - St. Louis Region
% Change 2018/2023	-12.20%	15.93%	37.89%	19.69%

EXTRAORDINARY COSTS

- $80.6M IN EXTRAORDINARY COSTS
- $61.8M MAXIMUM REIMBURSEMENT
- NOT ALL EXTRAORDINARY COSTS WILL BE RECOVERED
- INCENTIVES ARE APPROX 6% OF OVERALL PROJECT INVESTMENT

EXTRAORDINARY COSTS	
ITEM	COST ($ Million)
UTILITY INFRASTRUCTURE + STREET IMPROVEMENTS	$ 16.2
ST LOUIS CITY WATER MAINS	$ 9.7
MoDOT IMPROVEMENTS	$ 4.4
ABATEMENT & REPURPOSE	$ 31.7
WETLANDS, STORMWATER, TOPOGRAPHY	$ 16.1
OLD OLIVE INTERSECTION	$ 2.5
TOTAL	$ 80.6

EST REAL PROPERY TAXES PAID – WITH ABATEMENT

- $1.0M in current real property taxes (2023)
- $1.6M in real property taxes (Year 1 in 2026)
- $127M in real property taxes paid during abatement period

COMMUNITY IMPROVEMENT DISTRICT ("CID") & TRANSPORTATION DEVELOPMENT DISTRICT ("TDD")

Property Owner Proposes a CID & TDD to Fund Extraordinary Costs of Development

- Funding of CID & TDD
  - CID Sales Tax of 1%
  - CID Special Assessment Generally Equal to Tax Abatement
  - TDD Sales Tax of ½%
- CID & TDD Taxes/Assessments Limited to the Boundaries of the Development
- City Oversight of CID & TDD Boards
- CID & TDD Sales Taxes Enable Cap on Amount of Tax Abatement Used to Fund Extraordinary Costs
  - Tax Abatement to Fund No More than $34.1M
  - CID & TDD Sales Taxes to Fund at Least $27.7M

SALES & USE TAX EXEMPTION ON CONSTRUCTION MATERIALS

Property Owner Requests a Sales and Use Tax Exemption on Construction Materials for the Site Work

- Authorized by Chapter 100 of the Revised Statutes of Missouri
- Affected Taxing Districts are the State of Missouri and St. Louis County
- Estimated Tax Savings of $4.6M
- Total Estimated Cost of Site Work $134.8M

Exhibit B



Olia Village Tax Impact Statement

CITY COUNCIL MEETING - CREVE COEUR, MISSOURI - MARCH 25, 2024

Tax Impact Statement

- Estimates the impact of the proposed Project and requested tax abatement on real property tax revenues for each political subdivision that may be impacted pursuant to Chapter 353.
- Reflects the property tax abatement considered in one of many negotiated incentive packages
- More detailed abatement examples included in redevelopment agreement

Tax Impact Statement

- Notable Assumptions
  - 75% abatement years 1-10 and 50% abatement years 11-25 - no townhomes
  - Abatement period begins for each phase independently
  - Base value - 2023 land and improvements - commercial rates
  - Each lot expected to be allocated a proportionate share of the Base (improvements if applicable)
  - 2023 residential and commercial property tax rates held steady
  - CCFD receives 100% of what they would have received in the absence of tax abatement
  - Abatement applied to incremental taxes
  - Developer anticipated components, phases, and completion dates
  - Market values and assessed values based on comparable properties
  - Market value assumed to grow at 2% in each reassessment year

Tables

- Table 4
  - Build vs. No-Build - additional $93M in real property tax revenues
  - All jurisdictions, all phases
- Tables 5-8
  - Estimated real property tax abatement and taxes paid during abatement period for each phase
- Tables 9
  - Estimated real property tax abatement and taxes paid during abatement period for all phases
  - Gross Total Abatement Value - $86M

Tables

- Table 10
  - Estimated taxes paid - without abatement in place - separated by jurisdiction
  - $213M
- Tables 11
  - Estimated taxes paid - with abatement in place - separated by jurisdiction
  - $127M
- Tables 12
  - Estimated taxes abated - with abatement in place - separated by jurisdiction
  - $86M
- Table 13-15
  - Estimated taxes paid and abated by jurisdiction for various time periods

School District - Fire District - City

Table 16
29-Year Jurisdiction Real Property Tax Revenues Summary
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	Estimated No-Build - Paid	Estimated Build - Abatement - Paid	Projected Increase
Ladue School District	$ 14,186,030	$ 52,806,185	$ 38,620,155
Creve Coeur Fire District ("CCFD")	$ 4,263,734	$ 27,025,384	$ 22,761,650
City of Creve Coeur	$ 602,727	$ 2,211,402	$ 1,608,675
Total Taxes Paid	**$ 34,378,121**	**$ 127,176,622**	**$ 92,798,501**

Table 17
Estimated Ladue School District Real Property Tax Revenue Compared to Estimated Enrollment Costs
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
	1	2	3	4	5	6	7	8	9	10
Real Property Taxes Paid to School District[1]	$ 603,559	$ 948,772	$ 948,772	$ 1,071,164	$ 1,236,951	$ 1,256,113	$ 1,256,113	$ 1,275,659	$ 1,275,659	$ 1,295,596
Estimated School Enrollment[2]	6	14	14	53	53	53	53	53	53	53
Additional Costs @ $17,000 Per Student[3]	$ 102,000	$ 238,000	$ 238,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000
Difference[4]	**$ 501,559**	**$ 710,772**	**$ 710,772**	**$ 170,164**	**$ 335,951**	**$ 355,113**	**$ 355,113**	**$ 374,659**	**$ 374,659**	**$ 394,596**

[1] Estimated real property taxes paid for all phases with abatement in place.
[2] High estimate of additional students residing at the Project and enrolled in Ladue Schools. Source: Developer, Steadfast City.
[3] Estimate provided by Ladue School District.
[4] Estimated Ladue School District revenues available after costs associated with estimated additional students.

Summary

- 2023 Base as 2023 land and improvements (with greater than clause) mitigates negative impact risk
- CCFD receives 100% reimbursement
- 25% (50% years 11-25) PILOT payment (with greater than clauses) on top of Base
- School District projected to cover estimated costs
- City projected to cover estimated costs (when sales tax and utility tax included in projections) (projected costs 14% of projected revenues)

Exhibit C

INNOVATIVE PUBLIC FINANCE SOLUTIONS

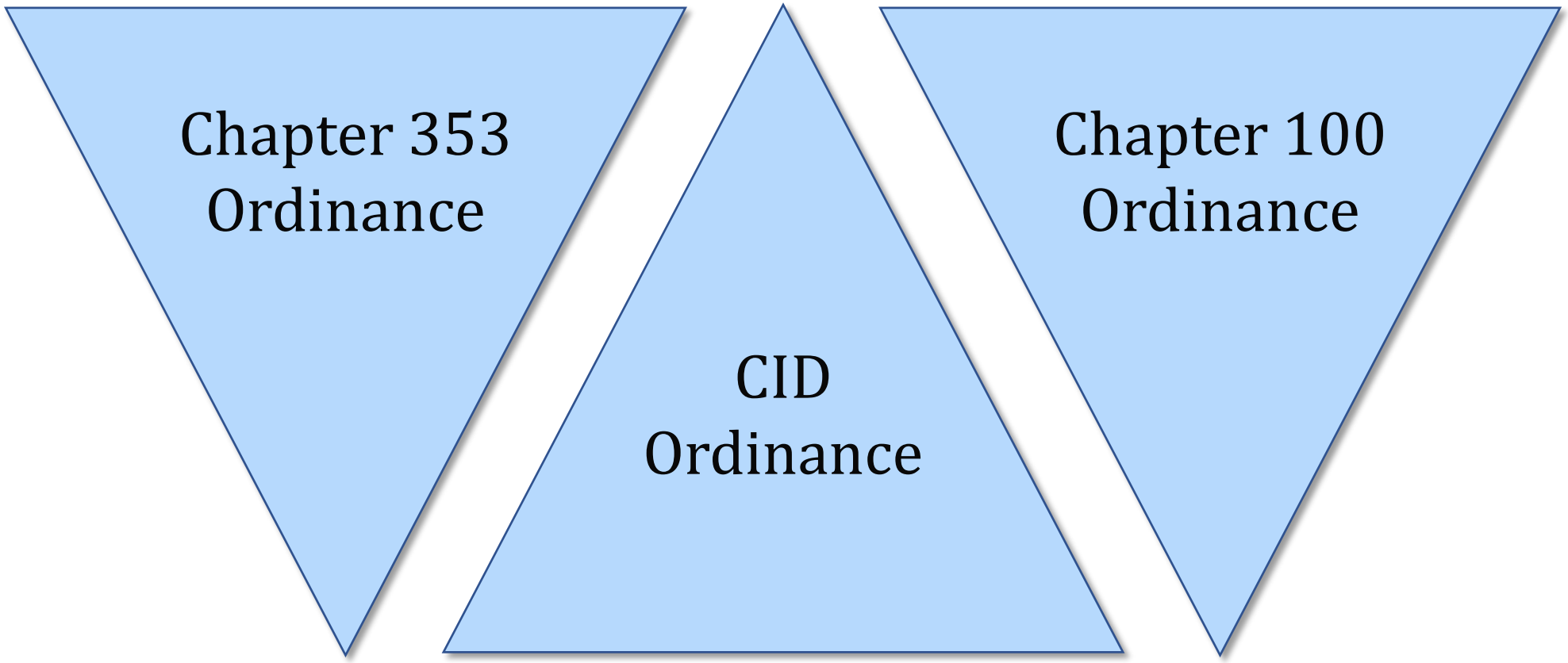
GILMORE BELL

Olia Village Authorizing Ordinances

Presented by:

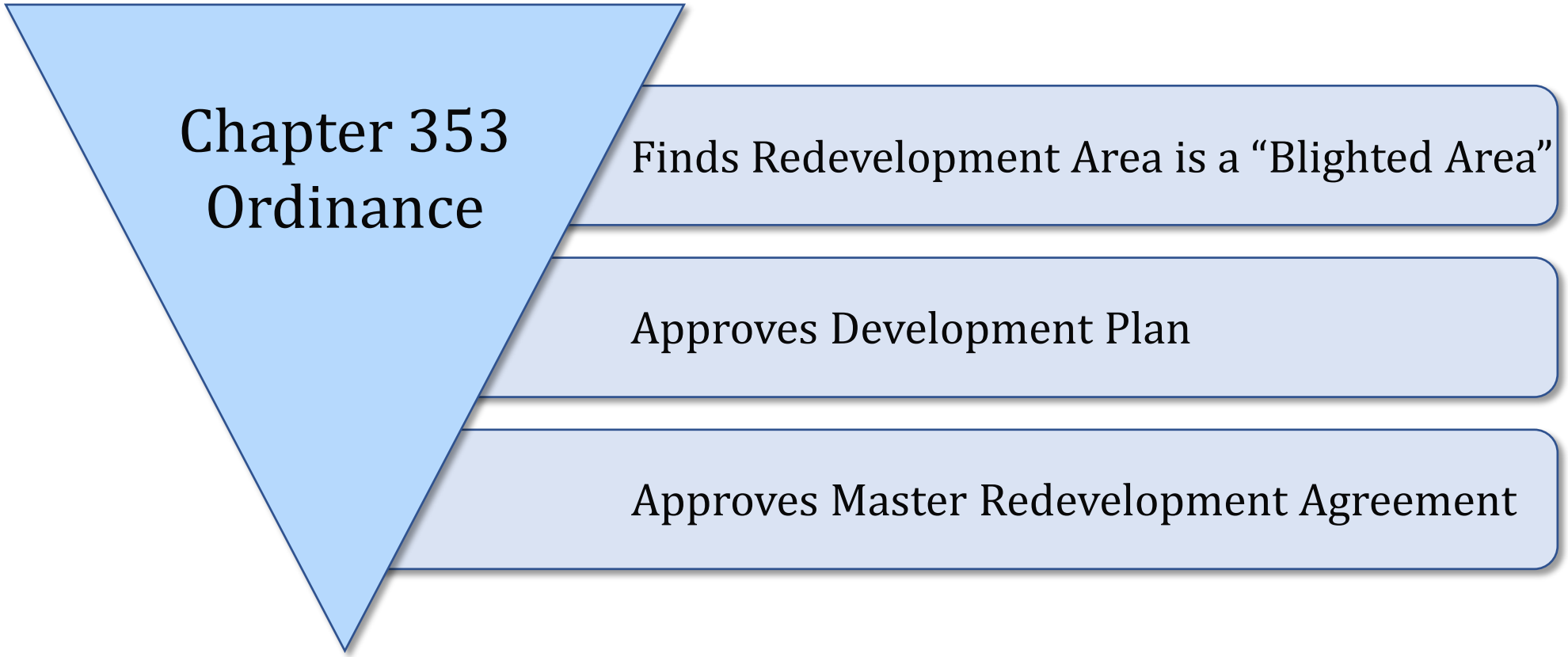
Mark Grimm

Authorizing Ordinances (3)

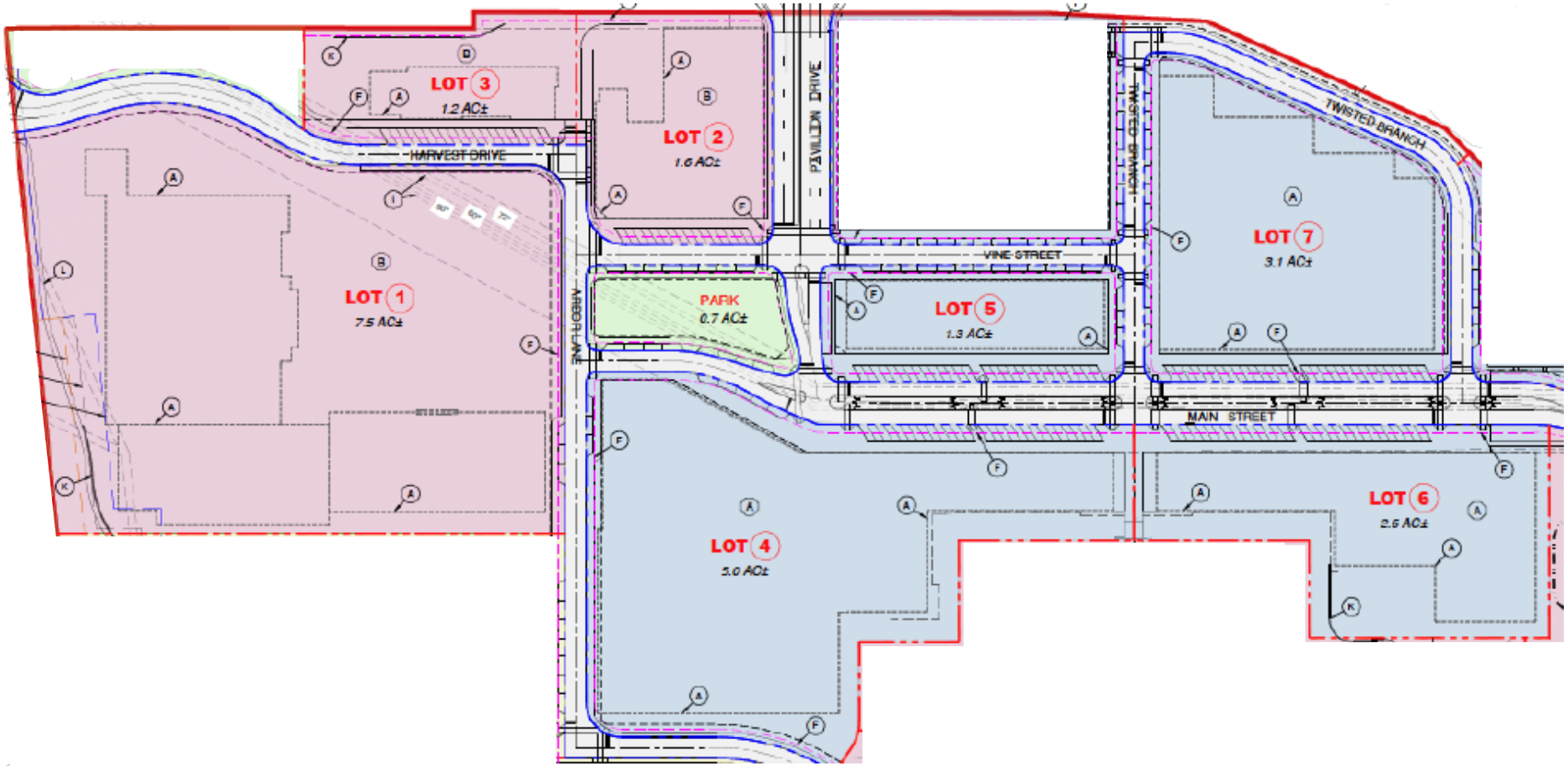


GILMORE BELL

Authorizing Ordinances (1 of 3)



Master Redevelopment Agreement: Development Requirements: Mixed-Use



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Master Redevelopment Agreement: Incentives



CHAPTER 353 REAL PROPERTY TAX ABATEMENT



CID SALES TAX AND SPECIAL ASSESSMENTS



TDD SALES TAX



CHAPTER 100 SALES TAX EXEMPTION ON CONSTRUCTION MATERIALS

Maximum of $61.8 M (excluding value of Chapter 100 sales and use tax exemption), of which a maximum of $34.1 M can come from Chapter 353 abatement/CID special assessments

GILMORE BELL

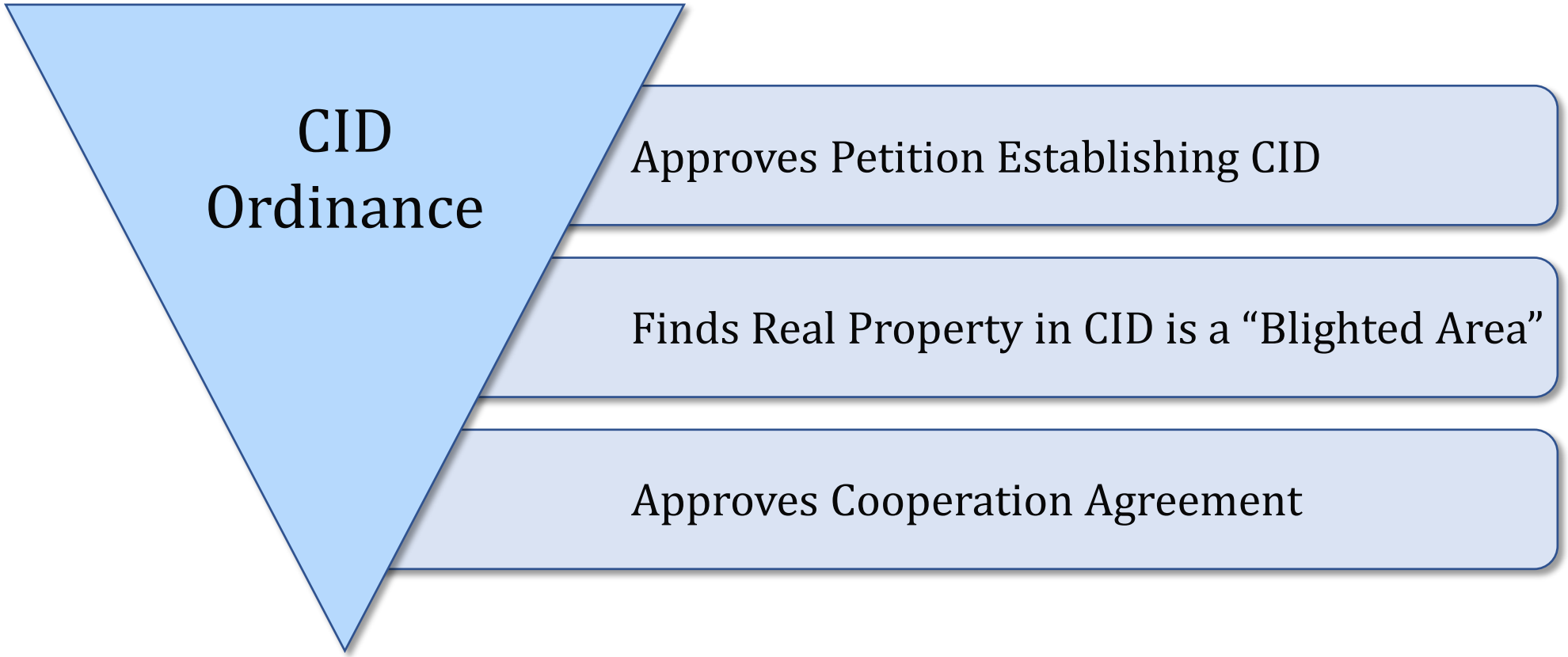
Master Redevelopment Agreement: Performance Guarantees

- No Chapter 353 abatement on any Lot until all Site Work is substantially completed and CID special assessment is levied on such Lot
- No notes issued until Site Work is substantially completed
- No bonds issued until Lots 1 & 2 are substantially completed; 25% of proceeds escrowed to ensure completion of Lots 3 – 5

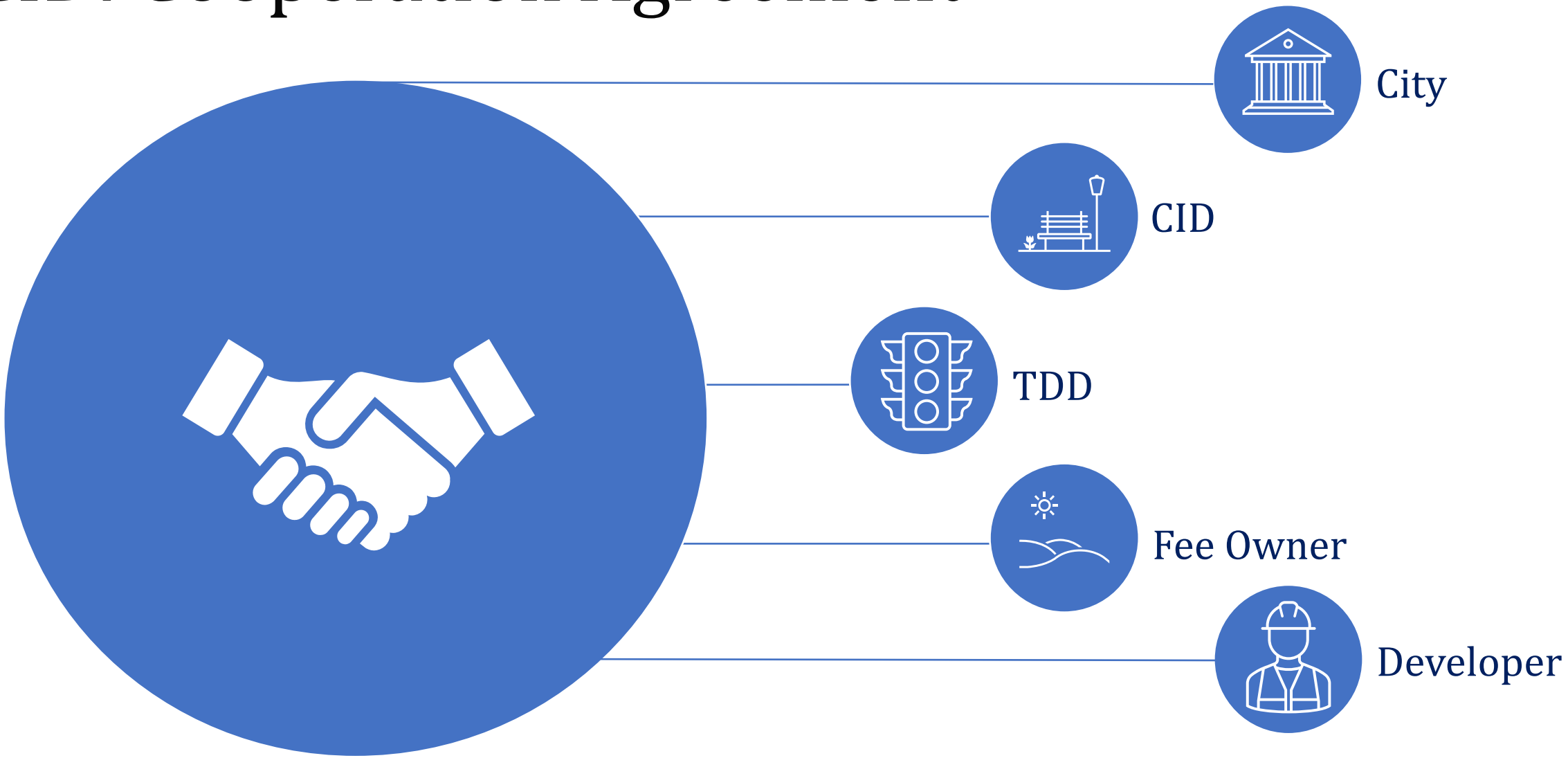
Master Redevelopment Agreement: Performance Guarantees (continued)

- No other bonds issued until the Mixed-Use Development is substantially completed
- If Mixed-Use Development is not completed by March 1, 2030, interest on outstanding notes ceases to accrue until Mixed-Use Development is substantially completed
- CID special assessments and Chapter 353 abatement may be reduced if sales taxes are outperforming initial projections
- Chapter 353 abatement ends when all project obligations secured by CID special assessments are paid in full or canceled

Authorizing Ordinances (2 of 3)



CID: Cooperation Agreement



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CID: Cooperation Agreement



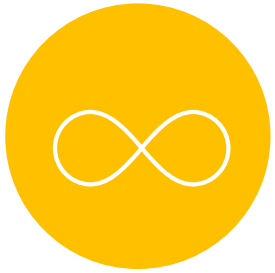
GOVERNANCE



FUNDING MECHANISMS

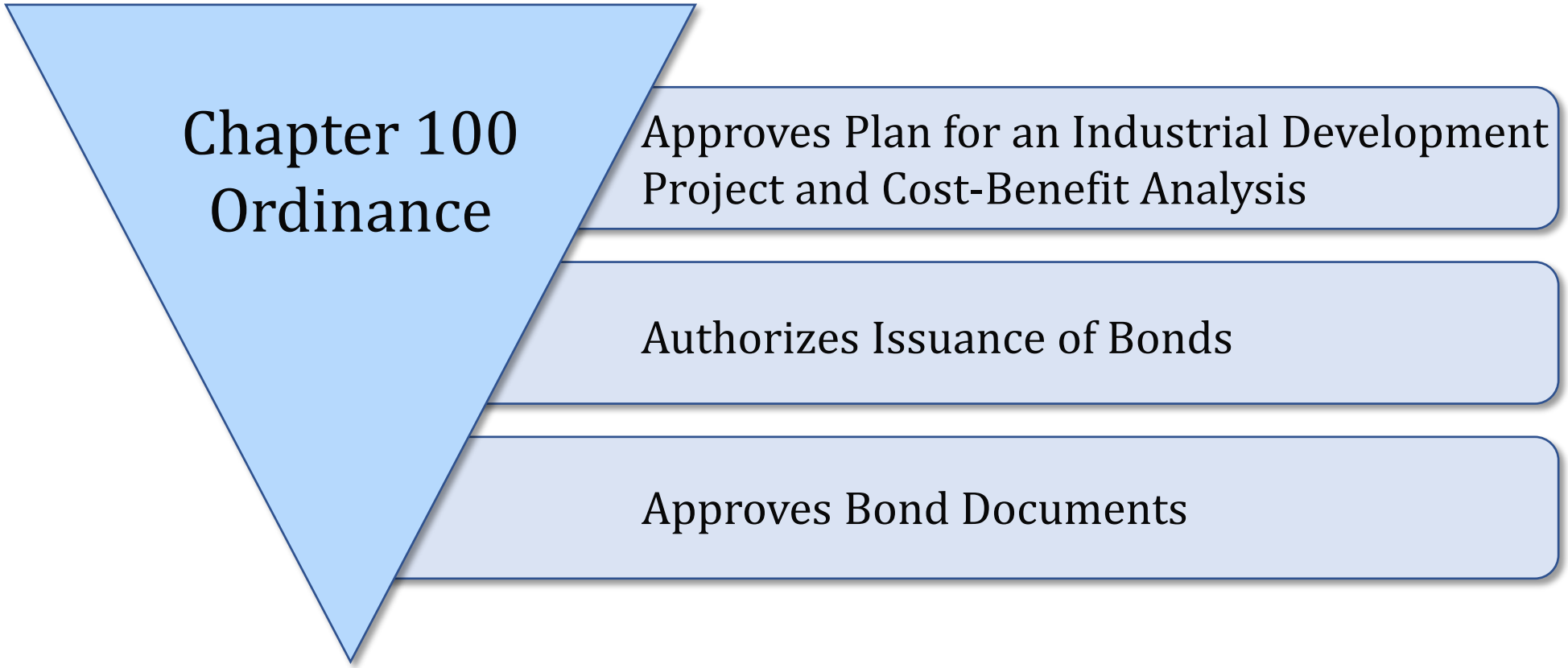


USES OF FUNDS



CONTINUING EXISTENCE

Authorizing Ordinances (3 of 3)



Chapter 100: Sales & Use Tax Exemption



Chapter 100: Sales & Use Tax Exemption



HORIZONTAL SITE WORK ONLY

GILMORE BELL



Mark Grimm
St. Louis Office
(314) 444-4118
mgrimm@gilmorebell.com

Exhibit D

Mayor Hoffman and Members of Council

My name is David Caldwell and my wife and I have lived at 257 Brooktrail Ct since 1976.

We also own an office/warehouse building at 1248 Andes Blvd in the Light Industrial District.

First, I want to thank you for serving the residents of Creve Coeur. You do this at a very low compensation and you have a big responsibility to represent the residents of Creve Coeur. In matters such as the subject of this hearing, your responsibility extends far beyond the residents. Your decisions will affect sales taxpayers, property taxpayers, and business owners and employees who do not reside in Creve Coeur.

Let me speak about commercial property taxpayers from a personal perspective. We bought our building in 2000 and moved our wholesale distribution business from Overland to Creve Coeur. Over the 23 years we have owned the building the value of the building has increased by roughly 75%. But the property taxes have more than tripled! This happened despite numerous appeals over the years. Why did this happen? Because the recipients of property taxes wanted more money and tax rates were increased by votes or otherwise. And it happened because other property owners were given special treatment, which reduced the money available to distribute. This is totally unfair to long term property owners and businesses which must compete with those given special treatment. It is taxation without representation beyond a doubt.

Now the last 23 years were not a period of high inflation. Who knows what will happen over the next 23 years. The estimates of the lost revenue are most likely extremely low. I strongly urge the Council to represent the entire community of those impacted by your decision and to deny the request. However, if it is granted, the time period should be minimized and the dollar amount capped.

If I have a few seconds left, I would just like to say that respected institutions such as The Show Me Institute have thoroughly examined the usefulness of TDD's and found them to be undesirable. The biggest winners from TDD's are the lawyers and banks. Creve Coeur's experience has not been good if you look at the total cost and what was accomplished. I strongly urge you to do your homework and look beyond the lipstick on the pig.

Thank you.

Exhibit E

For Public Hearing at Creve Coeur City Council Meeting of March 25, 2024 re Olia Village:

Good evening. My name is Gene Rovak; I reside at 766 Gascogne in the 4th Ward of Creve Coeur. I am a Civil Engineer with decades of experience, including familiarity with requirements of infrastructure, commercial, and mixed residential development. I don't harbor any illusions that my remarks will block the Tax Abatement, CID, and TDD, that Fireside Financial has requested. But the council would do well to consider limits and conditions on their use.

Why consider limits and conditions?

Fireside's petition says the project can't go forward without tax incentives because the former office campus is blighted and that redevelopment poses "extraordinary costs," including new utility connections, new roads and sidewalks, land clearance and the need to work around a water main on the site. *How are utility connections, roads and sidewalks, and avoiding a water main "extraordinary"?*

By what definition is the former office campus "blighted"?
Does blight mean that property needs improvements? Some needed improvements include the removal or immobilization of asbestos, and improvement to internal utility and circulation features.
Aren't these development costs common with older buildings?
Or, do we accept the approach that a property which is currently unused is assumed to be blighted? Does anything short of "highest and best use" automatically constitute blight?

As we've heard, Fireside is asking for the following:

- Tax abatement for 75% of real estate tax due on improvements to the site for 10 years, then 50% of the tax due for another 15 years, diverting over $85M from 16 taxing districts.
- Community Improvement District (CID): 1-cent sales tax up to 25 years to pay for the development of this private property.
- Transportation Development District (TDD): ½ cent sales tax to pay for road and other costs.

That's a big "ask" – Tax abatement, plus a CID, plus a TDD.

We need some perspective: Undoubtably some Council and staff members remember the concept of Development Impact Fees. Under that system, developers are charged to pay for road and other improvements needed to handle the increased demand their developments place on public infrastructure. In recent times use of these fees have not only diminished, but been turned on their head as municipalities fall all over themselves to provide enticements for developers. Who now shoulders the costs of improvements?

Then there's the "But For" test regarding tax abatements.
The "But-For" test is used to ensure that new development that renders property eligible for a tax abatement *would not have occurred but for the tax break*. This standard ensures that the benefit is applied only where necessary to stimulate needed development, and not in cases where investment would have taken place anyway.

But let's look at this instance: After Bayer bought Monsanto and then after a pandemic-induced shift in office needs, in late February 2022 they started exploring a sale. Later they put the western half on the market. *Fireside snapped up the property in September 2022 for $55 million, only seven months after Bayer began to consider a sale.*
So, the campus was not a dog on the market, waiting years for an interested buyer. It presented an obvious opportunity. So, "but for" – really?

Last, regarding a TDD: If the TDD does go forward, I trust that Creve Coeur remembers the lesson of CityPlace, where Komen Group, a developer with lots of experience with buildings and internal circulation, proved to be incapable of working in the public right-of-way when they took charge of the Olive Blvd. improvements. They could not handle ordinary work like utility relocation and traffic control, which they claimed they didn't anticipate. The project ran massively over budget and vastly behind schedule; so badly so, that Creve Coeur had to assume in-house control of the TDD.

All things considered; Olia Village may turn out to be a valuable addition to Creve Coeur.

But that possibility does not warrant giving *carte blanche* to Fireside Financial and allowing them to shrug off the risks and responsibilities inherent in any major development.

Respectfully submitted,

Gene Rovak

The figures I've cited above are based on the Creve Coeur Newsletter of March 2024, and a St. Louis Post-Dispatch article of March 20, 2024.

MEMORANDUM

DATE: April 4, 2024

TO: Mark Perkins, City Administrator

FROM: Lori Obermoeller, Director of Finance

SUBJECT: Invoices Paid Listing

For your information and transmittal to the City Council, attached is a list of paid invoices from March 21, 2024 to March 31, 2024 in the amount of $587,952.30.

Council Report of invoices Paid Listing

By Fund

Payment Dates 3/21/2024 - 3/31/2024

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number	Amount
Fund: 01 - GENERAL FUND						
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	PRISONER MEALS	01-2410	DFT0008521	107.26
LAGERS	9103 MAR 2024	03/27/2024	LAGERS MARCH 2024	01-2317	DFT0008583	189,652.35
CDW LLC	PX70066	03/27/2024	LEXMARK IMAGING UNIT FO...	01-2410	653	59.98
DEPARTMENT OF TREASURY	INV0002016	03/29/2024	SOCIAL SECURITY	01-2102	DFT0008561	505.30
DEPARTMENT OF TREASURY	INV0002016	03/29/2024	MEDICARE	01-2103	DFT0008561	118.18
DEPARTMENT OF TREASURY	INV0002016	03/29/2024	FEDERAL WITHHOLDING	01-2104	DFT0008561	100.00
PAYROLL MISSOURI WITHHOLDING TAXES	INV0002017	03/29/2024	STATE WITHHOLDING	01-2105	DFT0008562	100.00
PAYROLL-MS CONTRIBUTIONS	INV0002018	03/29/2024	ICMA ROTH IRA %	01-2319	DFT0008563	105.73
FAMILY SUPPORT DIVSION-CHILD SUPPORT OFFICE	INV0002019	03/29/2024	CHILD SUPPORT	01-2113	DFT0008564	184.62
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ER PENSION 10%	01-2312	DFT0008565	797.40
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ICMA ROTH 457 %	01-2318	DFT0008565	3,692.66
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ICMA ROTH 457 $	01-2318	DFT0008565	1,908.08
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	MS ROTH IRA CATCHUP$	01-2318	DFT0008565	40.00
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ICMA ROTH IRA $	01-2319	DFT0008565	514.62
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ICMA 457 $	01-2322	DFT0008565	692.33
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ICMA 457 %	01-2322	DFT0008565	1,800.89
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ICMA 457 $	01-2322	DFT0008565	7,746.79
PAYROLL-MS CONTRIBUTIONS	INV0002020	03/29/2024	ICMA LOAN PAYMENT	01-2324	DFT0008565	200.64
VOYA	INV0002021	03/29/2024	VOYA 457 %	01-2321	DFT0008566	1,479.99
VOYA	INV0002021	03/29/2024	VOYA 457$	01-2321	DFT0008566	290.00
DEPARTMENT OF TREASURY	INV0002022	03/29/2024	SOCIAL SECURITY	01-2102	DFT0008567	41,195.20
DEPARTMENT OF TREASURY	INV0002022	03/29/2024	MEDICARE	01-2103	DFT0008567	9,634.38
DEPARTMENT OF TREASURY	INV0002022	03/29/2024	FEDERAL WITHHOLDING	01-2104	DFT0008567	31,398.99
PAYROLL MISSOURI WITHHOLDING TAXES	INV0002023	03/29/2024	STATE WITHHOLDING	01-2105	DFT0008568	11,815.00
						304,140.39
						304,140.39
Department: 11 - LEGISLATIVE SERVICES						
Division: 12 - MAYOR AND CITY COUNCIL						
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Council Dinner 2.12.24	01-11-12-6264	DFT0008521	383.68
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	39North meeting - A. Brenner	01-11-12-6264	DFT0008521	13.29

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number	Amount
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Council Dinner 2.26.24	01-11-12-6264	DFT0008521	10.39
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Council Dinner 2.12.24	01-11-12-6264	DFT0008521	17.97
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CCO Luncheon- Greer	01-11-12-6264	DFT0008521	26.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Council Dinner 2.26.24- Joint...	01-11-12-6264	DFT0008521	396.75
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Council Dinner 2.6.24 Special..	01-11-12-6264	DFT0008521	289.72
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CCO Annual Awards Dinner a...	01-11-12-6264	DFT0008521	425.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Council Dinner 2.26.24	01-11-12-6264	DFT0008521	25.98
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CCO Luncheon- Neudorf	01-11-12-6264	DFT0008521	26.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Donuts- Coffee with the May...	01-11-12-6264	DFT0008521	55.17
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Arbor Day - Participation Rib...	01-11-12-7315	DFT0008521	85.15
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Arbor Day - Ribbons	01-11-12-7315	DFT0008521	143.87
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Arbor Day - Participation Rib...	01-11-12-7315	DFT0008521	-3.75
SLMD, INC.	244032	03/27/2024	OUTGOING COUNCIL PLAQU...	01-11-12-7306	667	168.00
					Division 12 - MAYOR AND CITY COUNCIL Total:	**2,063.22**
					Department 11 - LEGISLATIVE SERVICES Total:	**2,063.22**
Department: 12 - ADMINISTRATION						
Division: 10 - LEGAL						
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	2024 MML Legislative Confer...	01-12-10-6265	DFT0008521	155.15
					Division 10 - LEGAL Total:	**155.15**
Division: 11 - ADMINISTRATIVE						
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Monthly Credit Reports	01-12-11-6202	DFT0008521	45.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Pre-Employment Background...	01-12-11-6202	DFT0008521	15.55
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Pre-Employment Background...	01-12-11-6202	DFT0008521	15.55
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Facebook Heart to Heart Ad	01-12-11-6260	DFT0008521	20.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Peach Jar Arbor Day Ad	01-12-11-6260	DFT0008521	75.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Business Journal	01-12-11-6262	DFT0008521	100.00

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number		Amount
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	PSHRA Membership - HRG	01-12-11-6262	DFT0008521		175.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Nonprofit Marketers Networ...	01-12-11-6262	DFT0008521		100.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Business e-newsletter subscr...	01-12-11-6262	DFT0008521		76.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Wall Street Journal	01-12-11-6262	DFT0008521		4.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MCMA Spring Conf CA & ACA..	01-12-11-6265	DFT0008521		400.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	2024 MML Legislative Confer...	01-12-11-6265	DFT0008521		155.15
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MML State Legislative Confe...	01-12-11-6265	DFT0008521		8.50
39 NORTH AGTECH INNOVATION DISTRICT	1026	03/27/2024	3RD QUARTERLY PAYMENT ...	01-12-11-6203	650		12,500.00
PAYLOCITY CORPORATION	INV1926846	03/27/2024	COBRA ADMINISTRATION	01-12-11-6203	67352		60.00
						Division 11 - ADMINISTRATIVE Total:	**13,749.75**
Division: 14 - MUNICIPAL COURT							
RICOH USA, INC	108064615	03/27/2024	COURT COPIER LEASE 2/13-3...	01-12-14-6213	67355		192.63
ODP BUSINESS SOLUTIONS LLC	356420280001	03/27/2024	RUBBERBANDS FOR COURT	01-12-14-7304	67350		11.59
ODP BUSINESS SOLUTIONS LLC	356420407001	03/27/2024	COURT OFFICE SUPPLIES	01-12-14-7304	67350		12.43
GRANITE WOODS PRINTING INC	426560	03/27/2024	FILE JACKETS FOR COURT CA...	01-12-14-7304	67343		1,150.00
INTERNATIONAL LANGUAGE SCHOOL	753027	03/27/2024	2 SERVICES SPANISH INTERP...	01-12-14-6201	660		82.00
ENGELMEYER & PEZZANI LLC	JUDGE FEB 24	03/27/2024	FY24 JUDICIAL SERVICES FEB ...	01-12-14-6201	67342		1,875.00
MARY LEIGHTON BRUNTRAGER	JUDGE FEB 24	03/27/2024	PROVISIONAL JUDGE 02/21 V...	01-12-14-6201	662		500.00
MSLACA	MAR 24 SEMINAR	03/27/2024	SPRING SEMINAR/MEETING ...	01-12-14-6264	67348		55.00
						Division 14 - MUNICIPAL COURT Total:	**3,878.65**
						Department 12 - ADMINISTRATION Total:	**17,783.55**
Department: 13 - FINANCE							
Division: 11 - ADMINISTRATIVE							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	GFOA NATIONAL CONFEREN...	01-13-11-6265	DFT0008521		50.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	TAX FORMS	01-13-11-7304	DFT0008521		38.78
PAYROLL MISSOURI WITHHOLDING TAXES	INV0002023	03/29/2024	STATE WITHHOLDING	01-13-11-6202	DFT0008568		0.50
						Division 11 - ADMINISTRATIVE Total:	**89.28**

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number		Amount
Division: 15 - INTERDEPARTMENTAL							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Emp Wellness - Insulated Coo..	01-13-15-6272	DFT0008521		449.00
AT&T	314983-27050760-03/07/24	03/27/2024	MONITOR LINE ICE ARENA 3/...	01-13-15-6253	67338		149.79
ODP BUSINESS SOLUTIONS LLC	359550290001	03/27/2024	LENS WIPES HIGHLIGHTERS ...	01-13-15-7312	67350		195.78
						Division 15 - INTERDEPARTMENTAL Total:	**794.57**
Division: 51 - MIS OPERATIONS							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	usb-c charging cables	01-13-51-6213	DFT0008521		36.97
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	ipad keyboard case (pd)	01-13-51-6213	DFT0008521		109.98
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	ipad charging items	01-13-51-6213	DFT0008521		67.82
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	creve-coeur.org renewal	01-13-51-6213	DFT0008521		20.99
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	monitor arm	01-13-51-6213	DFT0008521		35.49
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Office HS 2021 (pd)	01-13-51-7332	DFT0008521		149.99
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Zoom subscription	01-13-51-7332	DFT0008521		71.98
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	sqlbackup 1yr license ccapps...	01-13-51-7332	DFT0008521		48.00
DELL MARKETING LP	10737904518	03/27/2024	LATITUDE RUGGED 5424 KEY...	01-13-51-6213	655		85.99
DELL MARKETING LP	10738308163	03/27/2024	DELL RIGGED 5424 KEYBOAR...	01-13-51-6213	655		85.99
						Division 51 - MIS OPERATIONS Total:	**713.20**
						Department 13 - FINANCE Total:	**1,597.05**
Department: 14 - COMMUNITY SERVICES							
Division: 11 - ADMINISTRATIVE							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Credit for ID Card Printer/Su...	01-14-11-7304	DFT0008521		-9.05
MYRLYNN HENLEY	122A	03/27/2024	TAI CHI INSTRUCTION 3/5/24...	01-14-11-6202	664		400.50
						Division 11 - ADMINISTRATIVE Total:	**391.45**
						Department 14 - COMMUNITY SERVICES Total:	**391.45**
Department: 16 - MUNICIPAL FACILITIES MAINTENANCE							
Division: 11 - ADMINISTRATIVE							
SPIRE	5003001000-03/14/24	03/25/2024	300 N NEW BALLAS CITY HALL..	01-16-11-6252	DFT0008552		716.13
LOCAL CLEANERS LLC	000224	03/27/2024	CITY HALL COMMERCIAL CLE...	01-16-11-6212	661		3,000.00
UNIFIRST CORPORATION	1880108496	03/27/2024	MAINTENANCE UNIFORMS J ...	01-16-11-7308	670		8.66
						Division 11 - ADMINISTRATIVE Total:	**3,724.79**
						Department 16 - MUNICIPAL FACILITIES MAINTENANCE Total:	**3,724.79**

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number		Amount
Department: 21 - POLICE							
Division: 11 - ADMINISTRATIVE							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CALEA ONLINE MANAGER C...	01-21-11-6261	DFT0008521		675.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	FBI NAA ANNUAL MEMBERSH..	01-21-11-6262	DFT0008521		115.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MEALS FOR SGTS PROCESS	01-21-11-6264	DFT0008521		34.06
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	(4) FBI NA MEETINGS	01-21-11-6264	DFT0008521		60.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MEALS FOR SGTS PROCESS	01-21-11-6264	DFT0008521		5.23
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MEALS FOR SGTS PROCESS	01-21-11-6264	DFT0008521		6.80
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CCO Annual Awards Dinner a...	01-21-11-6264	DFT0008521		425.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MEALS FOR SGTS PROCESS	01-21-11-6264	DFT0008521		93.94
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	LUNCH DURING FY25 BUDGE...	01-21-11-6264	DFT0008521		92.98
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	(2) LEO JANUARY MEETINGS	01-21-11-6264	DFT0008521		30.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	(4) LEO FEBRUARY MEETING S	01-21-11-6264	DFT0008521		60.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	GAS FOR CHIEF'S VEHICLE	01-21-11-7307	DFT0008521		39.80
UNIFIRST CORPORATION	1880108496	03/27/2024	MAINTENANCE UNIFORMS J ...	01-21-11-7308	670		8.67
SLMD, INC.	244000	03/27/2024	OFFICE OF THE YEAR NAMEP...	01-21-11-7306	667		18.00
ENERGY PETROLEUM CO	373053	03/27/2024	REGULAR FUEL AT PW GARA...	01-21-11-7307	657		1,115.43
						Division 11 - ADMINISTRATIVE Total:	**2,779.91**
Division: 21 - INVESTIGATION							
ENERGY PETROLEUM CO	373053	03/27/2024	REGULAR FUEL AT PW GARA...	01-21-21-7307	657		730.21
						Division 21 - INVESTIGATION Total:	**730.21**
Division: 22 - PATROL							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	1 UNLIMITED CAR WASH	01-21-22-6210	DFT0008521		18.99
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	1 UNLIMITED CAR WASH	01-21-22-6210	DFT0008521		18.99
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	24 UNLIMITED CAR WASHES	01-21-22-6210	DFT0008521		455.76
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	1 UNLIMITED CAR WASH	01-21-22-6210	DFT0008521		18.99
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	ANNUAL HANDLER SUBSCRIP...	01-21-22-6262	DFT0008521		140.00

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number	Amount
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	2024 LETSAC CONFERENCE	01-21-22-6265	DFT0008521	225.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	REGISTRATION FOR ILEETA C...	01-21-22-6265	DFT0008521	440.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CAT COMBAT APPLICATION ...	01-21-22-6271	DFT0008521	29.39
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CAT TOURNIQUET GEN 7 BL...	01-21-22-6271	DFT0008521	59.55
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	VARIOUS MEDICAL SUPPLIES ...	01-21-22-6271	DFT0008521	328.04
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	XPRITE RED/BLUE LED VISOR ...	01-21-22-7302	DFT0008521	25.73
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	FOOD FOR K9	01-21-22-7304	DFT0008521	88.98
VALVOLINE LLC	230952	03/27/2024	OIL CHANGE FOR CAR 2406	01-21-22-6210	67358	40.98
VALVOLINE LLC	230958	03/27/2024	OIL CHANGE FOR CAR 2404	01-21-22-6210	67358	40.28
VALVOLINE LLC	230962	03/27/2024	OIL CHANGE FOR CAR 2407	01-21-22-6210	67358	40.28
ENERGY PETROLEUM CO	373053	03/27/2024	REGULAR FUEL AT PW GARA...	01-21-22-7307	657	17,885.63
LAGERS	9103 MAR 2024	03/27/2024	LAGERS MARCH 2024	01-21-22-5241	DFT0008583	0.28
DEFENDER PRODUCT SOLUTIONS, LLC	DPS-24-049	03/27/2024	LABOR AND EQUIPMENT FOR...	01-21-22-9502	654	12,024.00
DEFENDER PRODUCT SOLUTIONS, LLC	DPS-24-049	03/27/2024	LIGHTS FOR FOR CAR 2424	01-21-22-9503	654	2,250.00
DEFENDER PRODUCT SOLUTIONS, LLC	DPS-24-050	03/27/2024	DECOMMISSION CAR 2424	01-21-22-6210	654	350.00
CDW LLC	QD93608	03/27/2024	1 MOBILE PRINTER W/BATTE...	01-21-22-9503	653	914.14
					Division 22 - PATROL Total:	**35,395.01**
					Department 21 - POLICE Total:	**38,905.13**
Department: 31 - PUBLIC WORKS						
Division: 41 - STREET MAINTENANCE						
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CARBURETOR FOR BLOWER	01-31-41-6211	DFT0008521	39.26
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MIKE FOGG APWA CONFERE...	01-31-41-6265	DFT0008521	605.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	SUPER SHUTTLE FOR APWA ...	01-31-41-6265	DFT0008521	93.20
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	FLIGHT TO APWA CONFEREN...	01-31-41-6265	DFT0008521	188.97
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	FOOD FOR WINTER EVENT 02...	01-31-41-7304	DFT0008521	210.85
HUMAN RESOURCE STAFFING	1001076992	03/27/2024	PW TEMPORARY EMPLOYEE...	01-31-41-6207	658	1,085.37
POMPS TIRE SERVICE INC	1170099965	03/27/2024	LOADER TIRE FOR JOHN DEE...	01-31-41-6211	67353	562.12
NB WEST CONTRACTING CO	16132	03/27/2024	COLD MIX UPM	01-31-41-7305	67349	480.60
EAST PENN MANUFACTURING CO	240276306	03/27/2024	CONCRETE SAW BATTERY	01-31-41-6211	67341	63.76

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number	Amount
ENERGY PETROLEUM CO	373053	03/27/2024	REGULAR FUEL AT PW GARA...	01-31-41-7307	657	2,369.33
K AND K SUPPLY	401403	03/27/2024	SLEDGE HAMMER, GARAGE ...	01-31-41-6212	67344	106.90
SAFETY-KLEEN SYSTEMS, INC.	94031799	03/27/2024	OIL WATER SEP	01-31-41-6212	67356	1,076.78
ST LOUIS METRO ELECTRIC SUPPLY INC	S78286-00	03/27/2024	PWG PARKING LOT LIGHTS	01-31-41-9503	668	1,931.00
DH PACE COMPANCY INC	SVC/264-794423	03/27/2024	SALT PAD DOOR	01-31-41-6212	656	989.70
SPIRE	7725111000-03/19/24	03/29/2024	996 RUE DE LA BANQUE 2/21...	01-31-41-6252	DFT0008591	368.48
					Division 41 - STREET MAINTENANCE Total:	**10,171.32**
Division: 43 - PARKS MAINTENANCE						
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	CARBURETOR FOR BLOWER	01-31-43-6211	DFT0008521	39.26
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	BACK OF MILLENNIUM PARK	01-31-43-6212	DFT0008521	1,014.30
HUMAN RESOURCE STAFFING	1001076992	03/27/2024	PW TEMPORARY EMPLOYEE...	01-31-43-6207	658	361.79
POMPS TIRE SERVICE INC	1170099965	03/27/2024	LOADER TIRE FOR JOHN DEE...	01-31-43-6211	67353	187.38
EAST PENN MANUFACTURING CO	240276306	03/27/2024	CONCRETE SAW BATTERY	01-31-43-6211	67341	21.26
ENERGY PETROLEUM CO	373053	03/27/2024	REGULAR FUEL AT PW GARA...	01-31-43-7307	657	522.80
SPIRE	7725111000-03/19/24	03/29/2024	996 RUE DE LA BANQUE 2/21...	01-31-43-6252	DFT0008591	368.49
					Division 43 - PARKS MAINTENANCE Total:	**2,515.28**
					Department 31 - PUBLIC WORKS Total:	**12,686.60**
					Fund 01 - GENERAL FUND Total:	**381,292.18**
Fund: 02 - CAPITAL IMPROVEMENT FUND						
Department: 61 - CIP						
Division: 71 - CIP						
SWEETENS CONCRETE SERVICES LLC	20243883	03/27/2024	NEW BALLAS ROAD IMPR-PH...	02-61-71-9510	669	142,906.40
					Division 71 - CIP Total:	**142,906.40**
					Department 61 - CIP Total:	**142,906.40**
					Fund 02 - CAPITAL IMPROVEMENT FUND Total:	**142,906.40**
Fund: 05 - PARKS & STORMWATER FUND						
Department: 61 - CIP						
Division: 71 - CIP						
METROPOLITAN PARK & RECREATION DISTRICT	D2023.17.02 2.29.24	03/27/2024	CENTENNIAL GREENWAY/39...	05-61-71-9506	663	33,750.00
					Division 71 - CIP Total:	**33,750.00**
					Department 61 - CIP Total:	**33,750.00**
					Fund 05 - PARKS & STORMWATER FUND Total:	**33,750.00**

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number		Amount
Fund: 06 - MUNICIPAL ENTERPRISE FUND							
Department: 14 - COMMUNITY SERVICES							
Division: 31 - ICE ARENA							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	First Aid Supplies	06-14-31-6271	DFT0008521		9.98
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Moisture Meter	06-14-31-7302	DFT0008521		91.60
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Dobbers	06-14-31-7304	DFT0008521		21.89
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	LTS Supplies	06-14-31-7304	DFT0008521		29.98
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	LTS Supplies	06-14-31-7304	DFT0008521		5.99
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	LTS Supplies	06-14-31-7304	DFT0008521		9.99
MISSOURI AMERICAN WATER CO	1017-210013831700-3/22/24	03/27/2024	11400 OLDE CABIN RD 2/21/...	06-14-31-6254	67346		1,127.92
ARAMARK UNIFORM SERVICES	6170254622	03/27/2024	MOP AND TOWEL SERVICE D...	06-14-31-7301	652		47.45
ARAMARK UNIFORM SERVICES	6170257107	03/27/2024	MOP AND TOWEL SERVICE D...	06-14-31-7301	652		52.44
RHINE PARACO GAS OF ST LOUIS	796667	03/27/2024	PROPANE FOR OLY	06-14-31-7307	67354		192.51
SPIRE	4981701000-03/18/24	03/28/2024	11400 OLDE CABIN RD 2/19/...	06-14-31-6252	DFT0008585		1,808.62
						Division 31 - ICE ARENA Total:	**3,398.37**
Division: 32 - GOLF MAINTENANCE							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	tree felling tools	06-14-32-6212	DFT0008521		38.56
HYSPECO, INC.	00706138	03/27/2024	HYD HOSE JD240	06-14-32-6211	659		73.13
MISSOURI AMERICAN WATER CO	1017-210013831700-3/22/24	03/27/2024	11400 OLDE CABIN RD 2/21/...	06-14-32-6254	67346		471.79
OREILLY AUTOMOTIVE STORES INC	1388-469757	03/27/2024	GASKET LUBE	06-14-32-6210	666		7.64
SITEONE LANDSCAPE SUPPLY HOLDING, LLC	139033569-001	03/27/2024	MULCH 18 YDS	06-14-32-6212	67357		676.00
ADVANCED TURF SOLUTIONS INC	SO1154909.2	03/27/2024	ROPE STAKES AND CUP CUTT...	06-14-32-6212	651		403.00
						Division 32 - GOLF MAINTENANCE Total:	**1,670.12**
Division: 33 - PRO-SHOP							
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	ID Tags	06-14-33-7304	DFT0008521		23.96
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	golf vests golf shirts	06-14-33-8325	DFT0008521		103.97
PATTONVILLE SCHOOL DISTRICT	2662	03/27/2024	SCORE CARDS	06-14-33-7304	67351		798.00

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number	Amount
ARAMARK UNIFORM SERVICES	6170254622	03/27/2024	MOP AND TOWEL SERVICE D...	06-14-33-7301	652	35.36
ARAMARK UNIFORM SERVICES	6170257107	03/27/2024	MOP AND TOWEL SERVICE D...	06-14-33-7301	652	40.35
SPIRE	4981701000-03/18/24	03/28/2024	11400 OLDE CABIN RD 2/19/...	06-14-33-6252	DFT0008585	775.12
					Division 33 - PRO-SHOP Total:	**1,776.76**
Division: 34 - FOOD SERVICES						
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Beer for Resale	06-14-34-8316	DFT0008521	34.96
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Coffee Supplies	06-14-34-8317	DFT0008521	38.95
BREAKTHRU BEVERAGE GROUP	114805239	03/27/2024	BEER FOR RESALE	06-14-34-8316	67339	470.20
ARAMARK UNIFORM SERVICES	6170254622	03/27/2024	MOP AND TOWEL SERVICE D...	06-14-34-7301	652	29.43
ARAMARK UNIFORM SERVICES	6170257107	03/27/2024	MOP AND TOWEL SERVICE D...	06-14-34-7301	652	34.45
D AND D DISTRIBUTORS LLP	627138	03/27/2024	BEER FOR RESALE	06-14-34-8316	67340	591.50
MISSOURI DIRECTOR OF REVENUE	LIQUOR LICENSE 7/1/24-6/30...	03/27/2024	ANNUAL CITY LIQUOR LICEN...	06-14-34-6202	67347	250.00
					Division 34 - FOOD SERVICES Total:	**1,449.49**
					Department 14 - COMMUNITY SERVICES Total:	**8,294.74**
					Fund 06 - MUNICIPAL ENTERPRISE FUND Total:	**8,294.74**
Fund: 11 - SEWER LATERAL FUND						
Department: 61 - CIP						
Division: 93 - SEWER LATERAL						
AMARE PROPERTIES LLC	SLR 02/12/24	03/27/2024	SANITARY SEWER LATERAL R...	11-61-93-9315	67337	3,147.80
					Division 93 - SEWER LATERAL Total:	**3,147.80**
					Department 61 - CIP Total:	**3,147.80**
					Fund 11 - SEWER LATERAL FUND Total:	**3,147.80**
Fund: 19 - PUBLIC SAFETY FUND						
Department: 21 - POLICE						
Division: 23 - PUBLIC SAFETY						
AMERENUE	0427008070-02/29/24	03/21/2024	350 N NEW BALLAS POLICE 1...	19-21-23-6250	DFT0008553	4,601.50
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	POLICE INTERROGATIONS - N...	19-21-23-6261	DFT0008521	450.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	SEX ASSAULT INTERROGATI...	19-21-23-6261	DFT0008521	450.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	RED DOT PISTOL: FUNDAME...	19-21-23-6261	DFT0008521	1,400.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	SUPERVISION OF POLICE PER...	19-21-23-6261	DFT0008521	1,100.00

Vendor Name	Payable Number	Payment Date	Description (Item)	Account Number	Payment Number	Amount
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	SABRE AEROSOL IRRITANT P...	19-21-23-6261	DFT0008521	192.34
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	Annual Membership - Nepor...	19-21-23-6261	DFT0008521	50.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	LUNCH FOR CRIMINAL EXCH...	19-21-23-6264	DFT0008521	578.98
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	NAT PEER SUPPORT CONF - ...	19-21-23-6265	DFT0008521	107.48
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	ITEMS FOR PD WORKOUT R...	19-21-23-7302	DFT0008521	63.48
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	PLUNGER AND DRAIN GUN	19-21-23-7302	DFT0008521	65.96
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	VARIOUS SUPPLIES FOR K9 U...	19-21-23-7304	DFT0008521	165.79
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	BADGE HOLE SLOT PUNCHER	19-21-23-7304	DFT0008521	14.29
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	ANKER USB C ADAPTERS AND...	19-21-23-7331	DFT0008521	85.63
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	5 PORTABLE EXTERNAL DRIV...	19-21-23-7331	DFT0008521	495.00
ARVEST BANK OPERATIONS INC	PURCHASES FEB 24	03/22/2024	MINI DISPLAYPORT TO HDMI...	19-21-23-7331	DFT0008521	23.98
SPIRE	0076006378-03/14/24	03/25/2024	350 N NEW BALLAS RD 2/14/...	19-21-23-6252	DFT0008551	243.18
LOCAL CLEANERS LLC	000225	03/27/2024	PD COMMERCIAL CLEANING...	19-21-23-6212	661	1,275.00
NEW SYSTEM LLC	102534	03/27/2024	1 FLOOR MAT W/LOGO AND ...	19-21-23-6212	665	858.37
METROPOLITAN ST LOUIS SEWER DISTRICT	1225607-9-FEB24	03/27/2024	PD SUMMARY BILLING 1225...	19-21-23-6254	67345	95.89
SAMS CLUB/SYNCHRONY BANK	0323-03/08/24	03/28/2024	LATE FEE	19-21-23-7304	DFT0008513	15.99
					Division 23 - PUBLIC SAFETY Total:	**12,332.86**
					Department 21 - POLICE Total:	**12,332.86**
					Fund 19 - PUBLIC SAFETY FUND Total:	**12,332.86**
Fund: 99 - POOLED CASH						
ARVEST BANK	1797-03/25/24	03/27/2024	EPAYMENT 3/27/24	99-2809	DFT0008592	6,228.32
						6,228.32
						6,228.32
					Fund 99 - POOLED CASH Total:	**6,228.32**
					Grand Total:	**587,952.30**

Report Summary

Fund Summary

Fund	Payment Amount
01 - GENERAL FUND	381,292.18
02 - CAPITAL IMPROVEMENT FUND	142,906.40
05 - PARKS & STORMWATER FUND	33,750.00
06 - MUNICIPAL ENTERPRISE FUND	8,294.74
11 - SEWER LATERAL FUND	3,147.80
19 - PUBLIC SAFETY FUND	12,332.86
99 - POOLED CASH	6,228.32
Grand Total:	**587,952.30**

Account Summary

Account Number	Account Name	Payment Amount
01-11-12-6264	IN TOWN MEETINGS	1,669.95
01-11-12-7306	MEMORIALS AND PLAQ...	168.00
01-11-12-7315	SPECIAL EVENTS	225.27
01-12-10-6265	TRAVEL & CONFERENCES	155.15
01-12-11-6202	TECHNICAL AND PERSO...	76.10
01-12-11-6203	PROFESSIONAL SERVICES	12,560.00
01-12-11-6260	ADVERTISING	95.00
01-12-11-6262	DUES MEMBERSHIPS & ...	455.00
01-12-11-6265	TRAVEL & CONFERENCES	563.65
01-12-14-6201	LEGAL AND ACCOUNTIN...	2,457.00
01-12-14-6213	OFFICE EQUIPMENT MA...	192.63
01-12-14-6264	IN TOWN MEETINGS	55.00
01-12-14-7304	GENERAL SUPPLIES	1,174.02
01-13-11-6202	TECHNICAL AND PERSO...	0.50
01-13-11-6265	TRAVEL & CONFERENCES	50.00
01-13-11-7304	GENERAL SUPPLIES	38.78
01-13-15-6253	TELEPHONE	149.79
01-13-15-6272	EMPLOYEE RELATIONS	449.00
01-13-15-7312	OFFICE SUPPLIES	195.78
01-13-51-6213	OFFICE EQUIPMENT MA...	443.23
01-13-51-7332	COMPUTER SOFTWARE	269.97
01-14-11-6202	TECHNICAL AND PERSO...	400.50
01-14-11-7304	GENERAL SUPPLIES	-9.05
01-16-11-6212	BUILDING AND GROUND...	3,000.00
01-16-11-6252	NATURAL GAS	716.13
01-16-11-7308	WEARING APPAREL AND...	8.66
01-2102	FICA WITHHOLDING	41,700.50
01-2103	MEDICARE WITHHOLDI...	9,752.56
01-2104	FEDERAL TAX WITHHOLD..	31,498.99

Account Summary

Account Number	Account Name	Payment Amount
01-2105	MISSOURI TAX WITHHO…	11,915.00
01-21-11-6261	EDUCATION & TRAINING	675.00
01-21-11-6262	DUES MEMBERSHIPS & …	115.00
01-21-11-6264	IN TOWN MEETINGS	808.01
01-21-11-7306	MEMORIALS AND PLAQ…	18.00
01-21-11-7307	GASOLINE, PROPANE & …	1,155.23
01-21-11-7308	WEARING APPAREL AND…	8.67
01-2113	PAYROLL CHILD SUPPORT	184.62
01-21-21-7307	GASOLINE, PROPANE & …	730.21
01-21-22-5241	PENSION CONTRIBUTION	0.28
01-21-22-6210	VEHICLE MAINTENANCE	984.27
01-21-22-6262	DUES MEMBERSHIPS & …	140.00
01-21-22-6265	TRAVEL & CONFERENCES	665.00
01-21-22-6271	MEDICAL SUPPLIES	416.98
01-21-22-7302	SMALL TOOLS	25.73
01-21-22-7304	GENERAL SUPPLIES	88.98
01-21-22-7307	GASOLINE, PROPANE & …	17,885.63
01-21-22-9502	VEHICLES	12,024.00
01-21-22-9503	EQUIPMENT	3,164.14
01-2312	401 - ICMA	797.40
01-2317	MO LAGERS	189,652.35
01-2318	ICMA ROTH 457	5,640.74
01-2319	ICMA ROTH IRA	620.35
01-2321	457 - VOYA	1,769.99
01-2322	457 - ICMA	10,240.01
01-2324	ICMA LOAN REPAYMENT	200.64
01-2410	INMATE SECURITY ACC…	167.24
01-31-41-6207	TEMP PROFESSIONAL SE…	1,085.37
01-31-41-6211	EQUIPMENT MAINTENA…	665.14
01-31-41-6212	BUILDING AND GROUND…	2,173.38
01-31-41-6252	NATURAL GAS	368.48
01-31-41-6265	TRAVEL & CONFERENCES	887.17
01-31-41-7304	GENERAL SUPPLIES	210.85
01-31-41-7305	STREET & SIDEWALK MA…	480.60
01-31-41-7307	GASOLINE, PROPANE & …	2,369.33
01-31-41-9503	EQUIPMENT	1,931.00
01-31-43-6207	TEMP PROFESSIONAL SE…	361.79
01-31-43-6211	EQUIPMENT MAINTENA…	247.90
01-31-43-6212	BUILDING AND GROUND…	1,014.30
01-31-43-6252	NATURAL GAS	368.49
01-31-43-7307	GASOLINE, PROPANE & …	522.80
02-61-71-9510	STREETS	142,906.40

Account Summary

Account Number	Account Name	Payment Amount
05-61-71-9506	PARK DEVELOPMENT P…	33,750.00
06-14-31-6252	NATURAL GAS	1,808.62
06-14-31-6254	WATER AND SEWER	1,127.92
06-14-31-6271	MEDICAL SUPPLIES	9.98
06-14-31-7301	CHEMICALS & CLEANING	99.89
06-14-31-7302	SMALL TOOLS	91.60
06-14-31-7304	GENERAL SUPPLIES	67.85
06-14-31-7307	GASOLINE, PROPANE & …	192.51
06-14-32-6210	VEHICLE MAINTENANCE	7.64
06-14-32-6211	EQUIPMENT MAINTENA…	73.13
06-14-32-6212	BUILDING AND GROUND…	1,117.56
06-14-32-6254	WATER AND SEWER	471.79
06-14-33-6252	NATURAL GAS	775.12
06-14-33-7301	CHEMICALS & CLEANING	75.71
06-14-33-7304	GENERAL SUPPLIES	821.96
06-14-33-8325	MERCHANDISE-APPAREL	103.97
06-14-34-6202	TECHNICAL AND PERSO…	250.00
06-14-34-7301	CHEMICALS & CLEANING	63.88
06-14-34-8316	BEER	1,096.66
06-14-34-8317	COFFEE,TEA & SOFT DRI…	38.95
11-61-93-9315	SEWER LATERAL REIMB…	3,147.80
19-21-23-6212	BUILDING AND GROUND…	2,133.37
19-21-23-6250	ELECTRICITY	4,601.50
19-21-23-6252	NATURAL GAS	243.18
19-21-23-6254	WATER AND SEWER	95.89
19-21-23-6261	EDUCATION & TRAINING	3,642.34
19-21-23-6264	IN TOWN MEETINGS	578.98
19-21-23-6265	TRAVEL & CONFERENCES	107.48
19-21-23-7302	SMALL TOOLS	129.44
19-21-23-7304	GENERAL SUPPLIES	196.07
19-21-23-7331	COMPUTER HARDWARE	604.61
99-2809	EPAYABLES LIABILITY	6,228.32
	Grand Total:	**587,952.30**

Project Account Summary

Project Account Key	Payment Amount
None	410,733.89
21701E	142,906.40
219E	33,750.00
ISFE	167.24
K9 UNITE	394.77

Project Account Summary

Project Account Key	Payment Amount
K9 UNITE	
Grand Total:	**587,952.30**

ARVEST

Account Number: XXXX XXXX XXXX 1797
CITY OF CREVE COEUR EPAY
Statement Closing Date: 03/25/24

Cardholder Account Activity

CITY OF CREVE COEUR EPAY	Credit Limit	Credits	Purchases	Cash Advances	Total Activity
XXXX XXXX XXXX 2282	$250,000	$0.00	$6,228.32	$0.00	$6,228.32

Trans Date	Post Date	Reference Number	Description	Amount
03/19	03/20	24435654080081556946368	CREST INDUSTRIES INC 636-349-4800 MO	$41.59
03/19	03/20	24755424079270794407373	HANDY AUTOMOTIVE INC 314-2914666 MO	$350.04
03/19	03/20	24137464080600228696831	DOBBS TIRE #06 CORPORATE 636-677-2101 MO	$590.00
03/20	03/20	24692164080102648577215	WPY*UMZUZU 855-999-3729 KS	$1,759.56
03/20	03/21	24436544081037028040405	I/O SOLUTIONS, INC. 708-4100200 IL	$40.00
03/20	03/21	24412954080612531555642	ANIMAL CARE SERVICE 636-931-4440 MO	$100.00
03/20	03/21	24323004080200234100049	HACKETT SECURITY 314-432-4200 MO	$156.00
03/19	03/21	24412954080091845001728	BRANNEKY TRUE VALUE 314-739-0960 MO	$362.87
03/20	03/21	24639234080900011900394	SIRCHIE ACQUISITION COMPA 919-5542244 NC	$895.58
03/20	03/22	24639234081900018649126	BEYERS LUMBER AND HARDWAR 314-9932445 MO	$212.68
03/21	03/22	24057814082000017755692	REINHOLD ELECTRIC INC 314-6311158 MO	$1,720.00

Arvest Epayables
3/25/24 6,228.32

$ 6,228.32

AN ORDINANCE DESIGNATING A CERTAIN TRACT OF LAND IN THE CITY OF CREVE COEUR, MISSOURI, AS A BLIGHTED AREA; APPROVING THE OLIA VILLAGE DEVELOPMENT PLAN; APPROVING A MASTER REDEVELOPMENT AGREEMENT IN CONNECTION WITH THE DEVELOPMENT PLAN; AND AUTHORIZING THE CITY TO ENTER INTO CERTAIN AGREEMENTS AND TAKE CERTAIN OTHER ACTIONS IN CONNECTION THEREWITH.

WHEREAS, the City of Creve Coeur, Missouri (the "City"), is authorized and empowered to undertake certain redevelopment projects pursuant to Chapter 353 of the Revised Statutes of Missouri ("Chapter 353") and Chapter 400, Article II of the Code of Ordinances of the City of Creve Coeur, as amended (the "Creve Coeur Redevelopment Ordinance"); and

WHEREAS, the "Olia Village Development Plan," a copy of which is set forth as **Exhibit A**, attached hereto and incorporated herein by reference (the "Development Plan"), has been prepared and submitted to the City in connection with the proposed redevelopment of approximately 96 acres of real property located at 10300 Olive Boulevard in the City (the "Redevelopment Area"), at which Bayer Crop Science's North American headquarters was previously located; and

WHEREAS, the Development Plan contemplates the use of real property tax abatement to incentivize a mixed-used redevelopment project consisting of office, retail and other commercial uses, residential uses, and recreational uses (collectively and as further described in the Development Plan, the "Redevelopment Project"); and

WHEREAS, included as **Exhibit D** to the Development Plan is an analysis prepared by Steadfast City Economic & Community Partners (the "Blight Analysis"), which documents the current conditions of the Redevelopment Area and supports a finding that the Redevelopment Area is a "blighted area" as defined in Chapter 353; and

WHEREAS, implementation of the Development Plan through the completion of the Redevelopment Project will remediate the conditions that cause the Redevelopment Area to be a blighted area; and

WHEREAS, in accordance with Chapter 353 and the Creve Coeur Redevelopment Ordinance, the City Council held a duly noticed public hearing regarding the blight designation, the proposed Development Plan and the contemplated grant of tax abatement on March 25, 2024, at which hearing all interested persons and taxing districts were given the opportunity to be heard (the "Public Hearing"); and

WHEREAS, the City Council hereby finds and determines that it is desirable for the improvement of the economic welfare and development of the City to approve the Development Plan; and

WHEREAS, the boundaries of the Redevelopment Area are the same as the boundaries of the proposed Olia Village Community Improvement District (the "CID"); and

WHEREAS, a portion of the Redevelopment Project (the "Site Work") is the subject of the Plan for an Industrial Development Project (the "Chapter 100 Plan"), which Chapter 100 Plan allows for a sales tax exemption on construction materials used to complete the Site Work; and

WHEREAS, the City Council finds and determines that it is necessary and desirable in connection with the implementation of the Development Plan and the Chapter 100 Plan to enter into a Master Redevelopment Agreement (the "Redevelopment Agreement") with 10300 Olive LLC (the "Fee Owner"), 10300 Olive Dev LLC (the "Developer") and the Olia Village Redevelopment Corporation;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOURI, AS FOLLOWS:

Section 1. Findings. Upon due consideration of the Development Plan, the Blight Analysis and the testimony presented at the Public Hearing, the City Council finds that:

(a) the Development Plan is in proper form and contains the information and data required by Section 400.100 of the Creve Coeur Redevelopment Ordinance;

(b) the Redevelopment Area described in the Development Plan is a "blighted area" as defined in the Creve Coeur Redevelopment Ordinance and Chapter 353, and the clearance, redevelopment, replanning, rehabilitation or reconstruction thereof is necessary and in the best interest of the City and its citizens;

(c) the development of the Redevelopment Area, in accordance with the Development Plan, is not possible but for the availability of tax abatement pursuant to Chapter 353, in the amounts and for the durations set forth in the Development Plan; and

(d) all of the real property in the Redevelopment Area has been acquired by the Fee Owner, which is a related party of the Developer.

Section 2. Approval of Development Plan. The Development Plan is hereby approved.

Section 3. Approval of Redevelopment Agreement. The City is hereby authorized to enter into the Redevelopment Agreement, in substantially the form of **Exhibit B**, attached hereto and incorporated herein by reference, with such changes therein as shall be approved by the officials of the City executing the Redevelopment Agreement and consistent with the intent hereof, such officials' signatures thereon being conclusive evidence of their approval thereof. The City Administrator is hereby authorized to execute the Redevelopment Agreement, for and on behalf of and as the act and deed of the City. The City Clerk is hereby authorized to attest to and affix the seal of the City to the Redevelopment Agreement. Following the execution of the Redevelopment Agreement by all parties thereto, the City Clerk is hereby directed, on behalf of the City Council, to furnish a copy of the Redevelopment Agreement to the Collector of Revenue of St. Louis County, as required by Section 400.150 of the Creve Coeur Redevelopment Ordinance.

Section 4. Use of Redevelopment Area. The use of the Redevelopment Area shall be limited to the uses described in the Development Plan until the earlier of (a) the end of the 25-year tax abatement period on each Lot (as defined in the Redevelopment Agreement) or (b) the earlier expiration thereof as described in **Section 5.1(j)** of the Redevelopment Agreement.

Section 5. Further Authority. The City shall, and the officials, agents and employees of the City are hereby authorized to, take such further action and execute such other documents,

certificates and instruments as may be necessary or desirable to carry out and comply with the intent of this Ordinance and to carry out, comply with and perform the duties of the City with respect to the Development Plan and the Redevelopment Agreement. The City Administrator is hereby authorized, through the term of the Redevelopment Agreement, to execute all documents on behalf of the City (including documents pertaining to the financing or refinancing of the Redevelopment Project by the Fee Owner or the Developer) as may be required to carry out and comply with the intent of this Ordinance and the Redevelopment Agreement. The City Administrator is further authorized, on behalf of the City, to grant such consents, estoppels and waivers relating to the Redevelopment Agreement as may be requested during the term thereof; provided, such consents, estoppels and/or waivers shall not increase the amount or duration of the economic incentives provided in the Redevelopment Agreement, waive an event of default or materially change the nature of the transaction. The City Clerk is authorized to attest to and affix the seal of the City to any document authorized by this Section.

Section 6. Severability. The sections of this Ordinance shall be severable. If any section of this Ordinance is found by a court of competent jurisdiction to be invalid, the remaining sections shall remain valid, unless the court finds that: (a) the valid sections are so essential to and inseparably connected with and dependent upon the void section that it cannot be presumed that the City Council has or would have enacted the valid sections without the void one; and (b) the valid sections, standing alone, are incomplete and are incapable of being executed in accordance with the legislative intent.

Section 7. Effective Date. This Ordinance shall take effect in accordance with **Section 3.11(g)** of the City Charter.

ADOPTED THIS _____ DAY OF APRIL, 2024.

_____
NICOLE GREER, PRESIDENT OF CITY COUNCIL

APPROVED THIS _____ DAY OF APRIL, 2024.

_____
DR. ROBERT HOFFMAN, MAYOR

[SEAL]

ATTEST:

_____
KELLIE HENKE, CITY CLERK

BILL NO. _6112____ **ORDINANCE NO. _____**

EXHIBIT A

DEVELOPMENT PLAN

(On file in the office of the City Clerk)

BILL NO. _6112____ **ORDINANCE NO. _____**

EXHIBIT B

REDEVELOPMENT AGREEMENT

(On file in the office of the City Clerk)

(The above space is reserved for Recorder's Certification.)

TITLE OF DOCUMENT:	MASTER REDEVELOPMENT AGREEMENT
DATE OF DOCUMENT:	_____, 2024
GRANTOR:	CITY OF CREVE COEUR, MISSOURI
GRANTOR'S MAILING ADDRESS:	300 North New Ballas Road Creve Coeur, Missouri 63141
GRANTEES:	10300 OLIVE LLC 10300 OLIVE DEV LLC
GRANTEES' MAILING ADDRESS:	c/o Fireside Financial LLC 90 Edwardsville Professional Park Edwardsville, Illinois 62025
RETURN DOCUMENTS TO:	Gilmore & Bell, P.C. 211 North Broadway, Suite 2000 St. Louis, Missouri 63102 Attention: Mark D. Grimm, Esq.
LEGAL DESCRIPTION:	See **Exhibit A**

MASTER REDEVELOPMENT AGREEMENT

among the

CITY OF CREVE COEUR, MISSOURI,

10300 OLIVE LLC,

10300 OLIVE DEV LLC

and

OLIA VILLAGE REDEVELOPMENT CORPORATION

dated as of

_____, 2024

TABLE OF CONTENTS

Page

Recitals 1

ARTICLE I

DEFINITIONS

1.1. Definitions 2

ARTICLE II

DEVELOPER DESIGNATION; DEVELOPER TO ADVANCE COSTS

2.1. Developer Designation 7
2.2. Developer to Advance Costs 7

ARTICLE III

MANNER OF REDEVELOPMENT

3.1. Site Work 8
3.2. Private Development on Lots 9
3.3. Project Construction 10
3.4. Construction Contracts 10
3.5. Competitive Bids; Prevailing Wage; Federal Work Authorization 10
3.6. Governmental Approvals 11
3.7. Excusable Delay 11
3.8. Completion Certificates 11
3.9. Property Maintenance; Compliance with Applicable Laws 12
3.10. Restaurants in Mixed-Use Development 12
3.11. Hotel on Lot 11 12

ARTICLE IV

REIMBURSEMENT OF REIMBURSABLE DISTRICT PROJECT COSTS; PROJECT OBLIGATIONS

4.1. Reimbursement of Reimbursable District Project Costs 13
4.2. Project Notes 13
4.3. Project Bonds 14
4.4. Cooperation in the Issuance of Project Obligations 15
4.5. City to Select Bond Counsel, Underwriter and Consultants; Term and Interest Rate 15
4.6. Project Bonds, CID Special Assessment and Chapter 353 Abatement 15

ARTICLE V

DEVELOPMENT INCENTIVES

5.1. Real Property Tax Abatement; Taxes and Payments in Lieu of Taxes 16
5.2. Sales Tax Exemption on Construction Materials 19

5.3. Community Improvement District....19
5.4. Transportation Development District....19

ARTICLE VI

GENERAL PROVISIONS

6.1. Developer's Right of Termination....20
6.2. City's Right of Termination....20
6.3. Results of Termination....20
6.4. Successors and Assigns; Transfers of Property....21
6.5. Remedies....22
6.6. Notices....22
6.7. Insurance Requirements....23
6.8. Release and Indemnification....24
6.9. Choice of Law; Conflicts....26
6.10. Counterparts....26
6.11. Severability....26
6.12. No Waiver of Sovereign Immunity....26
6.13. No Third-Party Beneficiaries....26
6.14. Conflict of Interest....26
6.15. Further Authority....26
6.16. Project Data....26
6.17. Term of Agreement....26

ARTICLE VII

REPRESENTATIONS, WARRANTIES AND COVENANTS OF THE PARTIES

7.1. Representations by the City....27
7.2. Representations by the Fee Owner....27
7.3. Representations by the Developer....28
7.4. Representations by the Redevelopment Corporation....29

Signatures....31

EXHIBIT A – Legal Description of Redevelopment Area
EXHIBIT B – Depiction of Redevelopment Project/Concept Site Plan
EXHIBIT C – Competitive Bidding Requirements
EXHIBIT D – Form of Federal Work Authorization Program Affidavit
EXHIBIT E – Form of Lot Development Agreement
EXHIBIT F – Form of Certificate of Reimbursable District Project Costs
EXHIBIT G – Form of Completion Certificate
EXHIBIT H – Abatement Examples
EXHIBIT I – Form of Cooperation Agreement
EXHIBIT J – Ordinance No. _____ Approving the Development Plan
EXHIBIT K – Estimated Project Budget and Estimated Extraordinary Expenses to Complete the Site Work

MASTER REDEVELOPMENT AGREEMENT

THIS MASTER REDEVELOPMENT AGREEMENT (as from time to time modified, amended or supplemented, this *Agreement"*) is made and entered into as of _____, 2024, by and among the **CITY OF CREVE COEUR, MISSOURI**, a home rule city and political subdivision organized and existing under the laws of the State of Missouri (the *"City"*), **10300 OLIVE LLC**, a Missouri limited liability company (together with its successors and assigns, the *"Fee Owner"*), **10300 OLIVE DEV LLC**, a Missouri limited liability company (together with its successors and assigns, the *"Developer"*), and **OLIA VILLAGE REDEVELOPMENT CORPORATION**, a Missouri redevelopment corporation (together with its successors and assigns, the *"Redevelopment Corporation"* and, collectively with the City, the Fee Owner and the Developer, the *"Parties"*).

RECITALS

A. The Developer has submitted the "Olia Village Development Plan" (as from time to time modified, amended or supplemented, the *"Development Plan"*) concerning an approximately 96-acre area located at the southwest corner of the intersection of Olive Boulevard and Lindbergh Boulevard (as more particularly described on **Exhibit A** attached hereto and incorporated herein by reference, the *"Redevelopment Area"*). The Development Plan was prepared in accordance with (1) Chapter 353 of the Revised Statutes of Missouri, as amended (*"Chapter 353"*), and (2) Chapter 400, Article II of the Code of Ordinances of the City of Creve Coeur, as amended (the *"353 Procedural Ordinance"*).

B. The Developer has proposed, and the Development Plan contemplates, that the Redevelopment Area will be redeveloped for a variety of uses, including office, retail and other commercial uses, residential uses, and recreational uses (collectively and as further described herein and in the Development Plan, the *"Redevelopment Project"*).

C. On March ___, 2024, the Fee Owner filed a petition with the City to establish the Olia Village Community Improvement District (the *"CID"*) encompassing the Redevelopment Area to assist in financing and implementing the Redevelopment Project. The Fee Owner expects to file a petition with the Circuit Court of St. Louis County to establish the Olia Village Transportation Development District (the *"TDD"*) encompassing substantially all of the Redevelopment Area to assist in financing and implementing the Redevelopment Project.

D. On March 25, 2024, the City Council held duly-noticed public hearings concerning (1) the establishment of the CID and (2) the approval of the Development Plan in accordance with the requirements of Chapter 353 and the 353 Procedural Ordinance.

E. On _____, 2024, the City Council adopted (1) Ordinance No. _____ approving the Development Plan, a copy of which is set forth as **Exhibit J**, attached hereto and incorporated herein by reference, (2) Ordinance No. _____ establishing the CID, (3) Ordinance No. _____ authorizing the execution of this Agreement and (4) Ordinance No. _____ authorizing the issuance of industrial revenue bonds pursuant to Sections 100.010 to 100.200 of the Revised Statutes of Missouri, as amended (*"Chapter 100"*), to facilitate a sales and use tax exemption on construction materials purchased in connection with certain portions of the Redevelopment Project.

F. The Parties desire to enter into this Agreement to set forth the terms upon which the Redevelopment Project will be completed, including the provision of certain economic development incentives in connection therewith.

AGREEMENT

NOW, THEREFORE, in consideration of the premises and mutual promises contained herein and other good and valuable consideration, the adequacy and sufficiency of which are hereby acknowledged, the Parties hereto agree as follows:

ARTICLE I

DEFINITIONS

1.1. Definitions. In addition to any words and terms defined elsewhere in this Agreement, the following words and terms as used in this Agreement shall have the following meanings, unless some other meaning is plainly intended:

"Abatement Compliance Manager" means the St. Louis County officer performing the duties as set forth herein on behalf of the St. Louis County Department of Revenue - Office of Compliance, or any successor thereto.

"Abatement Initiation Year" means, with respect to any Lot, the calendar year in which the Redevelopment Corporation obtains fee title to such Lot, unless the Fee Owner sends a written request to the City and the Abatement Compliance Manager stating the Fee Owner's desire for the Abatement Initiation Year to begin in the year following the calendar year in which the Redevelopment Corporation obtains fee title to such Lot and the City and the Abatement Compliance Manager agree to such request.

"Actual Abatement Amount" means, with respect to any Lot in any calendar year, the difference between (a) the ad valorem real property taxes that would have otherwise been due and payable on such Lot during such year, but for the limited tax abatement provided by **Section 5.1**, and (b) the sum of all Unabated Taxes and/or PILOTs paid during such year pursuant to **Section 5.1**.

"Annual Special Assessment Schedule" means, with respect to any Lot in any calendar year, the basis for determining the maximum annual installment of the CID Special Assessment to be levied against such Lot for such year, as set forth on **Schedule I** to **Exhibit C** to the petition to establish the CID, as such petition may be amended from time to time, if such annual installment set forth on **Schedule I** exceeds the Actual Abatement Amount.

"Approved Site Plan" means the site development plan or plans reflecting one or more portions of the Redevelopment Project approved by all entities required to approve a site plan pursuant to the City Code, as such site plan or site plans may be submitted, approved and amended from time to time in accordance with the City Code.

"Base AV" means, with respect to any Lot, its allocable share of the Base Land AV and, if applicable, the Base Improvements AV.

"Base Improvements AV" means $4,415,010, which represents the final assessed valuation of the improvements, exclusive of land, within the Redevelopment Area for the 2023 tax year. The Base Improvements AV shall be allocated among the respective Lots upon which such improvements are located as determined by the St. Louis County Assessor.

"Base Land AV" means $6,445,150, which represents the final assessed valuation of the land, exclusive of improvements, within the Redevelopment Area for the 2023 tax year. The Base Land AV

shall be allocated among the Lots on a pro rata basis (by square footage) or such other equitable manner as determined by the St. Louis County Assessor.

"Bond Counsel" means Gilmore & Bell, P.C., St. Louis, Missouri, or another attorney at law or a firm of attorneys selected by the City of nationally recognized standing in matters pertaining to the tax-exempt nature of interest on obligations issued by states and their political subdivisions, duly admitted to the practice of law in the State of Missouri.

"Bond Proceeds" means the net cash proceeds from the sale of Project Bonds available for deposit in the Project Fund (after deposit of funds for Issuance Costs, capitalized interest and any debt service reserve), together with any interest earned thereon.

"Certificate of Reimbursable District Project Costs" means a document, substantially in the form of **Exhibit F**, attached hereto and incorporated herein by reference, delivered by the Developer to the City and, as applicable, the CID or the TDD, which, upon the written acceptance by the CID or the TDD, as applicable, and the written acceptance or deemed acceptance by the City pursuant to **Section 3.1(f)**, will evidence the Reimbursable District Project Costs incurred by and payable to the Developer.

"CID Act" means the Community Improvement District Act, Sections 67.1401 to 67.1571 of the Revised Statutes of Missouri, as amended.

"CID Sales Tax" means the community improvement district sales and use tax to be levied by the CID at a rate of not more than 1% in accordance with the CID Act.

"CID Sales Tax Revenues" means the revenues generated by the CID Sales Tax, excluding, however, (a) any amount paid under protest until the protest is withdrawn or resolved against the taxpayer and (b) any sum received by the CID that is the subject of a suit or other claim communicated to the CID, which suit or claim challenges the collection of such sum, until such suit or other claim is withdrawn or resolved against the claimant.

"CID Special Assessment" means, with respect to any Lot in any calendar year, the special assessment to be levied by the CID (or imposed by contract) for such year at a rate not to exceed the greater of (a) the Actual Abatement Amount or (b) the amount shown on the Annual Special Assessment Schedule.

"CID Special Assessment Revenues" means the revenues generated by the CID Special Assessment, excluding, however, (a) any amount paid under protest until the protest is withdrawn or resolved against the taxpayer and (b) any sum received by the CID that is the subject of a suit or other claim communicated to the CID, which suit or claim challenges the collection of such sum, until such suit or other claim is withdrawn or resolved against the claimant.

"City Administrator" means the person duly appointed as City Administrator pursuant to the City Code.

"City Attorney" means Curtis, Heinz, Garrett & O'Keefe, P.C., or any other attorney or law firm appointed as the City Attorney pursuant to the City Code.

"City Code" means the Code of Ordinances of the City, as may be amended from time to time.

"Collector" means the Collector of Revenue of St. Louis County.

"Completion Certificate" means a document, substantially in the form of **Exhibit G**, attached hereto and incorporated herein by reference, delivered or caused to be delivered by the Developer to the City, which, upon the City's written acceptance or deemed acceptance thereof pursuant to **Section 3.8**, will evidence the Developer's satisfaction of all obligations and covenants to complete (a) the Site Work, (b) that portion of the Private Development related to Lots 1 and 2 and/or (c) the Mixed-Use Development pursuant to this Agreement. No Completion Certificate will constitute a final inspection certificate, final occupancy certificate, or other documentation required by the City or any other governmental entity to occupy the Redevelopment Project or any portion thereof.

"Concept Site Plan" means the City-approved site concept plan set forth as **Exhibit B**, attached hereto and incorporated herein by reference, depicting the conceptual program for construction of the Redevelopment Project.

"Cooperation Agreement" means an agreement, substantially in the form of **Exhibit I**, attached hereto and incorporated herein by reference, to be entered into among the City, the CID, the TDD and the Developer, as may be amended from time to time.

"Fire District" means the Creve Coeur Fire Protection District of St. Louis County, Missouri, and any successor thereto.

"Governmental Approvals" means all plat approvals, re-zoning or other zoning changes, planned unit development approvals, site plan approvals, conditional use permits, variances, building permits, architectural review or other subdivision, zoning or similar approvals, or approvals required by the City Code or this Agreement for the implementation of the Redevelopment Project.

"Incentives" means the incentives to be received by the Developer pursuant to this Agreement, consisting of CID reimbursements, TDD reimbursements and a Chapter 100 sales and use tax exemption on the construction materials necessary to complete the Site Work.

"Incremental AV" means, with respect to any Lot in any tax year, the difference between (a) the actual assessed valuation for such Lot, as finally equalized and adjusted, for such tax year and (b) such Lot's Base AV.

"Inspectors" means special inspectors hired by the City that, but for the Redevelopment Project, would not have been hired by the City, who are assigned to complete professional services related to the Redevelopment Project or any portion thereof.

"Issuance Costs" means all costs reasonably incurred by the City in connection with the issuance of the Project Obligations, including, but not limited to, the fees and expenses of financial advisors and consultants, the City's attorneys (including the City Attorney, Bond Counsel and disclosure counsel), the Issuer's attorneys, the CID's attorneys (not to exceed $25,000), the TDD's attorneys (not to exceed $25,000), the underwriter and its counsel, the City's administrative fees and expenses, the underwriter's discount and fees and the costs of printing any Project Obligations and any official statements relating thereto.

"Issuer" means the issuer of any Project Obligations as mutually agreed by the City and the Developer, which may be but is not limited to the CID, the TDD, the Missouri Development Finance Board, or The Industrial Development Authority of the County of St. Louis, Missouri.

"Lender" means any entity (a) not affiliated with the Developer or a Related Party that has made a loan to the Developer that is secured by all or a portion of the reimbursement to be received by the

Developer under this Agreement, and (b) for which the Developer has provided notice to the City, including notice of the fact that such entity has provided such loan and the name, address and contact person for such entity.

"Lot" means any one of the separate lots within the subdivided Redevelopment Area, as shown in the Concept Site Plan as Lots 1 through 17 and common ground, and all of the Property associated therewith.

"Lot Development Agreement" means an agreement among the City, the Developer and, if applicable, a Sub-Developer, setting forth a description of the applicable terms and conditions for the Incentives associated with a specific portion of the Private Development subject to the provisions of this Agreement. Any Lot Development Agreement in substantially the form of **Exhibit E** does not need further approval by the City Council. The City Administrator is hereby authorized and directed to execute such Lot Development Agreement on behalf of the City following execution thereof by the Developer and, if applicable, the Sub-Developer.

"Maximum Reimbursement Amount" means $61,765,775 plus (a) Issuance Costs, (b) amounts paid by the Developer pursuant to **Section 2.2(a)-(c)** and (c) amounts paid by the Developer pursuant to **Section 4.1(b)**. The Maximum Reimbursement Amount represents the maximum reimbursement to the Developer under this Agreement.

"Mixed-Use Development" means, collectively, the Village Green and the Private Development on Lots 1 through 7, inclusive; provided, however, that Lot 6 and/or 7 may initially be developed as a landscaped park or paved and landscaped surface parking (as approved by the City in accordance with Ordinance No. 5862 and the City Code) pending final construction of such Lot or Lots in accordance with the Approved Site Plan; and provided, further, that subject to the City's permitting requirements, the Developer may use Lot 7 as a temporary gravel parking lot for construction staging during the construction of Lots 1 through 6 and Lot 11 (it being understood that Lot 7 must be a landscaped park or paved and landscaped surface parking if construction staging is not imminent within the reasonable discretion of the City Administrator).

"Non-Emergency District" means any taxing district that levies a real property tax within the boundaries of the Redevelopment Area except for the Fire District.

"PILOTs" means the payments in lieu of taxes to be made by the Fee Owner pursuant to **Section 5.1**.

"Preliminary Funding Agreement" means the Preliminary Funding Agreement dated as of June 26, 2023, between the City and the Developer, as from time to time modified, amended or supplemented.

"Prime Rate" means the prime rate reported in the "Money Rates" column or any successor column of *The Wall Street Journal*, currently defined therein as the base rate on corporate loans posted by at least 70% of the nation's 10 largest banks. If *The Wall Street Journal* ceases publication of the Prime Rate, then *"Prime Rate"* shall mean the "prime rate" or "base rate" announced by Bank of America, N.A., or any successor thereto.

"Private Development" means the development or redevelopment of (a) approximately two million square feet of privately-owned buildings as part of the Redevelopment Project, including the construction of multifamily residences, townhomes, hotels and retail, office and other commercial spaces, and (b) associated parking lots and structures.

"Project Bonds" means any bonds authorized and issued by the Issuer for the purposes described in this Agreement and subject to the terms hereof.

"Project Fund" means the project fund established in connection with the issuance of any Project Obligations.

"Project Notes" means any notes authorized and issued by the Issuer to the Developer or a Related Party for the purposes described in this Agreement and subject to the terms hereof.

"Project Obligations" means, collectively, the Project Notes and the Project Bonds.

"Property" means the real property (including without limitation all options held by third parties, fee interests, leasehold interests, tenant-in-common interests and such other like or similar interests) necessary to complete the Redevelopment Project, together with all improvements now existing or hereafter located thereon.

"Redevelopment Project" means the Site Work and the Private Development.

"Reimbursable District Project Costs" means any costs that are eligible for payment under the CID Act or the TDD Act.

"Related Party" means any party related to the Developer or a Sub-Developer, as applicable, by one of the relationships described in Section 267(b) of the United States Internal Revenue Code of 1986, as amended, or any party controlled by or under common control with the Developer or a Sub-Developer, as applicable. For purposes of this Agreement, the Fee Owner shall be considered a Related Party of the Developer.

"Restaurant" means a "fine dining," "casual" or "contemporary casual" restaurant (as such terms are commonly defined in the restaurant industry) at street level that offers table service and outdoor dining space, a full menu of food and beverage selections, and an innovative, unique destination and/or compelling setting (for example, Cooper's Hawk or Uncle Julio's). For purposes of clarity, a rooftop dining establishment does not qualify as a Restaurant because it is not street level.

"Retail/Restaurant Requirement" means, unless otherwise approved by the City Council, a minimum of 200,000 square feet of space that has been constructed within the Mixed-Use Development, comprised of the following:

(a) a minimum of 30,000 square feet of interior restaurant space for which there are executed leases that commit each tenant to open for at least one day. For purposes of clarity, all restaurants located within Lots 1 through 7 with interior restaurant space (other than those located within a grocery store on Lot 1) will count toward the 30,000 square foot requirement; and

(b) any amount of retail space for which there are executed leases that commit each tenant to open for at least one day that, when added to the interior restaurant space, equals or exceeds 200,000 square feet. At least 50% of such retail space must initially be occupied by businesses whose primary purpose is the sale of goods or services that are subject to Missouri sales tax.

"Site Work" means, collectively, the following activities: (a) the acquisition of all Property within the Redevelopment Area; (b) the demolition, removal, renovation, reconstruction or rehabilitation of existing buildings and structures as required; (c) site preparation, including site clearing and grading, and

environmental remediation; (d) the design and construction, or reconstruction, of streets, sidewalks, trails, basins, storm and sanitary sewers, and mainline utility improvements benefiting the Redevelopment Area; and (e) all other "horizonal" work, including associated offsite work, reasonably necessary to complete the Private Development within the Redevelopment Area and effectuate the intent of this Agreement.

"Sub-Developer" means any Sub-Developer named in a Lot Development Agreement. A Sub-Developer may or may not be a Related Party to the Developer.

"TDD Act" means the Missouri Transportation Development District Act, Sections 238.200 to 238.280 of the Revised Statutes of Missouri, as amended.

"TDD Sales Tax" means the transportation development district sales tax to be levied by the TDD at a rate of not more than 0.50% in accordance with the TDD Act.

"TDD Sales Tax Revenues" means the revenues generated by the TDD Sales Tax, excluding, however, (a) any amount paid under protest until the protest is withdrawn or resolved against the taxpayer and (b) any sum received by the TDD that is the subject of a suit or other claim communicated to the TDD, which suit or claim challenges the collection of such sum, until such suit or other claim is withdrawn or resolved against the claimant.

"Trustee" means the trustee for any Project Obligations.

"Unabated Taxes" means, with respect to the first 10 years of any Lot's tax abatement period, as described in **Section 5.1**, the ad valorem real property taxes imposed on such Lot, as measured in accordance with Section 353.110 of Chapter 353 by the amount of the assessed valuation of such Lot's land, exclusive of improvements, as was determined by the St. Louis County Assessor in the calendar year preceding the calendar year in which the Redevelopment Corporation acquired such Lot.

"Village Green" means the approximately 0.70-acre green space located immediately north of Lot 4, as shown in the Site Development Plan No. 1 attached to Ordinance No. 5862.

ARTICLE II

DEVELOPER DESIGNATION; DEVELOPER TO ADVANCE COSTS

2.1. Developer Designation. The Developer represents that it or a Related Party owns all of the Property within the Redevelopment Area. The City hereby selects the Developer to implement the Redevelopment Project in accordance with the Development Plan, this Agreement and all Governmental Approvals.

2.2. Developer to Advance Costs.

(a) *Advances Under Preliminary Funding Agreement.* Pursuant to the Preliminary Funding Agreement, the Developer has agreed to reimburse the City for any third-party planning and soft costs, including attorneys' fees, associated with the negotiation, approval and administration of this Agreement and other documents. As of the date of this Agreement, $_____ has been advanced under the Preliminary Funding Agreement, which includes funds that the City believes will be sufficient to reimburse the City for its costs through the date of execution of this Agreement. Any portion of the funds that are not spent by the time this Agreement is executed shall be applied to pay (1) the City's actual third-party costs for services provided by such consultants and advisors as the City deems advisable from time to time for

the Redevelopment Project and (2) expenses incurred by the City associated with the consideration and/or implementation of the Incentives for the Redevelopment Project. Upon payment of all amounts due under the Preliminary Funding Agreement, the obligations of the parties under the Preliminary Funding Agreement shall be deemed fully performed.

(b) *Advances Upon Execution of Agreement*. Upon execution of this Agreement, the Developer agrees to advance to the City the sum of $25,000 to pay the City's third-party planning, legal, financial and other consultants' fees incurred in connection with the approval of the Redevelopment Plan, the negotiation and administration of this Agreement (including, without limitation, the review of Certificates of Reimbursable District Project Costs and Completion Certificates), the defense of any challenges to the validity of the ordinances relating to the Redevelopment Plan and this Agreement, the creation of the CID and the TDD, and the cost of any Inspectors that the Developer is obligated to pay under **Section 4.1(b)**. If the amount initially deposited pursuant to this subsection is insufficient for the purposes described herein, the Developer shall deposit any additional amount requested by the City within 10 days of a written request therefor; provided, however, that (1) the City shall consult with the Developer before entering into any new engagements with any third party and (2) the City shall provide the Developer with a monthly statement showing each agreement executed and amounts paid pursuant to each such agreement.

(c) *Advances Upon Issuance of Project Notes*. Upon the initial issuance of the Project Notes, the Developer agrees to pay to the City an amount not to exceed $100,000 for the payment or reimbursement of reasonable Issuance Costs of the City (including the fees and expenses of the City Attorney and Bond Counsel) relating to the Project Notes.

(d) *No Waivers.* Payment of any advance under this Section will not waive any application fee or other cost to the Developer associated with any Governmental Approvals required by the City Code, including but not limited to application fees for zoning changes and costs of traffic studies and landscape review.

(e) *Advances to be Reimbursable*. To the extent permitted by law, all sums advanced or deemed advanced by the Developer under this Section shall constitute Reimbursable District Project Costs to be reimbursed to the Developer from the proceeds of Project Notes issued as provided herein.

ARTICLE III

MANNER OF REDEVELOPMENT

3.1. Site Work.

(a) The Parties expect the Developer to carry out the Site Work. Accordingly, the Fee Owner and the Developer will enter into a written contract with the Developer to carry out the Site Work pursuant to this Agreement. If the Parties' expectations change and another party is engaged to carry out the Site Work, the Fee Owner will provide written notice to the City and will enter into an amendment to this Agreement with the City and such other party.

(b) On or before August 1, 2024, subject to any Excusable Delay under **Section 3.7**, the Developer shall either (1) establish escrows as required by the City Code to complete the Site Work or (2) provide written evidence to the City that it has sufficient financing commitments to complete the Site Work.

(c) The Developer shall commence the applicable portion of the Site Work within 30 days after the City's issuance of the appropriate permits.

(d) The substantial completion of the Site Work shall be evidenced by the City's acceptance or deemed acceptance of a Completion Certificate pursuant to **Section 3.8**. **No Lot will be eligible for the limited tax abatement provided by Section 5.1 until the Completion Certificate for the Site Work is accepted or deemed accepted by the City.**

(e) Simultaneous with the delivery of the Completion Certificate, the Developer shall deliver to the City a Certificate of Reimbursable District Project Costs for the Site Work. The Certificate of Reimbursable District Project Costs shall be accompanied by itemized invoices, receipts or other documentation evidencing that all such costs have been paid or incurred and qualify as Reimbursable District Project Costs under this Agreement.

(f) Within 30 days following submission of the Certificate of Reimbursable District Project Costs, the City shall notify the Developer in writing of its approval or disapproval of such certificate. The certificate may be approved in part and disapproved in part. If the City determines that any cost identified in such certificate does not qualify as a Reimbursable District Project Cost pursuant to this Agreement, the City shall so notify the Developer in writing within such 30-day period, identifying the ineligible cost and the basis for determining the cost to be ineligible. If the City fails to approve or disapprove the Certificate of Reimbursable District Project Costs in writing within such 30-day period, then the Developer shall notify the City in writing of its failure to take action on the Certificate of Reimbursable District Project Costs and shall advise the City that the City's failure to take action within an additional 15 days will result in the deemed approval of the Certificate of Reimbursable District Project Costs. The City will have 15 days from receipt of such notice to approve or disapprove the Certificate of Reimbursable District Project Costs in writing. If the City has not approved or disapproved the Certificate of Reimbursable District Project Costs within such 15-day period, the Certificate of Reimbursable District Project Costs shall be deemed approved by the City.

3.2. Private Development on Lots.

(a) Before the Private Development on any Lot commences, the following shall occur:

(1) The Developer and/or any applicable Sub-Developer(s) shall enter into one or more Lot Development Agreements collectively providing for the Private Development of one or more Lots.

(2) The Developer and/or any applicable Sub-Developer(s) shall provide written evidence to the City that it has sufficient financing commitments to complete the Private Development contemplated.

(b) Upon the substantial completion of the Private Development on any Lot, the Developer may furnish to the City a Certificate of Reimbursable District Project Costs, which shall be reviewed by the City and approved or disapproved in accordance with **Section 3.1(f)**.

(c) Following the substantial completion of the Private Development on any Lot, the Fee Owner (or the Developer or a Sub-Developer acting pursuant to a Lot Development Agreement) may transfer fee title to such Lot to the Redevelopment Corporation for the purpose of initiating real property tax abatement as provided in Chapter 353 and **Section 5.1**. Immediately after acquiring fee title to a Lot, the Redevelopment Corporation shall transfer fee title to such Lot back to the Fee Owner, the Developer, the applicable Sub-Developer or a Related Party. The Fee Owner (or the Developer, applicable Sub-

Developer or Related Party) shall provide a copy of the recorded deed transferring fee title to any Lot to the Redevelopment Corporation to the City and the Abatement Compliance Manager. The Fee Owner (or the Developer, applicable Sub-Developer or Related Party) shall also provide the Abatement Compliance Manager and/or the Collector with any information relating to the Private Development on any Lot that is necessary for the Abatement Compliance Manager and/or the Collector to effect the real property tax abatement contemplated by this Agreement and to properly calculate the Unabated Taxes and PILOTs due hereunder.

3.3. Project Construction.

(a) Construction of the Redevelopment Project shall be pursued in a good and workmanlike manner in accordance with the terms of this Agreement and the Lot Development Agreements.

(b) Neither the Developer nor any Sub-Developer shall commence construction of any Private Development unless such Private Development is the subject of an executed Lot Development Agreement.

(c) The City and its duly authorized agents may, at reasonable times during normal business hours and, except in the event of emergencies, upon not less than one business day's prior written notice, subject to the Developer's and any applicable Sub-Developer's usual business, proprietary, safety and security requirements, inspect any work being performed in connection with the construction and installation of the Redevelopment Project or any portion thereof. Police work by the City's Police Department is not limited by this Agreement.

3.4. Construction Contracts. All construction contracts for the Redevelopment Project entered into by or on behalf of the Developer, a Sub-Developer or a Related Party shall state that the contractor has no recourse against the City in connection with the contractor's construction of the applicable portion of the Redevelopment Project (but the absence of such a provision shall not result in any such recourse being available).

3.5. Competitive Bids; Prevailing Wage; Federal Work Authorization.

(a) The Developer shall comply with all federal, state and local laws relating to the construction of the Redevelopment Project, including, but not limited to, Section 107.170 of the Revised Statutes of Missouri, as amended, and laws relating to the payment of prevailing wages and competitive bidding, to the extent such laws are applicable to those portions of the Redevelopment Project being undertaken by the Developer.

(b) In addition to the requirements above, the Developer shall comply with, and, if applicable, shall cause the CID and/or the TDD to comply with, the bidding requirements set forth in **Exhibit C**, attached hereto and incorporated herein by reference, relating to the construction of the Site Work or portions thereof. Such requirements shall not apply to the Private Development undertaken pursuant to a Lot Development Agreement.

(c) The Developer acknowledges that it must comply with Section 285.530 of the Revised Statutes of Missouri, as amended, regarding enrollment and participation in a federal work authorization program with respect to its employees working in connection with the Site Work. The Developer represents and warrants that it is in compliance with Section 285.530 of the Revised Statutes of Missouri, as amended, at the time of execution of this Agreement and has provided a sworn affidavit and supporting documentation affirming participation by or on behalf of itself in a qualified work authorization program as evidence thereof. On or before December 31 of each year during the term of this Agreement, beginning December 31, 2024, the Developer shall provide an affidavit in substantially the form of **Exhibit D**,

attached hereto and incorporated herein by reference, and documentation to evidence the Developer's continued compliance with Section 285.530 of the Revised Statutes of Missouri, as amended.

(d) It shall be a material breach of this Agreement if the Developer knowingly permits a contractor to employ persons not authorized to work in the United States. If the Developer reasonably believes a contractor working on the Redevelopment Project is employing persons not authorized to work in the United States, the Developer shall promptly report the basis for that belief to the City.

3.6. Governmental Approvals. The Developer shall obtain or cause to be obtained all necessary Governmental Approvals and shall be subject to all lawful inspections and perform such necessary acts as are required under the ordinances of the City. The City agrees to cooperate with the Developer to request that the City process and timely consider all complete applications for the Governmental Approvals within the jurisdiction of the City as received, all in accordance with the City Code and other applicable laws and regulations. Notwithstanding the foregoing, the City shall not be required to issue any permit related to any portion of the Redevelopment Project until the Developer demonstrates to the City's reasonable satisfaction that the Developer has sufficient funds (through a combination of debt and equity) to complete such portion of the Redevelopment Project and that the Developer has obtained all required approvals from other federal, state and local governmental entities.

3.7. Excusable Delay. Notwithstanding anything to the contrary contained herein, the times for performance under **Sections 3.1(b)** and **(c)** and **Section 4.2(d)** shall be automatically extended by the number of days of delay caused by actions or events beyond the control of the Developer or the applicable Sub-Developer, including acts of God, labor disputes, strikes, lockouts, civil disorder or unrest, war, lack of issuance of any permits and/or legal authorizations by a governmental entity necessary for the Developer or the applicable Sub-Developer to proceed with the construction or to cause the construction of the applicable portion of the Redevelopment Project (provided that reasonable efforts have been made to obtain said permits and/or authorizations and all conditions precedent to the issuance of said permits and/or authorizations have been met), shortage or delay in the shipment of material or fuel, the occurrence of an epidemic or pandemic that materially impacts the availability of labor, fire, unavoidable casualties, unusually adverse weather conditions, unusually wet soil conditions, materially adverse litigation relating to the Redevelopment Project, including, but not limited to, any litigation, court order or judgment resulting from any litigation affecting the validity of the Development Plan, the Redevelopment Project or this Agreement, or any other causes beyond the Developer's or the applicable Sub-Developer's reasonable control (an *"Excusable Delay"*). No Excusable Delay will be deemed to exist unless the Developer or the applicable Sub-Developer notifies the City in writing of such Excusable Delay within 30 days after the commencement of the event causing such Excusable Delay (or within 30 days after the date that the Developer or the applicable Sub-Developer should reasonably have determined that such event would cause such Excusable Delay). An Excusable Delay shall not include any condition or circumstance caused or extended by the Developer, a Sub-Developer or a Related Party or attributable to actions or inaction by the Developer, the Sub-Developer or a Related Party. The Parties agree that lender restrictions, financial conditions, economic conditions, market conditions, lack of tenant interest and similar conditions or events do not constitute Excusable Delays.

3.8. Completion Certificates.

(a) The Developer shall furnish or cause to be furnished three Completion Certificates to the City: (1) the first upon the substantial completion of the Site Work, (2) the second upon the substantial completion of Lots 1 and 2, and (3) the third upon the substantial completion of the Mixed-Use Development.

(b) The City shall diligently process each submitted Completion Certificate, including making such inspections as it deems necessary to verify to its reasonable satisfaction the accuracy of the certifications contained therein. The City shall accept or reject each Completion Certificate in writing within 30 days following delivery to the City. If the City fails to accept or reject a Completion Certificate in writing within such 30-day period, then the Developer shall notify the City in writing of its failure to take action on the Completion Certificate, and the City shall have 15 days from receipt of such notice to accept or reject the Completion Certificate in writing. If the City has not accepted or rejected the Completion Certificate within such 15-day period, the Completion Certificate shall be deemed accepted by the City. If the City rejects a Completion Certificate and/or the accompanying certifications, such rejection shall specify in reasonable detail in what respects the Developer has failed to complete the Site Work, Lots 1 and 2, or the Mixed-Use Development, as applicable, in reasonable accordance with the provisions of this Agreement, or in what respects the Developer is otherwise in default, and what specific measures or acts the Developer must take or perform, in the reasonable opinion of the City, to obtain such acceptance. The Developer shall have such amount of time as is reasonably necessary to address the failure to complete the Site Work, Lots 1 and 2, or the Mixed-Use Development, as appliable, identified by the City, and when addressed, the Developer shall re-submit the Completion Certificate to the City in accordance with this subsection and the 30-day period for the City's approval or rejection of the Completion Certificate shall begin again subject to the foregoing provisions.

(c) Upon the City's acceptance or deemed acceptance of any Completion Certificate, the Developer, a Sub-Developer or a Related Party may record the Completion Certificate with the St. Louis County Recorder of Deeds, and the same shall constitute evidence of the satisfaction of the Developer's agreements and covenants to perform its obligations hereunder with respect to the Site Work or the agreements and covenants of the Developer, a Sub-Developer or a Related Party to perform its obligations hereunder with respect to the Private Development on Lots 1 and 2 or the Mixed-Use Development, as applicable.

3.9. Property Maintenance; Compliance with Applicable Laws.

(a) The Developer shall maintain or cause to be maintained all portions of the Redevelopment Project owned, leased or operated by the Developer or a Related Party in good repair and condition and in compliance with (1) the Approved Site Plan, (2) all property maintenance provisions included in the City Code and (3) any landscaping plans approved in accordance with the City Code.

(b) The Developer shall operate or cause to be operated all portions of the Redevelopment Project owned, leased or operated by the Developer or a Related Party in accordance with all applicable permits, licenses, laws and regulations.

3.10. Restaurants in Mixed-Use Development. When Lots 6 and 7 are substantially completed in accordance with the Approved Site Plan, the Mixed-Use Development must contain a minimum of three Restaurants (which, definitionally, must be at street level) among Lots 2, 4, 5, 6 and 7. If Lot 2 has a Restaurant, it must have outdoor dining space.

3.11. Hotel on Lot 11. Unless otherwise approved by the City Council, the hotel on Lot 11 must be developed as a national flag hotel and be either (1) in the "luxury" or "upper upscale" category according to the STR, Inc. (or similar rating agency) North America and Caribbean Chain Scales (https://hotelnewsnow.com/Media/Default/Images/chainscales.pdf) or (2) one of the following: AC Hotels by Marriott, Aloft Hotel, Drury Plaza Hotel, Element by Westin, Hyatt Place.

ARTICLE IV

REIMBURSEMENT OF REIMBURSABLE DISTRICT PROJECT COSTS; PROJECT OBLIGATIONS

4.1. Reimbursement of Reimbursable District Project Costs.

(a) Subject to the restrictions contained herein, the Developer may be reimbursed for verified Reimbursable District Project Costs, as evidenced by Certificates of Reimbursable District Project Costs submitted pursuant to **Sections 3.1(e)** and **3.2(b)** and approved or deemed approved in accordance with **Section 3.1(f)**, in an amount not to exceed the Maximum Reimbursement Amount. Reimbursements to the Developer are limited to proceeds of the Project Obligations authorized hereunder.

(b) The City intends to hire Inspectors, including, without limitation, a landscape architect and a road inspector. The Developer shall reimburse the City for all costs associated with these Inspectors. The Developer shall be entitled to reimbursement of these costs from proceeds of the Project Obligations authorized hereunder. Upon the substantial completion of the Site Work (as evidenced by the City's acceptance or deemed acceptance of a Completion Certificate pursuant to **Section 3.8**), the Developer will no longer be responsible for reimbursing the City for the costs of the Inspectors (except for inspections relating to "punch-list" items). For purposes of clarity, the Developer will still be obligated for fees and costs associated with any Governmental Approvals required by the City Code.

(c) Notwithstanding any other term or provision of this Agreement, (1) the amount of CID Sales Tax Revenues and CID Special Assessment Revenues applied to the payment of debt service on the Project Obligations shall not exceed the ratio of Reimbursable District Project Costs eligible for reimbursement under the CID Act to all Reimbursable District Project Costs and (2) the amount of TDD Sales Tax Revenues applied to the payment of debt service on the Project Obligations shall not exceed the ratio of Reimbursable District Project Costs eligible for reimbursement under the TDD Act to all Reimbursable District Project Costs; provided, however, that the amount of CID Special Assessment Revenues applied to the payment of debt service on any Project Obligations shall be subject to the limitations set forth in **Sections 4.2(e)** and **4.3(d)**.

4.2. Project Notes.

(a) Subject to the limitations contained herein and so long as no default by the Developer has occurred and is continuing hereunder, Project Notes may be issued to the Developer in an aggregate principal amount not to exceed the Maximum Reimbursement Amount. Project Notes may be issued in one or more taxable and/or tax-exempt series.

(b) Following the substantial completion of the Site Work, the City and the Developer may contact the Issuer to initiate the process of issuing Project Notes, subject to the limitations of this Section. Upon the initial issuance of Project Notes as provided herein, the Trustee shall endorse the Project Notes in an amount equal to the Reimbursable District Project Costs set forth in the Certificate of Reimbursable District Project Costs submitted pursuant to **Section 3.1(e)** and approved or deemed approved in accordance with **Section 3.1(f)**. Within 15 business days after the City's acceptance or deemed acceptance of each subsequent Certificate of Reimbursable District Project Costs submitted pursuant to **Section 3.1(e)** or **Section 3.2(b)** and approved or deemed approved in accordance with **Section 3.1(f)**, the City and the Developer may request the Trustee to issue an endorsement to the Project Notes in an amount equal to the Reimbursable District Project Costs set forth in each such certificate. Upon each endorsement to the Project Notes, the Developer shall be deemed to have advanced funds necessary to purchase such Project Notes and the Issuer shall be deemed to have deposited such funds in the Project Fund and shall be deemed to

have reimbursed the Developer on behalf of the City in full from the amounts deemed to be on deposit in the Project Fund from time to time.

(c) All Project Notes shall have the following terms:

(1) The Project Notes shall bear interest at a variable rate equal to (A) the Prime Rate plus 2.50% (but not less than 8.00%), if the interest on the Project Notes (in the opinion of Bond Counsel) is not excluded from gross income for federal income tax purposes, or (B) the Prime Rate plus 1.00% (but not less than 6.50%) if the interest on the Project Notes (in the opinion of Bond Counsel) is excluded from gross income for federal income tax purposes. Notwithstanding the foregoing, in no event shall the interest rate on the Project Notes exceed 10.00%.

(2) Interest on the Project Notes shall accrue only on the amounts deemed advanced under **Section 4.2(b)**.

(3) Interest on the Project Notes shall be compounded semi-annually.

(d) Except as otherwise provided in **Section 4.3(a)**, the Developer or a Related Party must hold all Project Notes until substantial completion of the Mixed-Use Development (as evidenced by the City's acceptance or deemed acceptance of a Completion Certificate pursuant to **Section 3.8**) and satisfaction of the Retail/Restaurant Requirement. If, by March 1, 2030, the Mixed-Use Development is not substantially completed or the Retail/Restaurant Requirement has not been satisfied, interest on the Project Notes will cease to accrue until the foregoing requirements have been met.

(e) Notwithstanding any other term or provision of this Agreement, Project Notes shall be payable only from CID Special Assessment Revenues, CID Sales Tax Revenues, TDD Sales Tax Revenues and Bond Proceeds and no other source. CID Special Assessment Revenues shall not be applied to the payment of more than $34,087,549 principal amount of the Project Notes plus Issuance Costs. CID Sales Tax Revenues and TDD Sales Tax Revenues may be applied to the payment of any Project Notes plus Issuance Costs, amounts paid by the Developer pursuant to **Section 2.2(a)-(c)** and amounts paid by the Developer pursuant to **Section 4.1(b)**.

4.3. Project Bonds.

(a) Project Bonds may be issued following the substantial completion of Lots 1 and 2 (as evidenced by the City's acceptance or deemed acceptance of a Completion Certificate pursuant to **Section 3.8**). Seventy-five percent (75%) of the Bond Proceeds may be used to refund Project Notes allocable to Lots 1 and 2; all remaining Bond Proceeds shall be escrowed and used to pay for the redevelopment of Lots 3 through 5, inclusive.

(b) No Project Bonds may be issued for any other portion of the Redevelopment Project until (1) the Mixed-Use Development is substantially completed, (2) the Retail/Restaurant Requirement has been met and (3) a minimum of (A) three Restaurants or (B)(i) two Restaurants and a rooftop dining establishment have been constructed among Lots 2, 4 and 5 and (ii) ten percent (10%) of the Bond Proceeds are escrowed until the completion of a third Restaurant on Lot 2, 4, 5, 6 or 7. If Lot 2 has a Restaurant, it must have outdoor dining space. Proceeds of the Project Bonds may be used to refund all or a portion of any outstanding Project Notes.

(c) Any Project Notes not refunded by Project Bonds shall be fully subordinated as to both principal and interest to the Project Bonds.

(d) Notwithstanding any other term or provision of this Agreement, Project Bonds shall be payable only from CID Special Assessment Revenues, CID Sales Tax Revenues and TDD Sales Tax Revenues and no other source. Project Bonds payable from CID Special Assessment Revenues may be issued in an aggregate principal amount not to exceed (1) the amount necessary to refund all of the then-outstanding Project Notes secured by the CID Special Assessment Revenues, together with all accrued and unpaid interest, plus Issuance Costs or (2) $34,087,549, plus Issuance Costs, if no such Project Notes have been issued.

4.4. Cooperation in the Issuance of Project Obligations. If Project Obligations are issued, the Developer and the City covenant to cooperate, and to cause the CID and the TDD to cooperate, and take all reasonable actions necessary to assist the Issuer, Bond Counsel, underwriters and financial advisors in the preparation of offering statements, private placement memorandums or other disclosure documents and all other documents necessary to market and sell the Project Obligations, including (1) disclosing tenants of the Redevelopment Project and the non-financial terms of the leases between the Developer and such tenants, and (2) providing sufficiently detailed estimates of the Reimbursable District Project Costs to be reimbursed so as to enable Bond Counsel to render its opinion as to the tax exemption of the Project Obligations. The Developer shall, if requested by the City or the Issuer, execute a continuing disclosure agreement or undertaking, whereby the Developer will be required to provide annual updates to certain operating information, including the information regarding tenant leases described above. The Developer will not be required to disclose to the general public or any investor the rent payable under any such lease or any proprietary or confidential financial information pertaining to the Developer, its tenants or the leases with its tenants, but upon the execution of a confidentiality agreement acceptable to the Developer, the Developer will provide such information to the City's and the Issuer's financial advisors, underwriters and their counsel to enable such parties to satisfy their due diligence obligations. Such compliance obligation shall be a covenant running with the Property, enforceable as if any subsequent transferee thereof were originally a party to and bound by this Agreement.

4.5. City to Select Bond Counsel, Underwriter and Consultants; Term and Interest Rate. Following consultation with the Developer and the Issuer, the City may select the Bond Counsel, disclosure counsel, underwriters, financial advisors and consultants as the City deems necessary for the issuance of the Project Obligations. The final maturity of the Project Obligations shall not exceed the maximum term permissible under Missouri law. The Project Obligations shall bear interest at such rates, shall be subject to redemption and shall have such terms as the City and the Issuer, following consultation with the Developer, underwriters, financial advisors and consultants, shall reasonably determine in conformance with the terms of this Agreement.

4.6. Project Bonds, CID Special Assessment and Chapter 353 Abatement. The Parties expect that the CID Special Assessment will be imposed with respect to each Lot in an amount roughly equal to the value of the real property tax abatement provided by **Section 5.1**. Notwithstanding the foregoing, the Parties agree that it is desirable to reduce the term of the real property tax abatement and/or the amount of the real property tax abatement, if doing so does not adversely affect the issuance of Project Bonds to refund those Project Notes secured by the CID Special Assessment Revenues. Accordingly, if (a) the underwriters, financial advisors and other consultants selected by the City for the issuance of the Project Bonds determine that only a portion of the CID Special Assessment Revenues is needed to produce sufficient revenues with which to repay the Project Bonds and (b) all of the then-outstanding Project Notes secured by the CID Special Assessment Revenues will be refunded with the Project Bonds, the Parties will, subject to approval by the City Council, amend this Agreement and any applicable Lot Development Agreements to reduce the value of the real property tax abatement to the amount recommended by the underwriters, financial advisors and other consultants. The reduction may be effected (1) by increasing the PILOTs to be made on any Lot or Lots (provided, there may only be an increase in the PILOTs to be made on any Lot or Lots to the extent that there is a corresponding reduction in the CID Special Assessments to

be levied on such Lot or Lots), (2) by reducing the term of the abatement on any Lot or Lots, or (3) any combination of (1) and (2). Nothing in this Section shall require the Developer to seek an amendment to the petition for the creation of the CID or an amendment to the petition of the owners of real property authorizing the CID Special Assessment if, at the time of any recommendation by the underwriters, financial advisors or other consultants pursuant to this Section, the Developer or a Related Party does not own the requisite percentage of real property within the CID as set forth in Section 67.1421.2(1)-(2) of the CID Act or Section 67.1521.1(1)-(2) of the CID Act, as applicable.

ARTICLE V

DEVELOPMENT INCENTIVES

5.1. Real Property Tax Abatement; Taxes and Payments in Lieu of Taxes.

(a) Subject to the continuing compliance with this Agreement, upon the acquisition of any Lot by the Redevelopment Corporation pursuant to **Section 3.2(c)**, such Lot shall be subject to the limited tax abatement permitted by Section 353.110 of Chapter 353 for 25 years, beginning with the Abatement Initiation Year.

(b) The Fee Owner covenants and agrees that in each year during the term of this Agreement, unless this Agreement is amended pursuant to the provisions of **Section 4.6**, it will make or cause to be made the following payments with respect to each Lot:

(1) In each year before the Abatement Initiation Year, the greater of:

(A) 100% of the real estate taxes actually due and payable on such Lot; or

(B) 100% of the real estate taxes that would be due and payable on such Lot if such Lot had an assessed valuation equal to its Base AV.

(2) In the Abatement Initiation Year and in each of the nine years thereafter, the sum of the following:

(A) To the Fire District, a PILOT equal to 100% of the real estate taxes that would otherwise be due and payable, but for the Chapter 353 abatement; plus

(B) To the Non-Emergency Districts, the sum of the following:

(i) the Unabated Taxes; plus

(ii) if the Unabated Taxes are less than the taxes that would be due and payable on such Lot's Base Land AV, a PILOT equal to 100% of the difference; plus

(iii) a PILOT equal to 100% of the taxes that would be due and payable on such Lot's Base Improvements AV, if any; plus

(iv) a PILOT equal to 25% of the taxes that would be due and payable on such Lot's Incremental AV.

(3) In each of the 15 years thereafter, the sum of the following:

(A) To the Fire District, a PILOT equal to 100% of the real estate taxes that would otherwise be due and payable, but for the Chapter 353 abatement; plus

(B) To the Non-Emergency Districts, a PILOT equal to 50% of the real estate taxes otherwise due and payable upon such Lot, as measured by the assessed valuation thereof as determined by the St. Louis County Assessor.

Exhibit H includes examples of how the above payments should be calculated.

(c) All PILOTs shall be paid to the Collector annually by December 31. The Parties expect that the real property tax bills provided by the Collector will reflect the appropriate amount of the taxes and PILOTs to be paid pursuant to this Agreement. However, the failure of the Collector to provide tax bills reflecting the appropriate amount of the taxes and PILOTs to be paid with respect to any Lot pursuant to this Agreement will not excuse the Fee Owner or any subsequent owner of such Lot from paying the taxes and PILOTs set forth above by December 31 of the applicable year.

(d) With respect to each Lot, each payment received by the Collector shall be distributed among the taxing districts that levy a real property tax on such Lot as follows:

(1) FIRST – Any PILOTs due and owing to the Fire District shall be paid to the Fire District; and

(2) SECOND -- The remaining PILOTs and Unabated Taxes shall be distributed among the Non-Emergency Districts in proportion to their respective, then-current real property tax levies.

(e) In consideration of the limited tax abatement provided by this Section, the Fee Owner agrees that neither it nor any successor in title or interest to any Lot will formally challenge or appeal the assessed valuation of such Lot at any time while such Lot is receiving limited tax abatement under this Agreement; provided, the foregoing shall not bind the Fee Owner or any successor if the assessed valuation is greater than the projected assessed valuation of such Lot, as shown in the tax impact statement prepared in connection with the Development Plan (the *"Tax Impact Statement"*). For purposes of this Section, if any Lot shown in the Tax Impact Statement is subdivided into two or more lots, the projected assessed valuation of such Lot, as shown in the Tax Impact Statement, shall be allocated among the subdivided lots on a pro rata basis (by square footage).

(f) The Parties agree that the property tax abatement described in this Agreement will not apply to special assessments (including the CID Special Assessments) or ad valorem personal property taxes and will not reduce or eliminate any licenses or fees owing to the City or any other taxing jurisdiction with respect to the Redevelopment Project.

(g) All deeds of trust and other security agreements secured by the Redevelopment Project or any portion thereof shall recognize that the PILOTs due and owing hereunder are to be given the same priority as real property taxes in the event of a foreclosure. To evidence such preference, all such deeds of trust or other security agreements must contain the following language (or similar language approved by the City Attorney or Bond Counsel):

Recognition of Lender to terms of Master Redevelopment Agreement and Lot Development Agreement. Lender agrees that for so long as [the applicable portion of] the Property is subject to

and receiving abatement of ad valorem real property taxes pursuant to (1) the Master Redevelopment Agreement dated as of _____, 2024 among 10300 Olive LLC, 10300 Olive Dev LLC, the City of Creve Coeur, Missouri (the "City"), and Olia Village Redevelopment Corporation and (2) the Lot Development Agreement dated as of _____, 20___ among the City, 10300 Olive Dev LLC and [Sub-Developer], the lien of the [Mortgage] shall be subject and inferior to the lien of the City thereto to the extent of any unpaid PILOTs (as defined in the aforementioned Master Redevelopment Agreement). Lender agrees that any proceeds received by Lender as a result of a foreclosure or deed in lieu of foreclosure related to [the applicable portion of] the Property shall be applied to pay any due and owing PILOTs before being applied to satisfy any or all amounts due and owing to the Lender.

Before executing any deed of trust or other security agreement secured by the Redevelopment Project or any portion thereof, the Fee Owner, the Developer, a Sub-Developer or a Related Party shall provide the City with a draft of such deed of trust or other security agreement for the sole purpose of ensuring that the language required by this **Section 5.1(g)** is included therein. Any deed of trust or other security agreement secured by the Redevelopment Project or any portion thereof that does not contain the required language shall be deemed to include such language, and the party whose obligations are secured by the deed of trust or other security agreement shall be bound by such language as if it were fully set forth therein. To the extent that the Fee Owner, the Developer, a Sub-Developer or a Related Party has provided the City with a draft of any such deed of trust or other security agreement as required by this paragraph, the Fee Owner, the Developer, the Sub-Developer or the Related Party, as applicable, shall have complied with its obligations under this Agreement and any applicable Lot Development Agreement, and the City shall have no right to terminate this Agreement with respect to such Lot or to terminate the applicable Lot Development Agreement solely because the final deed of trust or other security agreement does not contain the language required by this **Section 5.1(g)**.

(h) Notwithstanding anything to the contrary contained herein, no Lot, including particularly Lot 16, upon which townhomes or other single-family residences are constructed will be eligible for the limited tax abatement provided by this Section. The Fee Owner and any successors in title or interest will pay 100% of the real estate taxes actually due and payable on any such Lot.

(i) With respect to any Lot, the Parties agree that the limited tax abatement provided by this Section will be offset by the imposition of the CID Special Assessment. Therefore, if the CID Special Assessment is not imposed on any Lot within six months of the Redevelopment Corporation's acquisition of such Lot pursuant to **Section 3.2(c)**, then the limited tax abatement provided by this Section shall immediately cease and shall not be reinstated until the CID Special Assessment is imposed on such Lot. In each calendar year in which the limited tax abatement has ceased, if even for a part of such year, the Fee Owner, the Developer, a Sub-Developer or a Related Party shall make or cause to be made a PILOT to the Non-Emergency Districts in an amount which, when added to the Unabated Taxes, equals the amount of ad valorem real property taxes that would have been imposed on such Lot if the Lot were not subject to abatement. Any PILOT made under this subsection shall be in lieu of the PILOTs set forth in **Sections 5.1(b)(2)(B)(ii)**, **(iii)** and **(iv)**.

(j) Notwithstanding any provision to the contrary contained herein, the limited tax abatement provided by this Section shall expire upon the earlier of (1) the end of the 25-year tax abatement period on each Lot or (2) the payment in full of all Project Obligations secured by the CID Special Assessment Revenues. Upon the expiration of the limited tax abatement provided by this Section, (A) the Fee Owner or the Developer shall promptly send written notice to the Abatement Compliance Manager (with a copy to the City) that the limited tax abatement on all Lots provided by this Section shall immediately cease and (B) from and after such date, the Fee Owner or its successor in interest shall pay or cause to be paid 100% of the real estate taxes that are due on each individual Lot.

5.2. Sales Tax Exemption on Construction Materials. At the Fee Owner's and the Developer's request, the City will issue industrial revenue bonds pursuant to Chapter 100 to facilitate a sales and use tax exemption on the construction materials necessary to complete the Site Work. The costs of the City in connection with issuing any such industrial revenue bonds, including, without limitation, City Attorney fees, Bond Counsel fees and trustee fees, shall be paid by the Fee Owner or the Developer upon delivery of the City's project exemption certificate. Upon the substantial completion of the Site Work (as evidenced by the City's acceptance or deemed acceptance of a Completion Certificate pursuant to **Section 3.8**), the Fee Owner, the Developer and their respective contractors and subcontractors shall cease use of the project exemption certificate. For purposes of clarity, the Parties agree that any savings realized by the Fee Owner and/or the Developer from use of the sales and use tax exemption will not affect the Maximum Reimbursement Amount.

5.3. Community Improvement District.

(a) The CID shall be governed by a board of directors made up of five individuals appointed by the Mayor with the consent of the City Council, three of whom shall be representatives of the owners of real property or businesses operating within the CID and two of whom shall be residents of the City who are qualified and registered to vote and who have no financial interest in any real property or business operating within the CID. Successor directors of the CID shall be appointed as set forth in the petition for the creation of the CID. The Parties, acting through their representatives on the board of directors, shall cause the CID to (1) engage a qualified administrator and/or legal counsel to assist in managing the CID and ensuring compliance with applicable laws, (2) authorize and enter into the Cooperation Agreement and (3) take such steps as are necessary (including casting votes as qualified voters under the CID Act) to impose the CID Sales Tax and the CID Special Assessments.

(b) The CID shall not impose any tax or assessment (other than the CID Sales Tax and the CID Special Assessments) or issue any Project Obligations without the prior approval of the City in its sole and absolute discretion.

(c) If any Project Obligations are issued by or on behalf of the CID, the CID is authorized to apply the CID Sales Tax Revenues and the CID Special Assessment Revenues to the repayment of such Project Obligations, as further described in **Section 12(c)** of the Cooperation Agreement.

(d) Notwithstanding any provision hereof to the contrary, the authorization to levy the CID Special Assessments shall terminate upon the earlier of (1) the expiration of the term of the CID or (2) the payment in full of all Project Obligations secured by the CID Special Assessment Revenues.

5.4. Transportation Development District. The Fee Owner shall petition the St. Louis County Circuit Court for the creation of a TDD encompassing the entirety of the Redevelopment Area except Lot 16 and that portion of the buildings located on other Lots that are intended for residential occupancy, the creation of which the City shall not oppose. The Parties acknowledge that the TDD will be governed by a board of directors made up of five representatives of the owners of real property within the TDD, including two persons designated by the City, who will be elected by the owners of real property within the TDD. The Fee Owner, as an owner of real property within the TDD, will cause the election to the board of directors of two persons designated by the City who meet all other qualifications to serve on the board of directors, by designating each such person as an authorized representative of the Fee Owner and voting for such persons. The Parties, acting through their representatives on the board of directors, shall cause the TDD to (a) engage a qualified administrator and/or legal counsel to assist in managing the TDD and ensuring compliance with applicable laws, (b) authorize and enter into the Cooperation Agreement and (c) take such steps as are necessary (including casting votes as qualified voters under the

TDD Act) to impose the TDD Sales Tax. The TDD shall not impose any tax or assessment (other than the TDD Sales Tax) or issue any Project Obligations without the prior approval of the City in its sole and absolute discretion. If any Project Obligations are issued by or on behalf of the TDD, the TDD is authorized to apply the TDD Sales Tax Revenues to the repayment of such Project Obligations, as further described in the Cooperation Agreement.

ARTICLE VI

GENERAL PROVISIONS

6.1. Developer's Right of Termination.

(a) At any time before the Site Work is substantially completed (as evidenced by the City's acceptance or deemed acceptance of a Completion Certificate pursuant to **Section 3.8**), the Developer may abandon the Redevelopment Project in its entirety and terminate this Agreement in whole by giving written notice to the City.

(b) At any time after the Site Work is substantially completed but before fee title to a Lot is transferred to the Redevelopment Corporation, the Developer, a Sub-Developer or a Related Party may abandon the Private Development on such Lot and terminate this Agreement with respect to the abandoned Private Development on such Lot by giving written notice to the City. For purposes of clarity, termination of this Agreement with respect to one or more Lots pursuant to this subsection (b) does not terminate this Agreement with respect to the remaining Lots. If this Agreement is terminated with respect to the abandoned Private Development on one or more Lots pursuant to this **Section 6.1(b)**, such Lot(s) shall not be eligible for limited tax abatement, and the Fee Owner, the Developer, a Sub-Developer or a Related Party shall pay 100% of the real estate taxes actually due and payable on such Lot(s) from and after the calendar year in which this Agreement terminates with respect to the abandoned Private Development on such Lot(s).

6.2. City's Right of Termination. The City may terminate this Agreement in whole if:

(a) the Developer defaults in or breaches any material provision of this Agreement and fails to cure such default or breach pursuant to **Section 6.5**; or

(b) the Developer materially breaches any representation or warranty contained in **Section 7.2**.

6.3. Results of Termination.

(a) If this Agreement is terminated pursuant to **Section 6.1(a)** or **Section 6.2**:

(1) the City will have no further obligation to enter into any Lot Development Agreements (provided, however, every previously executed Lot Development Agreement shall remain in effect so long as the applicable Sub-Developer has not defaulted or materially breached the Lot Development Agreement in a manner that permits the Lot Development Agreement to be terminated);

(2) no additional Certificates of Reimbursable District Project Costs will be approved or deemed approved by the City; and

(3) except as may expressly survive the termination of this Agreement, all other rights and obligations hereunder shall be deemed cancelled.

(b) If this Agreement is terminated with respect to the abandoned Private Development on one or more Lots pursuant to **Section 6.1(b)**, such Lot(s) shall not be eligible for limited tax abatement, and the Fee Owner, the Developer, a Sub-Developer or a Related Party shall pay 100% of the real estate taxes actually due and payable on such Lot(s) from and after the calendar year in which this Agreement terminates with respect to the abandoned Private Development on such Lot(s).

6.4. Successors and Assigns; Transfers of Property.

(a) All or any part of the Property or any interest therein may be sold, transferred, encumbered, leased, or otherwise disposed of at any time, and the rights of the Developer named herein or any successors in interest under this Agreement or any part hereof may be assigned at any time before, during or after redevelopment of the Redevelopment Project, whereupon the party disposing of its interest in the Property or assigning its interest under this Agreement shall be thereafter released from further obligation under this Agreement (although any such Property so disposed of or to which such interest pertains shall remain subject to the terms and conditions of this Agreement); provided, except as otherwise set forth herein, prior to substantial completion of the Site Work, the Developer shall not assign its interest in this Agreement to any person or entity, including but not limited to any Sub-Developer, without the City's prior written consent. The City shall not withhold its consent if it is reasonably satisfied that the proposed assignee has significant development experience and the financial ability to complete the Site Work (or portion thereof to be undertaken by such assignee) in accordance with the terms of this Agreement. The Developer shall be released from liability hereunder with respect to the Private Development on any Lot upon sale of any Lot to a Sub-Developer pursuant to and in accordance with the terms hereof and execution by such Sub-Developer of a Lot Development Agreement with respect thereto.

(b) The City hereby approves, and no prior consent shall be required in connection with: (1) subject to **Section 5.1(g)**, the right of the Fee Owner to encumber or collaterally assign its interest in the Property or any portion thereof or its rights, duties and obligations under this Agreement to obtain the benefits of a tax credit investment or to secure loans, advances or extensions of credit to finance or from time to time refinance all or any part of the Redevelopment Project, or the right of the holder of any such encumbrance or transferee of any such collateral assignment (or trustee or agent on its behalf) to transfer such interest by foreclosure or transfer in lieu of foreclosure under such encumbrance or collateral assignment; (2) the right of the Fee Owner to transfer all or any part of the Property or the right of the Developer to assign all or any portion of the Developer's rights, duties and obligations under this Agreement to any Related Party; and (3) the right of the Fee Owner to sell, lease or transfer a residential unit, commercial unit or parking space in the ordinary course of business; provided that in each such event (A) except as set forth herein, the Developer named herein shall remain liable hereunder for the substantial completion of the Site Work and shall be released from such liability hereunder only upon substantial completion, subject, however, to the Developer's right of termination pursuant to **Section 6.1(a)**, and (B) so long as tax abatement remains available for any applicable portion of the Redevelopment Project, the Developer provides to the City 15 days' advance written notice of the proposed assignment or transfer for such applicable portion of the Redevelopment Project, other than for the sale or lease of a residential unit, commercial unit or parking space in the ordinary course of business or the transfer of any rights hereunder or in the Property to a Related Party, which shall require no notice (but may be subject to a Lot Development Agreement, as described in this Section).

(c) The Developer shall, promptly upon the consummation of any assignment of its interests in this Agreement, provide the City with a copy of the assignment and assumption agreement between the Developer and the assignee.

(d) The Fee Owner agrees to notify the City in writing of any sale, transfer or other disposition of the Property, any portion thereof, or any interest therein, at least 15 days following such sale, transfer or other disposition. Said notice shall specify the name and address of the person so acquiring the Property, any portion thereof, or any interest therein and shall identify the Property to be sold, transferred or otherwise disposed, whether by voluntary transfer or otherwise. Notwithstanding the foregoing, (1) the Fee Owner shall not be required to notify the City of the lease or transfer of a residential unit, commercial unit or parking space in the ordinary course of business and (2) if the transfer is subject to a Lot Development Agreement, provision of the applicable Lot Development Agreement to the City shall constitute valid notice under this Section.

6.5. Remedies. If any party defaults or breaches any material term or condition of this Agreement, the defaulting or breaching party shall, upon written notice from the other party or parties specifying such default or breach, cure or remedy such default or breach within 30 days after receipt of such notice (or such longer period as is reasonably required to cure such default, provided that (a) the breaching party has commenced such cure within said 30-day period, and (b) the breaching party diligently prosecutes such cure to completion). If such cure or remedy is not taken or not diligently pursued, or the default or breach is not cured or remedied as provided above, the aggrieved party or parties may institute such proceedings as may be necessary or desirable in its opinion to cure and remedy such default or breach, including, but not limited to, proceedings to compel specific performance by the defaulting or breaching party or to terminate this Agreement.

6.6. Notices. Any notice, demand or other communication required by this Agreement to be given by one party hereto to another shall be in writing and shall be sufficiently given or delivered if delivered personally or transmitted electronically (and receipt confirmed by telephone or electronic read receipt):

(a) If to the City:

City of Creve Coeur, Missouri
Creve Coeur City Hall
300 North New Ballas Road
Creve Coeur, Missouri 63141
Attention: Mark Perkins, City Administrator
Email: mperkins@crevecoeurmo.gov

with copies to:

Curtis, Heinz, Garrett & O'Keefe, P.C.
130 S. Bemiston, Suite 200
St. Louis, Missouri 63105
Attention: Carl Lumley, City Attorney
Email: CLumley@chgolaw.com

and:

Gilmore & Bell, P.C.
One Metropolitan Square, Suite 2000
St. Louis, Missouri 63102
Attention: Mark D. Grimm, Esq.
Email: mgrimm@gilmorebell.com

(b) If to the Fee Owner, the Developer or the Redevelopment Corporation:

c/o Fireside Financial LLC
90 Edwardsville Professional Park
Edwardsville, Illinois 62025
Attention: Kristie Bailey
Email: klbailey@firesidefinancial.com

with copies to:

c/o Jack Matthews Development LLC
3925 Blackburn Road
Edwardsville, Illinois 62025
Attention: Matthew J. Pfund
Email: matt@jackmatthewsdevelopment.com

and:

Armstrong Teasdale LLP
7700 Forsyth Boulevard, Suite 1800
St. Louis, Missouri 63105
Attention: Robert Klahr, Esq.
Email: rklahr@atllp.com

or to such other address with respect to any party as such party may, from time to time, designate in writing and forward to the others as provided in this Section. A duplicate copy of each notice or other communication given hereunder shall be given to each other party.

6.7. Insurance Requirements.

(a) The Developer shall obtain, or shall require the applicable Sub-Developer, Related Party or contractor to obtain, insurance as hereinafter set forth and shall maintain such insurance from the commencement of construction of the Redevelopment Project and continuing through the term of this Agreement. The Developer shall require that any such insurance obtained by the applicable Sub-Developer, Related Party or contractor be maintained by such Sub-Developer, Related Party or contractor for the duration of the construction of the applicable portion of the Redevelopment Project. The policies for such insurance shall be placed with financially sound and reputable insurers licensed to transact business in the State of Missouri. The Developer, Sub-Developer or Related Party shall, from time to time at the request of the City, furnish the City with copies of the following polices and endorsements:

(1) property and casualty insurance to keep the applicable portions of the Redevelopment Project constantly insured against loss or damage by fire, lightning and all other risks covered by the extended coverage insurance endorsement then in use in the State of Missouri in an amount equal to the Full Insurable Value thereof (subject to reasonable loss deductible clauses). *"Full Insurable Value"* means the actual replacement cost of the applicable portion of the Redevelopment Project;

(2) commercial general liability insurance with coverages of not less than the current absolute statutory waivers of sovereign immunity in Sections 537.600 and 537.610 of the Revised Statutes of Missouri, as amended (which for calendar year 2024 is equal to $3,370,137 for all claims

arising out of a single accident or occurrence and $505,520 for any one person in a single accident or occurrence). Further, the policy shall be adjusted upward annually, to remain at all times not less than the inflation adjusted sovereign immunity limits as published in the Missouri Register on an annual basis by the Department of Insurance pursuant to Section 537.610 of the Revised Statutes of Missouri, as amended. Each liability policy obtained pursuant to this Section shall name the City as an additional insured and shall contain an agreement by the insurer that, notwithstanding any right of cancellation reserved to such insurer, such policy or contract shall continue in force for at least 10 days after written notice of cancellation is given to the City; and

(3) workers' compensation insurance, with statutorily required coverage.

(b) The Developer, Sub-Developer or Related Party shall maintain commercial general liability insurance subject to the terms of the Insurance Services Office (*"ISO"*) Commercial General Liability Coverage Form CG 0001, or a substitute form providing coverage that is at least as broad as the ISO form specified, including standard contractual liability coverage. Subject to such policy form's terms, conditions, and exclusions, contractual liability coverage shall apply to the Developer's indemnification obligations under **Section 6.8** and the Sub-Developer's or Related Party's indemnification obligations under the Lot Development Agreement. The required commercial general liability insurance shall be placed with such insurance carriers and contain such terms and conditions as shall be reasonably acceptable to the City Administrator. The Developer, Sub-Developer or Related Party shall provide the City with a copy of such policy and any endorsements to evidence the current effectiveness of such insurance coverage upon the execution of this Agreement and from time to time thereafter upon written request of the City. The Developer, Sub-Developer or Related Party shall name the City as an additional insured under the commercial general liability insurance coverage required by this Section.

6.8. Release and Indemnification.

(a) The indemnification and covenants contained in this Section shall survive expiration or earlier termination of this Agreement.

(b) The Developer hereby agrees that, anything to the contrary herein notwithstanding, it will defend, hold harmless and indemnify the City and its governing body members, officials, employees, attorneys and agents against any and all claims, demands, actions, causes of action, losses, damages, injuries, liabilities and/or expenses (including reasonable attorneys' fees and court costs) resulting from, arising out of, or in any way connected with:

(1) the Developer's failure to comply with any provision of this Agreement or the activities or transactions contemplated herein;

(2) the negligence or intentional misconduct of the Developer or an affiliate thereof, or their respective employees and agents;

(3) the presence of hazardous wastes, hazardous materials or other environmental contaminants in the Redevelopment Area;

(4) any loss of or damage to property or any injury to or death of any person occurring in or about the Redevelopment Project in connection with any activities, acts or omissions of the Developer, a Related Party, or any of their respective contractors, agents or employees; or

(5) otherwise arising out of the adoption or administration of this Agreement or the construction or operation of the portions of the Redevelopment Project being undertaken by the Developer.

If the validity or construction of any state laws or local ordinances or resolutions in connection with this Agreement or affecting the Redevelopment Project are contested in court, the Developer shall defend, hold harmless and indemnify the City from and against all claims, demands and/or liabilities of any kind whatsoever including, without limitation, any claim for reasonable attorneys' fees and court costs, and the Developer shall pay any monetary judgment and all court costs rendered against the City, if any.

(c) The Fee Owner hereby agrees that, anything to the contrary herein notwithstanding, it will defend, hold harmless and indemnify the City and its governing body members, officials, employees, attorneys and agents against any and all claims, demands, actions, causes of action, losses, damages, injuries, liabilities and/or expenses (including reasonable attorneys' fees and court costs) resulting from, arising out of, or in any way connected with:

(1) the Fee Owner's failure to comply with any provision of this Agreement or the activities or transactions contemplated herein;

(2) the negligence or intentional misconduct of the Fee Owner or an affiliate thereof, or their respective employees and agents;

(3) the presence of hazardous wastes, hazardous materials or other environmental contaminants in the Redevelopment Area;

(4) any loss of or damage to property or any injury to or death of any person occurring in or about the Redevelopment Project in connection with any activities, acts or omissions of the Fee Owner or any of its respective contractors, agents or employees; or

(5) otherwise arising out of the adoption or administration of this Agreement.

If the validity or construction of any state laws or local ordinances or resolutions in connection with this Agreement or affecting the Redevelopment Project are contested in court, the Fee Owner shall defend, hold harmless and indemnify the City from and against all claims, demands and/or liabilities of any kind whatsoever including, without limitation, any claim for reasonable attorneys' fees and court costs, and the Fee Owner shall pay any monetary judgment and all court costs rendered against the City, if any.

(d) Notwithstanding anything herein to the contrary, the City and its governing body members, officials, employees, attorneys and agents shall not be liable to the Fee Owner or the Developer for damages or otherwise if all or any part of Chapter 353 or any ordinance or resolution of the City adopted in connection with this Agreement or the Redevelopment Project is declared invalid or unconstitutional in whole or in part by the final (as to which all rights of appeal have expired or have been exhausted) judgment of any court of competent jurisdiction.

(e) Notwithstanding the foregoing terms of this Section, neither the Fee Owner nor the Developer shall have any obligation to defend, hold harmless or indemnify the City with respect to any matter or expense resulting from or arising out of the negligence or willful misconduct of the City.

(f) All covenants, stipulations, promises, agreements and obligations of the City contained herein shall be deemed to be the covenants, stipulations, promises, agreements and obligations of the City

solely, and not of any of its governing body members, officials, employees, attorneys or agents in their individual capacities.

6.9. Choice of Law; Conflicts. This Agreement shall be taken and deemed to have been fully executed, made by the Parties in, and governed by the laws of the State of Missouri for all purposes and intents. Any action arising out of, or concerning, this Agreement shall be brought only in the St. Louis County Circuit Court or the U.S. District Court for the Eastern District of Missouri.

6.10. Counterparts. This Agreement is executed in multiple counterparts, each of which shall constitute one and the same instrument.

6.11. Severability. If any term or provision of this Agreement is held to be unenforceable by a court of competent jurisdiction, the remainder shall continue in full force and effect, to the extent the remainder can be given effect without the invalid term or provision.

6.12. No Waiver of Sovereign Immunity. Nothing in this Agreement shall be construed or deemed to constitute a waiver of the City's sovereign immunity.

6.13. No Third-Party Beneficiaries. This Agreement constitutes a contract solely among the City, the Fee Owner, the Developer and the Redevelopment Corporation. No third party has any beneficial interest in, or derived from, this Agreement.

6.14. Conflict of Interest. The Developer represents and warrants that it has fully complied in all material respects with the City's Charter and Code of Conduct regarding conflicting interests. In the acquisition, installation, completion and operation of the portions of the Redevelopment Project being undertaken by the Developer, no shareholder, member or officer of the Developer shall knowingly, after due inquiry, cause the Developer to employ or contract with any person if a member of such person's immediate family is a member of the City Council or is employed by the City in an administrative capacity (*i.e.*, those having selection, hiring or supervisory or operational responsibility for the work to be performed pursuant to this Agreement). For the purposes of this Section *"immediate family"* includes wife, husband, son, daughter, mother, father, brother, sister, brother-in-law, sister-in-law, father-in-law, mother-in-law, aunt, uncle, niece, nephew, step-parent, and step-child.

6.15. Further Authority. The City Administrator is authorized to execute all documents on behalf of the City (including documents pertaining to the transfer of property or the financing or refinancing of the Redevelopment Project or any portion thereof) as may be required to carry out and comply with the intent of this Agreement. The City Administrator is also authorized, unless expressly prohibited herein, to grant on behalf of the City such consents, estoppels and waivers relating to this Agreement as may be requested during the term hereof; provided, such consents, estoppels and/or waivers shall not increase the Maximum Reimbursement Amount set forth herein, waive an event of default or materially change the nature of the transactions contemplated herein unless otherwise approved by the City Council.

6.16. Project Data. The Developer has engaged architects, engineers and various other consultants to enable the Developer to provide certain estimates regarding the total cost of the Redevelopment Project and the total cost of the Site Work for review by the City and its consultants, which estimates are set forth as **Exhibit K**, attached hereto and incorporated herein by reference (the *"Project Data"*). In providing the Project Data, the Developer has generally reviewed and relied upon certain information furnished by its architects, engineers and various other consultants. The Project Data contains prospective information, opinions and estimates regarding a Redevelopment Project and Site Work that have not yet been constructed. The Project Data is not provided as a prediction or assurance that a certain level of performance will be achieved or that certain events will occur. The Parties agree that actual results

will vary from the estimates provided in the Project Data and that such variations may be material. Nevertheless, to the Developer's knowledge, the Project Data is a good faith estimate of anticipated costs of the Redevelopment Project and the Site Work as of the date hereof.

6.17. Term of Agreement. This Agreement shall terminate on the earliest of the following: (a) termination by the Developer pursuant to **Section 6.1(a)**; (b) termination by the City pursuant to **Section 6.2**; or (c) payment in full of all outstanding Project Obligations or, if such Project Obligations are not paid in full at final maturity, then upon expiration of the last to expire of the CID Sales Tax, the CID Special Assessments and the TDD Sales Tax.

ARTICLE VII

REPRESENTATIONS, WARRANTIES AND COVENANTS OF THE PARTIES

7.1. Representations by the City. The City makes the following representations and warranties, which are true and correct on the date hereof:

(a) *No Violations.* The execution and delivery of this Agreement, the consummation of the transactions contemplated hereby, and the fulfillment of the terms and conditions hereof do not and will not conflict with or result in a breach of any of the terms or conditions of any agreement or instrument to which it is now a party, and do not and will not constitute a default under any of the foregoing.

(b) *No Litigation*. To the City's knowledge, no litigation, proceedings or investigations are pending against the City with respect to the Redevelopment Project or this Agreement. In addition, no litigation, proceedings or investigations are pending against the City that seek to restrain, enjoin or in any way limit the approval or execution, delivery or validity of this Agreement or that would in any manner challenge or adversely affect the existence or powers of the City to enter into and carry out the transactions described in or contemplated by this Agreement or the performance by the City of the terms and provisions hereof.

(c) *No Default*. No default or event of default has occurred and is continuing, and no event has occurred and is continuing that with the lapse of time or the giving of notice, or both, would constitute a default or an event of default in any material respect on the part of the City under this Agreement.

7.2. Representations by the Fee Owner. The Fee Owner makes the following representations and warranties, which are true and correct on the date hereof:

(a) *No Violations.* The execution and delivery of this Agreement, the consummation of the transactions contemplated hereby, and the fulfillment of the terms and conditions hereof do not and will not conflict with or result in a breach of any of the terms or conditions of any corporate or organizational restriction or of any agreement or instrument to which it is now a party, and do not and will not constitute a default under any of the foregoing.

(b) *No Litigation*. To the Fee Owner's knowledge (including the knowledge of the representative of the Fee Owner executing this Agreement), no litigation, proceedings or investigations are pending against the Fee Owner (or any member of the Fee Owner) with respect to the Redevelopment Project. In addition, to the Fee Owner's knowledge (including the knowledge of the representative of the Fee Owner executing this Agreement), no litigation,

proceedings or investigations are pending against the Fee Owner (or any member of the Fee Owner) that seek to restrain, enjoin or in any way limit the approval or execution, delivery or validity of this Agreement or that would in any manner challenge or adversely affect the existence or powers of the Fee Owner to enter into and carry out the transactions described in or contemplated by this Agreement or the performance by the Fee Owner of the terms and provisions hereof.

(c) *No Default*. No default or event of default has occurred and is continuing, and no event has occurred and is continuing that with the lapse of time or the giving of notice, or both, would constitute a default or an event of default in any material respect on the part of the Fee Owner under this Agreement or any other material agreement or material instrument related to the Fee Owner's ability to perform pursuant to this Agreement and to which the Fee Owner is a party or by which the Fee Owner is or may be bound.

(d) *Compliance with Laws*. With respect to its ability to perform pursuant to this Agreement, the Fee Owner is, to its knowledge, in material compliance with all valid laws, ordinances, orders, decrees, decisions, rules, regulations and requirements of every duly constituted governmental authority, commission and court applicable to any of its affairs, business or operations as contemplated by this Agreement.

(e) *Local, State and Federal Taxes.* The Fee Owner and its key principals are current on all local, state and federal taxes. On or before March 1 of each year during the term of this Agreement, beginning March 1, 2025, the Fee Owner shall recertify to the City that this representation remains true and correct and shall provide evidence to the City's reasonable satisfaction that the Fee Owner is current on all local, state and federal taxes.

(f) *Anti-Discrimination Against Israel Act.* Pursuant to Section 34.600 of the Revised Statutes of Missouri, as amended, the Fee Owner certifies it is not currently engaged in and shall not, for the duration of this Agreement, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

7.3. Representations by the Developer. The Developer makes the following representations and warranties, which are true and correct on the date hereof:

(a) *No Violations.* The execution and delivery of this Agreement, the consummation of the transactions contemplated hereby, and the fulfillment of the terms and conditions hereof do not and will not conflict with or result in a breach of any of the terms or conditions of any corporate or organizational restriction or of any agreement or instrument to which it is now a party, and do not and will not constitute a default under any of the foregoing.

(b) *No Litigation*. To the Developer's knowledge (including the knowledge of the representative of the Developer executing this Agreement), no litigation, proceedings or investigations are pending against the Developer (or any member of the Developer) with respect to the Redevelopment Project. In addition, to the Developer's knowledge (including the knowledge of the representative of the Developer executing this Agreement), no litigation, proceedings or investigations are pending against the Developer (or any member of the Developer) that seek to restrain, enjoin or in any way limit the approval or execution, delivery or validity of this Agreement or that would in any manner challenge or adversely affect the existence or powers of the Developer (or any member of the Developer) to enter into and carry out the transactions described in or contemplated by this Agreement or the performance by the Developer (or any member of the Developer) of the terms and provisions hereof.

(c) *No Default*. No default or event of default has occurred and is continuing, and no event has occurred and is continuing that with the lapse of time or the giving of notice, or both, would constitute a default or an event of default in any material respect on the part of the Developer under this Agreement or any other material agreement or material instrument related to the Developer's ability to perform pursuant to this Agreement and to which the Developer is a party or by which the Developer is or may be bound.

(d) *Compliance with Laws*. With respect to its ability to perform pursuant to this Agreement, the Developer is, to its knowledge, in material compliance with all valid laws, ordinances, orders, decrees, decisions, rules, regulations and requirements of every duly constituted governmental authority, commission and court applicable to any of its affairs, business or operations as contemplated by this Agreement.

(e) *Local, State and Federal Taxes.* The Developer and its key principals are current on all local, state and federal taxes. On or before March 1 of each year during the term of this Agreement, beginning March 1, 2025, the Developer shall recertify to the City that this representation remains true and correct and shall provide evidence to the City's reasonable satisfaction that the Developer is current on all local, state and federal taxes.

(f) *Anti-Discrimination Against Israel Act.* Pursuant to Section 34.600 of the Revised Statutes of Missouri, as amended, the Developer certifies it is not currently engaged in and shall not, for the duration of this Agreement, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

7.4. Representations by the Redevelopment Corporation. The Redevelopment Corporation makes the following representations and warranties, which are true and correct on the date hereof:

(a) *No Violations.* The execution and delivery of this Agreement, the consummation of the transactions contemplated hereby, and the fulfillment of the terms and conditions hereof do not and will not conflict with or result in a breach of any of the terms or conditions of any corporate or organizational restriction or of any agreement or instrument to which it is now a party, and do not and will not constitute a default under any of the foregoing.

(b) *No Litigation*. To the Redevelopment Corporation's knowledge (including the knowledge of the officer of the Redevelopment Corporation executing this Agreement), no litigation, proceedings or investigations are pending against the Redevelopment Corporation (or any shareholder or officer of the Redevelopment Corporation) with respect to the Redevelopment Project. In addition, to the Redevelopment Corporation's knowledge (including the knowledge of the officer of the Redevelopment Corporation executing this Agreement), no litigation, proceedings or investigations are pending against the Redevelopment Corporation (or any shareholder or officer of the Redevelopment Corporation) that seek to restrain, enjoin or in any way limit the approval or execution, delivery or validity of this Agreement or that would in any manner challenge or adversely affect the existence or powers of the Redevelopment Corporation (or any officer of the Redevelopment Corporation) to enter into and carry out the transactions described in or contemplated by this Agreement or the performance by the Redevelopment Corporation (or any shareholder or officer of the Redevelopment Corporation) of the terms and provisions hereof.

(c) *No Default*. No default or event of default has occurred and is continuing, and no event has occurred and is continuing that with the lapse of time or the giving of notice, or both, would constitute a default or an event of default in any material respect on the part of the

Redevelopment Corporation under this Agreement or any other material agreement or material instrument related to the Redevelopment Corporation's ability to perform pursuant to this Agreement and to which the Redevelopment Corporation is a party or by which the Redevelopment Corporation is or may be bound.

(d) *Compliance with Laws*. With respect to its ability to perform pursuant to this Agreement, the Redevelopment Corporation is, to its knowledge, in material compliance with all valid laws, ordinances, orders, decrees, decisions, rules, regulations and requirements of every duly constituted governmental authority, commission and court applicable to any of its affairs, business or operations as contemplated by this Agreement.

(e) *Anti-Discrimination Against Israel Act.* Pursuant to Section 34.600 of the Revised Statutes of Missouri, as amended, the Redevelopment Corporation certifies it is not currently engaged in and shall not, for the duration of this Agreement, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the City, the Fee Owner, the Developer and the Redevelopment Corporation have caused this Agreement to be executed in their respective names, and the City has caused its seal to be affixed hereto and attested, as of the date first above written

CITY OF CREVE COEUR, MISSOURI

(SEAL)

By: _____
Mark Perkins, City Administrator

ATTEST:

_____
Kellie Henke, City Clerk

ACKNOWLEDGMENT

STATE OF MISSOURI)
) SS.
COUNTY OF ST. LOUIS)

On this _____ day of _____, 2024, before me appeared **MARK PERKINS**, to me personally known, who, being by me duly sworn, did say that he is the City Administrator of the **CITY OF CREVE COEUR, MISSOURI**, a home rule city, and that he is authorized to sign the foregoing instrument on behalf of said city, and acknowledged that he executed said instrument as said city's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public - State of Missouri
Commissioned in _____

My Commission Expires: _____

10300 OLIVE LLC

By: **10300 Olive Holdings LLC**, its sole member

By: _____
Name: _____
Title: _____

ACKNOWLEDGMENT

STATE OF _____)
) SS.
COUNTY OF _____)

On this _____ day of _____, 2024, before me appeared _____, to me personally known, who, being by me duly sworn, did say that s/he is the _____ of 10300 Olive Holdings LLC, the sole member of **10300 OLIVE LLC**, a Missouri limited liability company, and that s/he is authorized to sign the foregoing instrument on behalf of said company, and acknowledged that s/he executed said instrument as said company's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public - State of Missouri
Commissioned in _____

My Commission Expires: _____

10300 OLIVE DEV LLC

By: _____
Name: _____
Title: _____

ACKNOWLEDGMENT

STATE OF _____)
) SS.
COUNTY OF _____)

On this _____ day of _____, 2024, before me appeared _____, to me personally known, who, being by me duly sworn, did say that s/he is the _____ of **10300 OLIVE DEV LLC**, a Missouri limited liability company, and that s/he is authorized to sign the foregoing instrument on behalf of said company, and acknowledged that s/he executed said instrument as said company's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public - State of Missouri
Commissioned in _____

My Commission Expires: _____

OLIA VILLAGE REDEVELOPMENT CORPORATION

By: _____
Name: _____
Title: _____

ACKNOWLEDGMENT

STATE OF _____)
) SS.
COUNTY OF _____)

On this _____ day of _____, 2024, before me appeared _____, to me personally known, who, being by me duly sworn, did say that s/he is the _____ of **OLIA VILLAGE REDEVELOPMENT CORPORATION**, a Missouri urban redevelopment corporation, and that s/he is authorized to sign the foregoing instrument on behalf of said corporation, and acknowledged that s/he executed said instrument as said corporation's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public - State of Missouri
Commissioned in _____

My Commission Expires: _____

EXHIBIT A

LEGAL DESCRIPTION OF REDEVELOPMENT AREA

A TRACT OF LAND BEING PART OF LOTS 9, 10, 11 AND 12 OF MAJOR THOMAS SUBDIVISION, SITUATED IN THE SOUTHWEST QUARTER AND NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 45 NORTH, RANGE 5 EAST, ST. LOUIS COUNTY, MISSOURI, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE WEST RIGHT OF WAY LINE OF STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH-PUBLIC RIGHT OF WAY) BOULEVARD WITH THE NORTH LINE OF LAND NOW OR FORMERLY OF VANTAGE CREDIT UNION, AS RECORDED BY DEED IN BOOK 23850, PAGE 141 OF THE ST. LOUIS COUNTY, MISSOURI RECORDER'S OFFICE;

THENCE ALONG SAID NORTH LINE AND THE NORTH LINE OF SUNSWEPT PLAT 3, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 4 AND SUNSWEPT PLAT 2, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 23, ALL OF SAID RECORDER'S OFFICE, NORTH 89 DEGREES 11 MINUTES 17 SECONDS WEST, A DISTANCE OF 1352.62 FEET TO THE EAST LINE OF LAND NOW OR FORMERLY OF DONALD J AND MARGRETTA CASSMEYER, ETAL, AS RECORDED BY DEED IN BOOK 11070, PAGE 767 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF LAND NOW OR FORMERLY OF JAVED MUHAMMAD ALI AND ALZUBEIDI DUHA, AS RECORDED BY DEED IN BOOK 23726, PAGE 3547; TIMOTHY C TOWNSEND, ETAL, AS RECORDED BY DEED IN BOOK 23562, PAGE 160, ALL OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 12 MINUTES 14 SECONDS EAST, A DISTANCE OF 500.19 FEET TO THE EAST LINE OF SPOEDE HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 54, PAGE 26 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF SPOEDE WOODS, A SUBDIVISION FORMERLY KNOWN AS GAS LIGHT SQUARE, AS RECORDED IN PLAT BOOK 104, PAGE 18 OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 08 MINUTES 11 SECONDS EAST, A DISTANCE OF 831.21 FEET TO THE NORTH LINE OF SAID SPOEDE WOODS; THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 51 MINUTES 14 SECONDS WEST, A DISTANCE OF 826.36 FEET TO THE EAST LINE OF MISSION HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 36 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF RAMBLEWOOD, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 58 AND THE EAST LINE OF LAND NOW OR FORMERLY OF MDC COAST 22 LLC, AS RECORDED BY DEED IN BOOK 25302, PAGE 4186, ALL OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE, THE FOLLOWING COURSES AND DISTANCES: NORTH 01 DEGREES 12 MINUTES 15 SECONDS EAST, A DISTANCE OF 466.53 FEET; NORTH 88 DEGREES 57 MINUTES 33 SECONDS WEST, A DISTANCE OF 51.85 FEET AND NORTH 04 DEGREES 53 MINUTES 33 SECONDS WEST, A DISTANCE OF 682.38 FEET TO

THE SOUTH RIGHT OF WAY LINE OF MISSOURI STATE HIGHWAY 340, A.K.A. OLIVE (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTH RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: ALONG A NON- TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 11,358.19 FEET, WITH A CENTRAL ANGLE OF 00 DEGREES 49 MINUTES 02 SECONDS, WHICH CHORD BEARS SOUTH 89 DEGREES 27 MINUTES 38 SECONDS EAST, A CHORD DISTANCE OF 162.03 FEET, THROUGH AN ARC LENGTH OF 162.03 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 427.12 FEET; NORTH 01 DEGREES 00 MINUTES 53 SECONDS EAST, A DISTANCE OF 20.00 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 723.00 FEET AND SOUTH 86 DEGREES 13 MINUTES 52 SECONDS EAST, A DISTANCE OF 200.26 FEET TO THE SOUTHWEST RIGHT OF WAY TRANSITION BETWEEN STATE HIGHWAY 340 AND STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

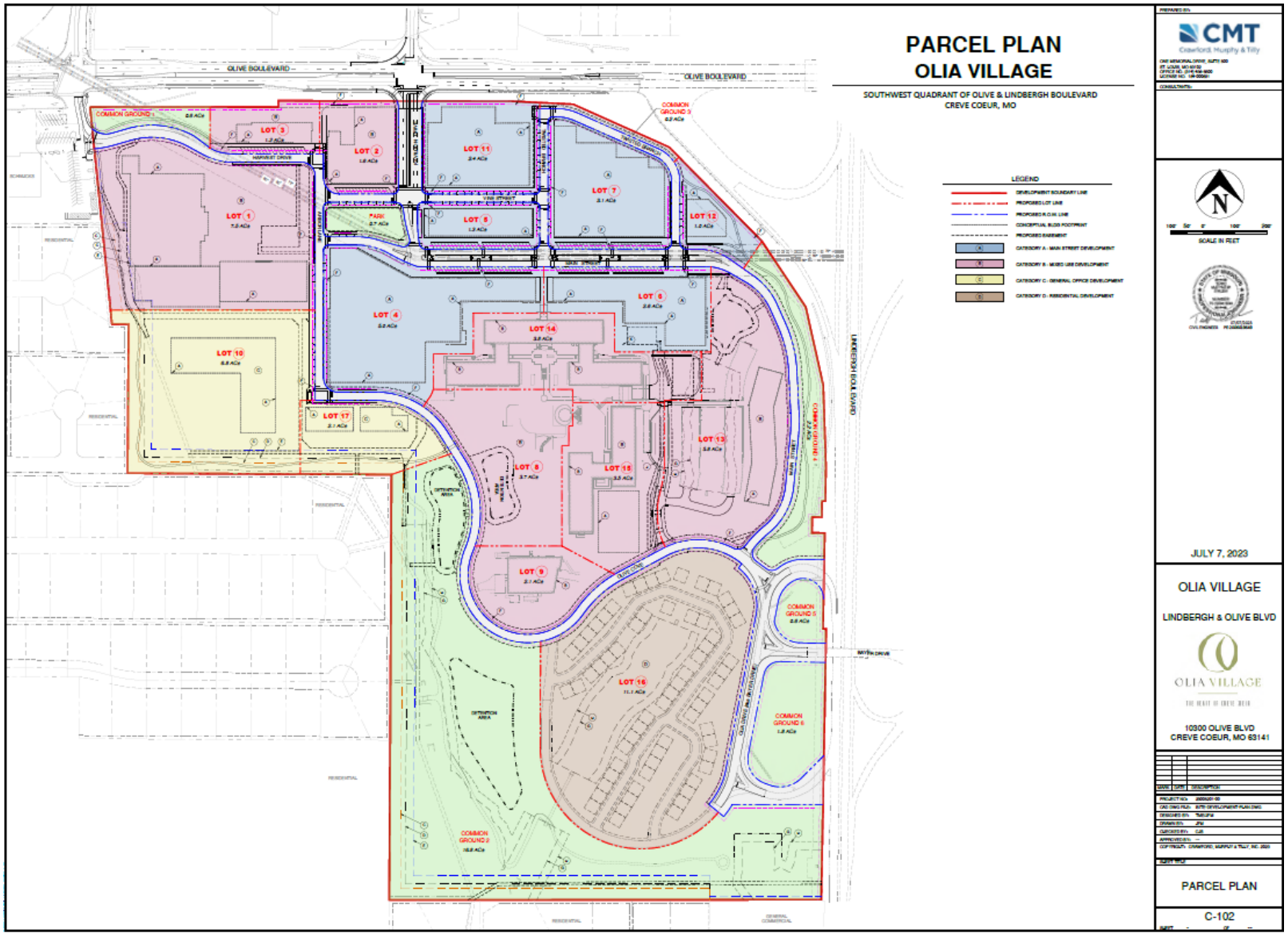
THENCE ALONG SAID SOUTHWEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 65 DEGREES 03 MINUTES 50 SECONDS EAST, A DISTANCE OF 328.98 FEET; SOUTH 43 DEGREES 48 MINUTES 52 SECONDS EAST, A DISTANCE OF 413.64 FEET; SOUTH 32 DEGREES 46 MINUTES 12 SECONDS EAST, A DISTANCE OF 248.25 FEET AND SOUTH 11 DEGREES 42 MINUTES 30 SECONDS EAST, A DISTANCE OF 250.82 FEET TO THE WEST RIGHT OF WAY LINE OF THE AFOREMENTIONED LINDBERGH BOULEVARD;

THENCE ALONG SAID WEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 01 DEGREES 00 MINUTES 47 SECONDS EAST, A DISTANCE OF 256.89 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 105.09 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 10.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 30.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 40.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 300.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 10.00 FEET AND SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 847.31 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND CONTAINING 4,171,444 SQUARE FEET OR 95.763 ACRES IS BASED UPON AN ACTUAL URBAN CLASS BOUNDARY SURVEY DONE IN ACCORDANCE WITH THE CURRENT MISSOURI STANDARDS FOR PROPERTY BOUNDARY SURVEYS, SUBJECT TO ALL EASEMENTS, RESTRICTIONS, RESERVATIONS, CONDITIONS OF RECORD AND NOT OF RECORD, IF ANY.

EXHIBIT B

DEPICTION OF REDEVELOPMENT PROJECT/CONCEPT SITE PLAN



B-1

EXHIBIT C

COMPETITIVE BIDDING REQUIREMENTS

OLIA VILLAGE DEVELOPMENT PROJECT
10300 OLIVE BOULEVARD, CREVE COUER, MISSOURI

Bidding Procedure

1. Procedural Requirements:

The Developer shall require for the Site Work (this procedure is not required for any work specific to the development on each of the 17 private lots within the Redevelopment Area) that parties contracting on behalf of the Developer or its designee shall follow the procedure set forth below in relation to all bids:

(a) at least three bids shall be solicited for each category of work to pre-qualified bidders;

(b) all bids shall be in writing; and

(c) all bids shall contain the following information: name of the firm, experience of the firm, its ability to meet time schedules, and the cost of services, including allowances if applicable.

2. Evaluating the Bids:

After the Developer or its designee has reviewed and investigated all bids received, it will consider the following factors in determining the lowest and best bidder:

(a) the ability, capacity and skill of the bidder to perform the contract or provide the services required;

(b) whether the bidder can perform the contract or provide the services promptly or within the required time period without delay or interference;

(c) the quality of performance of previous contracts or services;

(d) the previous and existing compliance by the bidder with applicable laws and ordinances;

(e) the financial resources and the ability of the bidder to perform the contract or provide the services; and

(f) the quality, availability and adaptability of the supplier or services.

3. Rejection of Bids:

The Developer or its designee may, in its sole discretion, reject any and all bids if such bids do not conform to the requirements of the plans, specifications and profiles or if the bids exceed the Developer's cost estimate. The Developer or its designee may also re-advertise or re-solicit bids whenever it is deemed to be in the best interest of the Developer.

Awarding the Contract

1. Requirements for Contract:

The Developer or its designee will approve and award contracts to successful bidders and shall enter into written contracts which set forth the terms thereof, provide for the completion of such work according to the plans and specifications and within the time agreed upon, and prescribe the manner in which payment for the same shall be made. Further, the contract shall provide that in no event is the Developer or its designee liable for any negligence causing or tending to cause damage to private property, or for the payment of any sum whatsoever for work done under such contract. Also, the instructions to bidders, plans, specifications and profiles shall be attached to such contract and made a part thereof.

As part of each contract, the Developer or its designee shall reserve the right to make any additions to, omissions from, or changes or substitutions for the work or materials called for by the plans and specifications. Further, the contract shall provide that the Developer or its designee is not liable for any additional work or material unless the Developer or its designee agrees to such additional work or material and the cost thereof.

2. Performance and Payment Bonds:

With respect to any improvements that will be dedicated to the City or another governmental entity, the Developer or its designee will either (a) require that the bidder furnish a performance bond and a labor and material payment bond in the full amount of the contract price, conditioned on the bidder faithfully and completely complying with all the terms and conditions of the contract, and the bidder paying for all labor and material that are used in the work and provided for in such contract, paying all insurance premiums, and holding the Developer or its designee harmless on account of any damage which may accrue to any person by reason of the negligence of such bidder in performing such work or against any liens growing out of such labor performed or materials furnished (a "Performance and Payment Bond"), or (b) to the extent that the City Code specifically requires some other security, escrow or assurance with respect to such improvements, comply with the applicable provisions of the City Code in lieu of requiring a Performance and Payment Bond. For purposes of clarity, to the extent that a Performance and Payment Bond is provided with respect to such improvements, the Developer or its designee will not be required to comply with any provisions of the City Code that specifically require any other security, escrow or assurance with respect to such improvements.

For any improvements that will not be dedicated to the City or another governmental entity, the Developer or its designee need not require that the bidder furnish a Performance and Payment Bond or any other security, escrow or assurance (unless otherwise required to do so under the City Code), but the Developer may, in its sole discretion, so require. For purposes of clarity, to the extent that a Performance and Payment Bond is provided with respect to such improvements, the Developer or its designee will not be required to comply with any provisions of the City Code that specifically require any other security, escrow or assurance with respect to such improvements.

With respect to improvements that will be dedicated to the Missouri Highways and Transportation Commission or a local transportation authority other than the City, the Developer or its designee will require that the bidder provide a Performance and Payment Bond or any other security, escrow or assurance as may be required by the Missouri Highways and Transportation Commission or such other local transportation authority that will enter into a mutually satisfactory agreement regarding ownership and future maintenance of the improvements to be undertaken by the bidder.

3. Prevailing Wage:

All contracts for the construction of any improvements that will be dedicated to the City or another governmental entity shall provide that all contractors and subcontractors, exclusive of those contractors or subcontractors performing maintenance work, shall be paid the prevailing hourly wage that is paid for work of similar character in the locality, as provided for in the prevailing wage determination on file with the Developer or the locality. Such a requirement shall extend only to those workmen employed directly by contractors or subcontractors in actual construction work on the job site for the project or in hauling materials or equipment for some phase of the construction to the job site for the project, other than the mere transportation to the site of construction.

4. Contracts for Professional Services; Prohibition against Contingent Fees:

Any contract entered into by the Developer or its designee for architectural, engineering, land surveying or other professional services must be negotiated at a fair and reasonable price on the basis of demonstrated competence and qualifications for the type of services required. Each contract entered into by the Developer or its designee for professional services shall contain a complete prohibition against any contingent fees.

EXHIBIT D

FORM OF FEDERAL WORK AUTHORIZATION PROGRAM AFFIDAVIT

STATE OF _____)
) SS
COUNTY OF _____)

I, the undersigned, am over the age of 18 years and have personal knowledge of the matters stated herein.

I am a duly authorized officer of 10300 Olive Dev LLC, a Missouri limited liability company (the *"Developer"*), and am authorized to attest to the matters set forth herein.

The Developer has no employees and is not expected to have any employees in the future. All employment matters related to projects undertaken by the Developer in the City of Creve Coeur, Missouri, will be administered by its affiliate, _____ (*"_____"*). I hereby affirm _____'s enrollment and participation in a "federal work authorization program" as defined in Section 285.525 of the Revised Statutes of Missouri, as amended.

_____ does not knowingly employ any person who is an "unauthorized alien" as defined in Section 285.525 of the Revised Statutes of Missouri, as amended.

Further Affiant Sayeth Not.

10300 OLIVE DEV LLC

By: _____
Name: _____
Title: _____

Subscribed and sworn to before me this _____ day of _____, 20___.

_____
Notary Public

My Commission Expires: _____

EXHIBIT E

FORM OF LOT DEVELOPMENT AGREEMENT

THIS LOT DEVELOPMENT AGREEMENT (this "Agreement") is made and entered into as of this _____ day of _____, 20___, by and between the **CITY OF CREVE COEUR, MISSOURI**, a home rule city and political subdivision organized and existing under the laws of the State of Missouri (the "City"), and **10300 OLIVE DEV LLC**, a Missouri limited liability company (the "Developer" and, together with the City, the "Parties"). *[*Note: if the Private Development is being undertaken by a Sub-Developer, the Sub-Developer shall be named herein and the performance obligations attributed to the Developer shall instead be attributed to the Sub-Developer.*]*

RECITALS:

A. The City, the Developer, 10300 Olive LLC, and Olia Village Redevelopment Corporation entered into a Master Redevelopment Agreement dated as of _____, 2024 (the "Redevelopment Agreement"), relating to the development of certain property within the City described therein (as further defined in the Redevelopment Agreement, the "Redevelopment Area"). On _____, 2024, the Redevelopment Agreement was recorded with the St. Louis County Recorder of Deeds as Document No. _____.

B. The Developer desires to undertake, pursuant to this Agreement, the "Private Development" (as described on **Exhibit B**, attached hereto and incorporated herein by reference) on Lot ___ (as legally described on **Exhibit A**, attached hereto and incorporated herein by reference, the "Property" and as shown on the Concept Site Plan attached as **Exhibit B** to the Redevelopment Agreement).

C. The Redevelopment Agreement requires the City, the Developer and any Sub-Developer (as defined in the Redevelopment Agreement) to enter into a Lot Development Agreement with respect to the development or redevelopment of privately-owned buildings (and associated parking lots and structures) within the Redevelopment Area.

D. This Agreement is in substantially the form of the Lot Development Agreement attached as **Exhibit E** to the Redevelopment Agreement, and therefore, no further action by the City Council is required in connection with the execution of this Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the above premises and the mutual covenants set forth in this Agreement, the City and the Developer hereby agree as follows:

SECTION 1. MEANING OF TERMS

Section 1.1. Definitions. Capitalized words and terms that are not defined herein shall have the meanings assigned to such words and terms in the Redevelopment Agreement.

Section 1.2. Rules of Construction. Words of the masculine gender shall be deemed and construed to include correlative words of the feminine and neuter genders. Unless the context otherwise indicates, words importing the singular number shall include the plural and vice versa, and words importing persons shall include firms, associations and corporations, including governmental entities, as well as natural persons.

Section 1.3. Recitals; Other Items Incorporated into this Agreement. The recitals contained in this Agreement are important and material parts of this Agreement and are hereby acknowledged and incorporated by reference and made a part of this Agreement. The provisions of Chapter 353, the Redevelopment Agreement and the Development Plan are also hereby incorporated by reference and made a part of this Agreement.

SECTION 2. IMPLEMENTATION OF THE PRIVATE DEVELOPMENT

Section 2.1. Property Acquisition and Construction Costs. The Developer shall pay all costs associated with the acquisition of the Property and the construction of the Private Development.

Section 2.2. Developer's Control over the Private Development. Subject to the requirements of this Agreement and, specifically, the provisions set forth in **SECTION 4**, the Developer shall have complete and exclusive control over the implementation and timing of the Private Development and the management and operation of the Private Development and the Property.

Section 2.3. Developer to Adhere to All Applicable Regulations. To the extent that any federal, state, or local law, statute, ordinance, rule, regulation, executive order or code (each, an "Applicable Regulation") applies to any aspect of the Property or construction of the Private Development, the Developer covenants and agrees to take all such actions as are necessary to materially comply with such Applicable Regulation, and the Developer, the Property, and the Private Development shall each be subject to all lawful inspections in connection therewith.

Section 2.4. Compliance with Redevelopment Agreement Provisions.

a. The Developer shall comply with, and this Agreement shall be subject to, the following provisions of the Redevelopment Agreement with respect to the Property and the Private Development: **Sections 3.2(c)**, **3.3**, **3.4**, **3.6**, **3.9**, **3.11** (but only if this Agreement relates to Lot 11), **4.4**, **5.1**, **5.3**, **5.4**, **6.1(b)**, **6.3(b)** and **6.7**.

b. Without limiting the applicability of the foregoing, the Developer specifically acknowledges **Section 5.1(g)** of the Redevelopment Agreement, which requires all deeds of trust and other security agreements secured by the Redevelopment Project or any portion thereof to recognize that the PILOTs due and owing under the Redevelopment Agreement are to be given the same priority as real property taxes in the event of a foreclosure. The Developer further acknowledges that, pursuant to said section, any deed of trust or other security agreement secured by the Redevelopment Project or any portion thereof that does not contain the required language shall be deemed to include such language, and the party whose obligations are secured by the deed of trust or other security agreement shall be bound by such language as if it were fully set forth therein. The Developer covenants to comply with all requirements of such section.

Section 2.5. Breach and Compliance. In the event of non-compliance with the terms of this Agreement, written notice of the same may be delivered to the Developer by the City, and if the Developer has not corrected such non-compliance within 60 days after receipt of such notice, the City may institute such proceedings as may be necessary or desirable in its opinion to cure and remedy such default, including but not limited to the remedy of specific performance; provided, if such non-compliance cannot be cured within such 60-day period, then the Developer shall be afforded additional time to cure such non-compliance so long as the Developer, within such 60-day period, commences the curing of such default and diligently in good faith prosecutes the same to completion and furnishes evidence thereof to the City.

SECTION 3. LIMITED TAX ABATEMENT

Section 3.1. Limited Tax Abatement. Following the substantial completion of the Private Development, the Fee Owner, the Developer or the Sub-Developer, as applicable, may transfer fee title to the Property to the Redevelopment Corporation in accordance with **Section 3.2(c)** of the Redevelopment Agreement and may receive limited real property tax abatement as set forth in Chapter 353 and **Section 5.1** of the Redevelopment Agreement, subject to the terms hereof and thereof.

Section 3.2. Assignment of Agreement; Developer's Right to Transfer Property. The Developer may assign this Agreement or transfer the Property under the same conditions that the Developer may assign the Redevelopment Agreement or transfer the Property (as such term is used in the Redevelopment Agreement) pursuant to **Section 6.4** thereof.

SECTION 4. FURTHER OBLIGATIONS; REPRESENTATIONS

Section 4.1. Release and Indemnification. The Developer shall defend, hold harmless and indemnify the City and its governing body members, officials, employees, attorneys and agents against any and all claims, demands, actions, causes of action, losses, damages, injuries, liabilities and/or expenses (including reasonable attorneys' fees and court costs) resulting from, arising out of, or in any way connected with: (a) the Developer's failure to comply with any provision of this Agreement or the activities or transactions contemplated herein; (b) the negligence or intentional misconduct of the Developer or an affiliate thereof, or their respective employees and agents; (c) the presence of hazardous wastes, hazardous materials or other environmental contaminants at the Property; (d) any loss of or damage to property or any injury to or death of any person occurring at or about the Property in connection with any activities, acts or omissions of the Developer, a Related Party, or any of their respective contractors, agents or employees; or (e) otherwise arising out of the adoption or administration of this Agreement or the construction or operation of the Private Development. Notwithstanding the foregoing, the Developer shall have no obligation to defend, hold harmless or indemnify the City with respect to any matter or expense resulting from or arising out of the negligence or willful misconduct of the City. The indemnification obligations of the Developer hereunder shall not be assignable or delegable by the Developer without the prior written consent of the City and shall survive termination or cancellation of this Agreement for any reason. In no event shall the City or any official, employee, attorney, agent or representative of the City have any liability to the Developer or to any parent or affiliate of the Developer for damages or otherwise if all or any part of the Development Plan, the Redevelopment Agreement, the grant of limited real property tax abatement or this Agreement is declared invalid or unconstitutional by a final (as to which all rights of appeal have been exhausted or expired) judgment of a court of competent jurisdiction, or if the Developer is prevented from enjoying the rights and privileges of the Developer hereunder.

Section 4.2. Invalidation; Cancellation of Agreement. If Chapter 353, the grant of limited real property tax abatement or this Agreement is declared invalid in whole or in part, then and in any such event, this Agreement shall terminate and no party shall have any further obligation to any other party (whether or not a signatory to this Agreement) hereunder; provided that notwithstanding the foregoing, the obligation of the Developer to defend, hold harmless and indemnify the City under 0 shall survive termination or cancellation of this Agreement for any reason.

Section 4.3. Compliance with Section 285.530 of the Revised Statutes of Missouri, as amended. Contemporaneous with the Developer's execution of this Agreement, the Developer shall, by sworn affidavit in substantially the form of Exhibit C, attached hereto and incorporated herein by reference, and provision of documentation, affirm the Developer's enrollment and participation in a federal work

authorization program with respect to the employees working in connection with the Private Development, all as required by Section 285.530 of the Revised Statutes of Missouri, as amended. The Developer shall also sign and deliver to the City an affidavit affirming that the Developer does not and will not knowingly employ in connection with the Private Development any person who is an unauthorized alien and, if and as required by Section 285.530 of the Revised Statutes of Missouri, as amended, the Developer shall obtain from each contractor employed by or on behalf of the Developer in connection with the Private Development affidavits affirming that such contractors do not and will not knowingly employ in connection with the Private Development any person who is an unauthorized alien.

Section 4.4. Representations of the Developer. The Developer hereby represents and warrants to the City that:

a. The Developer is a duly organized Missouri limited liability company existing and in good standing and duly authorized to do business and subject to service of process in Missouri;

b. The execution and delivery of this Agreement by the Developer will not conflict with or result in a breach of any of the terms of, or constitute a default under, any indenture, mortgage, deed of trust, lease or other agreement or instrument to which the Developer or any parent, affiliate or principal of the Developer is a party or by which the Developer or any parent, affiliate or principal of the Developer is bound or any applicable articles of organization, or operating agreement, or any of the rules or regulations of any governmental authority applicable to the Developer or any parent, affiliate or principal of the Developer;

c. The Developer has full corporate power to execute and deliver and perform the terms and obligations of this Agreement. The Developer has been authorized by all necessary action to execute and deliver this Agreement, which shall constitute the legal, valid and binding obligation of the Developer, enforceable in accordance with its terms, subject to bankruptcy and other laws affecting creditors' rights generally and to general principles of equity;

d. There are no actions or proceedings by or before any court, governmental commission, board, bureau or other administrative agency pending, threatened or affecting the Developer that would impair its ability to perform under this Agreement; and

e. The Developer has obtained, or will obtain as and when required by law, and shall maintain, all government permits, certificates and consents (including, without limitation, environmental approvals required by law) necessary to conduct the Developer's business and to construct, complete and operate the Private Development on the Property.

SECTION 5. MISCELLANEOUS PROVISIONS

Section 5.1. Term of Agreement. This Agreement shall remain in full force and effect until the earlier of (a) the termination of this Agreement by the City or the Developer or (b) the expiration of the limited real property tax abatement on the Property; provided that if any Project Obligations remain outstanding at such time, then upon the expiration of the last to expire of the CID Sales Tax or the TDD Sales Tax. The rights and privileges given to the Developer by this Agreement and the duties and obligations imposed on the Developer shall apply only to the Private Development and the Property.

Section 5.2. Notice. Whenever notice or other communication is called for in this Agreement to be given or is otherwise given, such notice or other communication shall be in writing and shall be personally delivered or transmitted electronically (and receipt confirmed by telephone or electronic read receipt), addressed as follows:

a. If to the City:

City of Creve Coeur, Missouri
Creve Coeur City Hall
300 North New Ballas Road
Creve Coeur, Missouri 63141
Attention: Mark Perkins, City Administrator
Email: mperkins@crevecoeurmo.gov

with copies to:

Curtis, Heinz, Garrett & O'Keefe, P.C.
130 S. Bemiston, Suite 200
St. Louis, Missouri 63105
Attention: Carl Lumley, City Attorney
Email: CLumley@chgolaw.com

and:

Gilmore & Bell, P.C.
One Metropolitan Square, Suite 2000
St. Louis, Missouri 63102
Attention: Mark D. Grimm, Esq.
Email: mgrimm@gilmorebell.com

b. If to the Developer:

c/o Fireside Financial LLC
90 Edwardsville Professional Park
Edwardsville, Illinois 62025
Attention: Kristie Bailey
Email: klbailey@firesidefinancial.com

with copies to:

c/o Jack Matthews Development LLC
3925 Blackburn Road
Edwardsville, Illinois 62025
Attention: Matthew J. Pfund
Email: matt@jackmatthewsdevelopment.com

and:

Armstrong Teasdale LLP
7700 Forsyth Boulevard, Suite 1800
St. Louis, Missouri 63105
Attention: Robert Klahr, Esq.
Email: rklahr@atllp.com

or to such other addresses as the Parties may designate in writing from time to time in accordance with this paragraph.

Section 5.3. Mutual Assistance. The City and the Developer each agrees to take such actions as may be necessary or appropriate to carry out the terms, provisions and intent of this Agreement and to aid and assist each other in carrying out said terms, provisions and intent.

Section 5.4. Severability. The provisions of this Agreement shall be severable. If any word, phrase, term, sentence, paragraph or other portion of this Agreement shall, at any time or to any extent, be invalid or unenforceable, the remainder of this Agreement shall not be affected by such partial invalidity, and each remaining word, phrase, term, sentence, paragraph or other portion of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

Section 5.5 Headings; Agreement Preparation. The headings and captions of this Agreement are for convenience and reference only and in no way define, limit or describe the scope or intent of this Agreement or any provision hereof and shall in no way be deemed to explain, modify, amplify or aid in the interpretation or construction of the provisions of this Agreement. In any interpretation, construction or determination of the meaning of any provision of this Agreement, no presumption whatsoever shall arise from the fact that the Agreement was prepared by or on behalf of any party hereto.

Section 5.6. Choice of Law; Venue. This Agreement and its performance shall be deemed to have been fully executed, made by the Parties in, governed by and construed in accordance with the laws of the State of Missouri applicable to contracts made and to be performed wholly within such state, without regard to choice or conflict of law provisions. The Parties agree that any action at law, suit in equity or other judicial proceeding arising out of this Agreement shall be instituted only in the St. Louis County Circuit Court or the U.S. District Court for the Eastern District of Missouri, and each Party waives any objection based upon venue or *forum non conveniens* or otherwise.

Section 5.7. Entire Agreement; Amendments; No Waiver by Prior Actions. The Parties agree that this Agreement shall constitute the entire agreement among the Parties and no other agreements or representations other than those contained in this Agreement have been made by the Parties. This Agreement shall be amended only in writing and effective when signed by the duly authorized agents of the Parties. The failure of any Party to insist in any one or more cases upon the strict performance of any term, covenant or condition of this Agreement to be performed or observed by another Party shall not constitute a waiver or relinquishment for the future of any such term, covenant or condition.

Section 5.8. No Waiver of Sovereign Immunity. Nothing in this Agreement shall be construed or deemed to constitute a waiver of the City's sovereign immunity.

Section 5.9. Relationship of the Parties; No Third-Party Beneficiaries. Nothing contained in this Agreement nor any act of the City or the Developer shall be deemed or construed to create a partnership or agency relationship between or among them, and this Agreement is and shall be limited to the specific purposes set out herein. Other than as expressly provided in this Agreement, no Party shall be the agent of, or have any rights to create any obligations or liabilities binding on, another Party. The

Parties do not intend to confer any benefit under this Agreement on any other person or entity other than the Parties hereto.

Section 5.10. Binding Effect. Except as otherwise expressly provided in this Agreement, the covenants, conditions and agreements contained in this Agreement shall bind and inure to the benefit of the Developer and the City and their respective permitted successors and assigns.

Section 5.11. Counterparts. This Agreement may be executed in several counterparts, each of which shall be an original, but all of which shall constitute one and the same instrument.

Section 5.12. Anti-Discrimination Against Israel Act. Pursuant to Section 34.600 of the Revised Statutes of Missouri, as amended, the Developer certifies it is not currently engaged in and shall not, for the duration of this Agreement, engage in a boycott of goods or services from (a) the State of Israel, (b) companies doing business in or with the State of Israel or authorized by, licensed by or organized under the laws of the State of Israel or (c) persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the Parties have set their hands and seals as of the day and year first written above.

CITY OF CREVE COEUR, MISSOURI

(SEAL)

By: _____
Mark Perkins, City Administrator

ATTEST:

_____
Kellie Henke, City Clerk

ACKNOWLEDGMENT

STATE OF MISSOURI)
) SS.
COUNTY OF ST. LOUIS)

On this _____ day of _____, 2024, before me appeared **MARK PERKINS**, to me personally known, who, being by me duly sworn, did say that he is the City Administrator of the **CITY OF CREVE COEUR, MISSOURI**, a home rule city, and that he is authorized to sign the foregoing instrument on behalf of said city, and acknowledged that he executed said instrument as said city's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public - State of Missouri
Commissioned in _____

My Commission Expires: _____

10300 OLIVE DEV LLC

By: _____
Name: _____
Title: _____

ACKNOWLEDGMENT

STATE OF _____)
) SS.
COUNTY OF _____)

On this _____ day of _____, 2024, before me appeared _____, to me personally known, who, being by me duly sworn, did say that s/he is the _____ of **10300 OLIVE DEV LLC**, a Missouri limited liability company, and that s/he is authorized to sign the foregoing instrument on behalf of said company, and acknowledged that s/he executed said instrument as said company's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public - State of Missouri
Commissioned in _____

My Commission Expires: _____

EXHIBIT A TO LOT DEVELOPMENT AGREEMENT

LEGAL DESCRIPTION OF THE PROPERTY

The land situated in the County of St. Louis, State of Missouri, and described as follows:

[*To be inserted*]

EXHIBIT B TO LOT DEVELOPMENT AGREEMENT

DESCRIPTION OF THE PRIVATE DEVELOPMENT

[*To be inserted*]

EXHIBIT C TO LOT DEVELOPMENT AGREEMENT

FORM OF AFFIDAVIT

EVIDENCING COMPLIANCE WITH THE WORK AUTHORIZATION LAW

STATE OF _____)
) SS
COUNTY OF _____)

I, the undersigned, am over the age of 18 years and have personal knowledge of the matters stated herein.

I am a duly authorized officer of 10300 Olive Dev LLC, a Missouri limited liability company (the *"Company"*), and am authorized to attest to the matters set forth herein.

The Company has no employees and is not expected to have any employees in the future. All employment matters related to projects undertaken by the Company in the City of Creve Coeur, Missouri, will be administered by its affiliate, _____ (*"*_____*"*). I hereby affirm _____'s enrollment and participation in a "federal work authorization program" as defined in Section 285.525 of the Revised Statutes of Missouri, as amended.

_____ does not knowingly employ any person who is an "unauthorized alien" as defined in Section 285.525 of the Revised Statutes of Missouri, as amended.

Further Affiant Sayeth Not.

10300 OLIVE DEV LLC

By: _____
Name: _____
Title: _____

Subscribed and sworn to before me this _____ day of _____, 20___.

_____
Name: _____
Notary Public in and for said State

My Commission Expires: _____

EXHIBIT F

FORM OF CERTIFICATE OF REIMBURSABLE DISTRICT PROJECT COSTS

Certificate of Reimbursable District Project Costs

TO: City of Creve Coeur, Missouri
Creve Coeur City Hall
300 North New Ballas Road
Creve Coeur, Missouri 63141
Attention: Mark Perkins, City Administrator

Re: Olia Village Redevelopment Project

Terms not otherwise defined herein shall have the meanings ascribed to such terms in the Master Redevelopment Agreement dated as of _____, 2024 (the "*Agreement*") among 10300 Olive LLC, 10300 Olive Dev LLC (the "*Developer*"), the City of Creve Coeur, Missouri (the "*City*"), and Olia Village Redevelopment Corporation. In connection with said Agreement, the undersigned hereby states and certifies that:

1. A total of $_____ in Reimbursable District Project Costs was incurred in connection with the acquisition and construction of the [*Site Work*][*Private Development on Lot _____*], as shown on **Schedule 1**, attached hereto and incorporated herein by reference. Attached are itemized invoices, receipts or other documentation evidencing that all such costs have been paid or incurred and qualify as Reimbursable District Project Costs under the Agreement.

2. Of the total Reimbursable District Project Costs, $_____ are eligible for reimbursement under the CID Act and $_____ are eligible for reimbursement under the TDD Act. Each item listed on **Schedule 1** for which reimbursement is requested is noted as such.

3. The Reimbursable District Project Costs have been paid by the Developer, are reimbursable under the Agreement and shall be reimbursed by the CID or the TDD. A copy of this Certificate is being delivered simultaneously to the CID or the TDD, as applicable.

4. No Reimbursable District Project Cost listed on **Schedule 1** has been included in any other certificate previously filed with the City.

5. There has not been filed with or served upon the Developer any notice of any lien, right of lien or attachment upon or claim affecting the right of any person, firm or corporation to receive payment of the amounts stated in this request, except to the extent any such lien is being contested in good faith.

6. The [*Site Work*][*Private Development on Lot _____*] has been performed in a good and workmanlike manner and in accordance with the Approved Site Plan, the Agreement and any applicable Lot Development Agreements.

7. The Developer is not in material default or breach of any term or condition of the Agreement.

Dated this _____ day of _____, 20___.

10300 OLIVE DEV LLC

By: _____
[Name], [Title]

Approved this _____ day of _____, 20___:

CITY OF CREVE COEUR, MISSOURI

By: _____
[Name], [Title]

EXHIBIT G

FORM OF COMPLETION CERTIFICATE

Completion Certificate

The undersigned, **[*10300 OLIVE DEV LLC/[NAME OF SUB-DEVELOPER FOR LOTS 1 AND 2 OR OTHER PORTIONS OF THE PRIVATE DEVELOPMENT RELATED TO THE MIXED-USE DEVELOPMENT]*]** (the *"Sub-Developer"*), pursuant to that certain Master Redevelopment Agreement dated as of _____, 2024 (the "*Agreement*") among 10300 Olive LLC, 10300 Olive Dev LLC (the *"Developer*"), the City of Creve Coeur, Missouri (the "*City*"), and Olia Village Redevelopment Corporation [*and that certain Lot Development Agreement dated as of _____, 20___ (the *"Lot Development Agreement"*) among the City, the Developer and the Sub-Developer*], hereby certifies to the City as follows:

1. As of _____, 20___, the [*Site Work*][*Private Development on Lots 1 and 2*][*Mixed-Use Development*] has been substantially completed in accordance with the Agreement [*and the Lot Development Agreement*].

2. The [*Site Work*][*Private Development on Lots 1 and 2*][*Mixed-Use Development, including the Private Development on all Lots associated therewith,*] has been completed in a good and workmanlike manner and in accordance with the Agreement [*and the Lot Development Agreement*], the Approved Site Plan and all Governmental Approvals applicable thereto.

3. Lien waivers for the [*Site Work*][*Private Development on Lots 1 and 2*][*Private Development on all Lots associated with the Mixed-Use Development*] have been obtained.

4. This Completion Certificate is accompanied by one or more architect's or engineer's certificate(s) of substantial completion on AIA Form G-704 (or the substantial equivalent thereof), which, when taken together, certify that the [*Site Work*][*Private Development on Lots 1 and 2*][*Mixed-Use Development*] has been substantially completed in accordance with the Agreement [*and the Lot Development Agreement*].

5. This Completion Certificate is being issued by the [*Developer/Sub-Developer*] to the City in accordance with the Agreement to evidence the [*Developer's/Sub-Developer's*] satisfaction of all obligations and covenants in the Agreement [*and the Lot Development Agreement*] to complete the [*Site Work*][*Private Development on Lots 1 and 2*][*Mixed-Use Development*].

6. The City's acceptance (below) or the City's deemed acceptance (pursuant to **Section 3.8(b)** of the Agreement) and the recordation of this Completion Certificate with the St. Louis County Recorder of Deeds shall evidence the satisfaction of the [*Developer's/Sub-Developer's*] agreements and covenants to complete the [*Site Work*][*Private Development on Lots 1 and 2*][*Mixed-Use Development*] pursuant to the Agreement [*and the Lot Development Agreement*].

7. The [*Developer/Sub-Developer*], simultaneous with the submission of this Completion Certificate, provided the City with a Certificate of Reimbursable District Project Costs for the [*Site Work*][*Private Development on Lots 1 and 2*][*Private Development on the last Lot(s) to be completed as part of the Mixed-Use Development*].

8. The Mixed-Use Development contains _____ square feet of retail space, of which _____ is sales tax producing, and _____ square feet of restaurant space. [*If the Completion Certificate is for the Mixed-Use Development, include this certification; otherwise, delete.*]

The [*Developer/Sub-Developer*] may record this Completion Certificate in the office of the St. Louis County Recorder of Deeds. This Completion Certificate is given without prejudice to any rights against third parties that exist as of the date hereof or that may subsequently come into being.

Terms not otherwise defined herein shall have the meanings ascribed to such terms in the Agreement.

IN WITNESS WHEREOF, the undersigned has hereunto set his/her hand this _____ day of _____, 20___.

[*10300 OLIVE DEV LLC/SUB-DEVELOPER*]

By: _____
Name: _____
Title: _____

ACCEPTED this _____ day of _____, 20___:

CITY OF CREVE COEUR, MISSOURI

By: _____
Name: _____
Title: _____

(Insert Notary Form(s) and Legal Description)

EXHIBIT H

ABATEMENT EXAMPLES

Abatement Program (imposed on a Lot-by-Lot basis)

- Each year before abatement begins: the *greater of the following shall be paid:*
  - 100% of the real estate taxes actually due and payable on such Lot; or
  - 100% of the real estate taxes that would be due and payable on such Lot if such Lot had an assessed valuation equal to its Base AV.
- Years 1-10: the *sum of the following shall be paid:*
  - To the Fire District, a PILOT equal to 100% of the real estate taxes that would otherwise be due and payable, but for the abatement; plus
  - To the Non-Emergency Districts, the *sum of:*
    - the Unabated Taxes; plus
    - if the Unabated Taxes are less than the taxes that would be due and payable on such Lot's Base Land AV, a PILOT equal to 100% of the difference; plus
    - a PILOT equal to 100% of the taxes that would be due and payable on such Lot's Base Improvements AV, if any; plus
    - a PILOT equal to 25% of the taxes that would be due and payable on such Lot's Incremental AV.
- Years 11-25: the *sum of the following shall be paid:*
  - To the Fire District, a PILOT equal to 100% of the real estate taxes that would otherwise be due and payable, but for the abatement; plus
  - To the Non-Emergency Districts, a PILOT equal to 50% of the real estate taxes otherwise due and payable on such Lot, but for the abatement.

Example #1 (Residential Building)

Assumptions:

- Fire District's current tax rate = $0.9080 per $100 of residential assessed value
- Non-Emergency Districts' current tax rate = $6.0382 per $100 of residential assessed value
- Base Land AV = $383,759
- Base Improvements AV = $1,299,525
- Base AV = $1,683,284
- Interim AV = $383,759
- Post-Redevelopment Land AV = $1,190,451
- Post-Redevelopment Improvements AV = $9,462,084
- Post-Redevelopment AV = $10,652,535
- Incremental AV = $8,969,251

Residential Taxes Before Abatement Begins

Fire District (since Interim AV < Base AV, 100% taxes due on Base AV)	$1,683,284 / $100 * $0.9080 = $15,284
Non-Emergency Districts (since Interim AV < Base AV, 100% taxes due on Base AV)	$1,683,284 / $100 * $6.0382 = $101,640
Total Taxes	$116,924

Residential Unabated Taxes + PILOTs Years 1-10

Fire District (PILOT: 100% taxes otherwise due)	$10,652,535 / $100 * $0.9080 = $96,725
Non-Emergency Districts (Unabated Taxes)	$383,759 / $100 * $6.0382 = $23,172
Non-Emergency Districts (PILOT: 100% taxes due on Base Improvements AV)	$1,299,525 / $100 * $6.0382 = $78,468
Non-Emergency Districts (PILOT: 25% taxes due on Incremental AV)	$8,969,251 / $100 * $6.0382 * 25% = $135,395
Total Unabated Taxes + PILOTs	$333,760

Residential PILOTs Years 11-25

Fire District (PILOT: 100% taxes otherwise due)	$10,652,535 / $100 * $0.9080 = $96,725
Non-Emergency Districts (PILOT: 50% taxes otherwise due)	$10,652,535 / $100 * $6.0382 * 50% = $321,611
Total PILOTs	$418,336

Example #2 (Commercial Building)

Assumptions:

- Fire District's current tax rate = $1.1460 per $100 of commercial assessed value
- Non-Emergency Districts' current tax rate = $8.0941 per $100 of commercial assessed value
- Base Land AV = $751,569
- Base Improvements AV = $0
- Base AV = $751,569
- Interim AV = $1,874,000
- Post-Redevelopment Land AV = $2,721,200
- Post-Redevelopment Improvements AV = $2,958,000
- Post-Redevelopment AV = $5,679,200
- Incremental AV = $4,927,631

Commercial Taxes Before Abatement Begins

Fire District (since Interim AV > Base AV, 100% taxes due on Interim AV)	$1,874,000 / $100 * $1.1460 = $21,476
Non-Emergency Districts (since Interim AV > Base AV, 100% taxes due on Interim AV)	$1,874,000 / $100 * $8.0941 = $151,683
Total Taxes	$173,159

Commercial Unabated Taxes + PILOTs Years 1-10

Fire District (PILOT: 100% taxes otherwise due)	$5,679,200 / $100 * $1.1460 = $65,084
Non-Emergency Districts (Unabated Taxes)	$751,569 / $100 * $8.0941 = $60,832
Non-Emergency Districts (PILOT: 25% taxes due on Incremental AV)	$4,927,631 / $100 * $8.0941 * 25% = $99,712
Total Unabated Taxes + PILOTs	$225,628

Commercial PILOTs Years 11-25

Fire District (PILOT: 100% taxes otherwise due)	$5,679,200 / $100 * $1.1460 = $65,084
Non-Emergency Districts (PILOT: 50% taxes otherwise due)	$5,679,200 / $100 * $8.0941 * 50% = $229,840
Total PILOTs	$294,924

Example #3 (Mixed-Use Building)[1]:

Assumptions:

- Fire District's current tax rate = $0.9080 per $100 of residential assessed value
- Fire District's current tax rate = $1.1460 per $100 of commercial assessed value
- Non-Emergency Districts' current tax rate = $6.0382 per $100 of residential assessed value
- Non-Emergency Districts' current tax rate = $8.0941 per $100 of commercial assessed value
- Base Land AV = $259,162
- Base Improvements AV = $0
- Base AV = $259,162
- Interim AV (commercial) = $200,355
- Post-Redevelopment Land AV (residential) = $677,103
- Post-Redevelopment Improvements AV (residential) = $5,381,831
- Post-Redevelopment AV (residential) = $6,058,934
- Incremental AV (residential) = $6,058,934
- Post-Redevelopment Land AV (commercial) = $1,287,537
- Post-Redevelopment Improvements AV (commercial) = $1,500,292
- Post-Redevelopment AV (commercial) = $2,787,829
- Incremental AV (commercial) = $2,528,667

Taxes Before Abatement Begins

Fire District (since Interim AV < Base AV, 100% taxes due on Base AV)	$259,162 / $100 * $1.1460 = $2,970
Non-Emergency Districts (since Interim AV < Base AV, 100% taxes due on Base AV)	$259,162 / $100 * $8.0941 = $20,977
Total Taxes	$23,947

[1] Assumes property is assessed solely as commercial property prior to redevelopment.

Unabated Taxes + PILOTs Years 1-10

Residential	
Fire District (PILOT: 100% taxes otherwise due)	$6,058,934 / $100 * $0.9080 = $55,015
Non-Emergency Districts (PILOT: 25% taxes due on Incremental AV)	$6,058,934 / $100 * $6.0382 * 25% = $91,463
Subtotal Unabated Taxes + PILOTs	$146,478

Commercial	
Fire District (PILOT: 100% taxes otherwise due)	$2,787,829 / $100 * $1.1460 = $31,949
Non-Emergency Districts (Unabated Taxes)	$259,162 / $100 * $8.0941 = $20,977
Non-Emergency Districts (PILOT: 25% taxes due on Incremental AV)	$2,528,667 / $100 * $8.0941 * 25% = $51,169
Subtotal Unabated Taxes + PILOTs	$104,095
Total Unabated Taxes + PILOTs	$250,573

PILOTs Years 11-25

Residential	
Fire District (PILOT: 100% taxes otherwise due)	$6,058,934 / $100 * $0.9080 = $55,015
Non-Emergency Districts (PILOT: 50% taxes otherwise due)	$6,058,934 / $100 * $6.0382 * 50% = $182,925
Subtotal PILOTs	$237,940
Commercial	
Fire District (PILOT: 100% taxes otherwise due)	$2,787,829 / $100 * $1.1460 = $31,949
Non-Emergency Districts (PILOT: 50% taxes otherwise due)	$2,787,829 / $100 * $8.0941 * 50% = $112,825
Subtotal PILOTs	$144,774
Total PILOTs	$382,714

* * *

EXHIBIT I

FORM OF COOPERATION AGREEMENT

THIS COOPERATION AGREEMENT (this "Agreement") is made and entered into as of _____, 2024, by and among the **CITY OF CREVE COEUR, MISSOURI**, a home rule city and political subdivision of the State of Missouri (the "City"), the **OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT**, a community improvement district and political subdivision of the State of Missouri (the "CID"), the **OLIA VILLAGE TRANSPORTATION DEVELOPMENT DISTRICT**, a transportation development district and political subdivision of the State of Missouri (the "TDD"), **10300 OLIVE LLC**, a Missouri limited liability company (the "Fee Owner"), and **10300 OLIVE DEV LLC**, a Missouri limited liability company (the "Developer" and, together with the City, the CID, the TDD, and the Fee Owner, the "Parties"). All capitalized terms not otherwise defined herein shall have the meanings ascribed to such terms in the hereinafter-defined Redevelopment Agreement.

RECITALS:

1. The City, the Developer, the Fee Owner, and Olia Village Redevelopment Corporation entered into a Master Redevelopment Agreement dated as of _____, 2024 (the "Redevelopment Agreement").

2. The Parties desire to enter into this Agreement, as contemplated by the Redevelopment Agreement, to set forth their respective rights and responsibilities regarding the construction and financing of projects to be funded by the CID and/or the TDD (the "CID Project" and the "TDD Project," respectively).

AGREEMENT:

NOW, THEREFORE, in consideration of the premises and the mutual covenants and agreements contained in this Agreement, the Parties agree as follows:

Section 1. Authority of the City. The City has full constitutional and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary City proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the City, enforceable in accordance with its terms.

Section 2. Authority of the CID. The CID has full constitutional and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary CID proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the CID, enforceable in accordance with its terms.

Section 3. Authority of the TDD. The TDD has full constitutional and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary TDD proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the TDD, enforceable in accordance with its terms.

Section 4. Authority of the Fee Owner. The Fee Owner has full corporate and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary corporate proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the Fee Owner, enforceable in accordance with its terms.

Section 5. Authority of the Developer. The Developer has full corporate and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary corporate proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the Developer, enforceable in accordance with its terms.

Section 6. CID Sales Tax; TDD Sales Tax.

(a) Promptly following the approval of this Agreement by the CID's Board of Directors (the "CID Board"), the CID shall adopt a resolution to impose a community improvement district sales and use tax (the "CID Sales Tax"). The Fee Owner and the City will promptly cause, through their respective representatives appointed to the CID Board and, with respect to the Fee Owner, in its capacity as a qualified voter, the CID Sales Tax to be levied by the CID and approved by the qualified voters at the rate of not to exceed one percent (1.0%). The CID Sales Tax shall be imposed as soon as possible pursuant to the terms of the CID Act and any other applicable laws and shall not be terminated so long as any Project Obligations issued by or on behalf of the CID remain outstanding and unless otherwise in conformance with Section 67.1545.9 of the CID Act.

(b) Promptly following the approval of this Agreement by the TDD's Board of Directors (the "TDD Board"), the TDD shall adopt a resolution to impose a transportation development district sales tax (the "TDD Sales Tax"). The Fee Owner and the City will promptly cause, through their respective representatives elected to the TDD Board and, with respect to the Fee Owner, in its capacity as a qualified voter, the TDD Sales Tax to be levied by the TDD and approved by the qualified voters at the rate of not to exceed one-half percent (0.5%). The TDD Sales Tax shall be imposed as soon as possible pursuant to the terms of the TDD Act and any other applicable laws and shall not be terminated so long as any Project Obligations issued by or on behalf of the TDD remain outstanding and unless otherwise in conformance with Section 238.235.6 of the TDD Act.

Section 7. CID Special Assessment. Promptly following the approval of this Agreement by the CID Board, the CID Board shall adopt a resolution to impose a community improvement district special assessment (the "CID Special Assessment"). The Fee Owner and the City will promptly cause, through their respective representatives appointed to the CID Board and, with respect to the Fee Owner, in its capacity as both an owner of more than 50% of the assessed value of the real property within the CID and an owner of more than 50% per capita of all of the real property within the CID, the CID Special Assessment to be levied by the CID Board and approved by petition of the owners. In each calendar year that a Lot is subject to the limited tax abatement provided by **Section 5.1** of the Redevelopment Agreement, the CID Special Assessment shall be levied on such Lot at a rate not to exceed the greater of (1) the Actual Abatement Amount or (2) the amount shown on the Annual Special Assessment Schedule. The CID Special Assessment shall be imposed as soon as possible pursuant to the terms of the CID Act and any other applicable laws and shall not be terminated so long as any Project Obligations issued by or on behalf of the CID and secured thereby remain outstanding and unless otherwise in conformance with the CID Act.

Section 8. Continuing Existence of the CID and the TDD.

(a) None of the CID, the City, or the Fee Owner will take any action to dissolve the CID or reduce the rate of the CID Sales Tax or the CID Special Assessment until the funding and construction of

the CID Project are completed, including the payment in full or cancellation of all Project Obligations issued by or on behalf of the CID and secured by the CID Sales Tax Revenues or the CID Special Assessment Revenues, as applicable. Upon the payment in full or cancellation of (1) all Project Obligations issued by or on behalf of the CID and secured by the CID Special Assessment Revenues, the CID will immediately take such steps as may be required to terminate the CID Special Assessment and (2) all Project Obligations issued by or on behalf of the CID and secured by the CID Sales Tax Revenues, the CID will immediately take such steps as may be required to terminate the CID Sales Tax. After all Project Obligations issued by or on behalf of the CID are paid in full or cancelled, the CID will immediately take such steps as may be required to dissolve the CID.

(b) None of the TDD, the City, or the Fee Owner will take any action to dissolve the TDD or reduce the rate of the TDD Sales Tax until the funding and construction of the TDD Project are completed, including the payment in full or cancellation of all Project Obligations issued by or on behalf of the TDD. Upon the payment in full or cancellation of all Project Obligations issued by or on behalf of the TDD, the TDD will immediately take such steps as may be required to terminate the TDD Sales Tax and dissolve the TDD.

Section 9. Governance of the CID.

(a) The Parties acknowledge that the CID will be governed by a board of directors made up of five individuals appointed by the Mayor with the consent of the City Council, three of whom shall be representatives of the owners of real property or businesses operating within the CID and two of whom shall be residents of the City who are qualified and registered to vote and who have no financial interest in any real property or business operating within the CID. Successor directors of the CID shall be appointed as set forth in the petition for the creation of the CID.

(b) The CID shall employ or engage an administrator or legal counsel with experience managing special taxing districts to ensure that the CID complies with this Agreement and all applicable laws and regulations. If the CID (1) fails to comply with any reporting requirement contained in the CID Act or other applicable law for two consecutive years, including, without limitation, timely submittal of annual reports, financial statements and budgets, (2) admits to or is found by a court to have committed two or more violations of Chapter 610 of the Revised Statutes of Missouri, as amended, or (3) is unresponsive to any inquiry or audit initiated by the Missouri State Auditor's office, then the City may designate an administrator or legal counsel for the CID to engage, at the CID's cost, to ensure that the CID complies with this Agreement and all applicable laws and regulations.

(c) Except as expressly provided in **Sections 11** and **12** of this Agreement, unless otherwise approved by the City in its sole and absolute discretion, the CID shall have no authorization to pay any costs, impose any tax, license, fee or assessment (other than the CID Sales Tax and the CID Special Assessment), or incur any obligations.

(d) The Fee Owner, the Developer and the CID shall allow the City and its employees, agents, and representatives to inspect, within three business days after request therefor, all contracts, documents and records pertaining to the CID Project and the CID, including but not limited to the CID Sales Tax, the CID Special Assessment, and the CID's financial statements. In addition, the CID agrees that, before the effective date of the CID Sales Tax, the CID will file Form 4379 with the Missouri Department of Revenue to designate the City's Director of Finance as an authorized person to access all information regarding the CID Sales Tax under Sections 32.057 and 144.121 of the Revised Statutes of Missouri, as amended, so long as permitted under the Revised Statutes of Missouri, as amended.

Section 10. Governance of the TDD.

(a) The Parties acknowledge that the TDD will be governed by a board of directors made up of five representatives of the owners of real property within the TDD, including two persons designated by the City, who will be elected by the owners of real property within the TDD. The Fee Owner, as an owner of real property within the TDD, will cause the election to the board of directors of two persons designated by the City who meet all other qualifications to serve on the board of directors, by designating each such person as an authorized representative of the Fee Owner and voting for such persons.

(b) The TDD shall employ or engage an administrator or legal counsel with experience managing special taxing districts to ensure that the TDD complies with this Agreement and all applicable laws and regulations. If the TDD (1) fails to comply with any reporting requirement contained in the TDD Act or other applicable law for two consecutive years, including, without limitation, timely submittal of annual reports, (2) admits to or is found by a court to have committed two or more violations of Chapter 610 of the Revised Statutes of Missouri, as amended, or (3) is unresponsive to any inquiry or audit initiated by the Missouri State Auditor's office, then the City may designate an administrator or legal counsel for the TDD to engage, at the TDD's cost, to ensure that the TDD complies with this Agreement and all applicable laws and regulations.

(c) Except as expressly provided in **Sections 11** and **13** of this Agreement, unless otherwise approved by the City in its sole and absolute discretion, the TDD shall have no authorization to pay any costs, impose any tax, license, fee or assessment (other than the TDD Sales Tax), or incur any obligations.

(d) The Fee Owner, the Developer and the TDD shall allow the City and its employees, agents, and representatives to inspect, within three business days after request therefor, all contracts, documents and records pertaining to the TDD Project and the TDD, including but not limited to the TDD Sales Tax and the TDD's financial statements. In addition, the TDD agrees that, before the effective date of the TDD Sales Tax, the TDD will file Form 4379 with the Missouri Department of Revenue to designate the City's Director of Finance as an authorized person to access all information regarding the TDD Sales Tax under Sections 32.057 and 144.121 of the Revised Statutes of Missouri, as amended, so long as permitted under the Revised Statutes of Missouri, as amended.

Section 11. Construction of the CID Project and the TDD Project. The Developer shall construct, or cause the construction of, the CID Project and the TDD Project and shall cause all funds to be advanced therefor. The Developer may be reimbursed for the costs thereof from the proceeds of Project Obligations, as further described in **Sections 12** and **13** of this Agreement.

Section 12. Reimbursable CID Project Costs and Project Obligations.

(a) The CID shall establish the "CID Trust Fund," which shall include a "Sales Tax Account" and a "Special Assessment Account." The CID Sales Tax Revenues and the CID Special Assessment Revenues shall be deposited in the Sales Tax Account and the Special Assessment Account, respectively, and disbursed as follows:

(1) first, to pay the CID's operating costs (legal, administrative, insurance, audit, etc.), which amount shall be paid equally from the Sales Tax Account and the Special Assessment Account and shall not exceed $20,000 for calendar year 2024, plus a year-over-year increase of 3% for any subsequent year, or such greater amount as unanimously approved by the members of the CID Board present at the meeting at which a quorum, including the City's two representatives, is present and the increase in the CID's annual operating costs is considered; and

(2) second, to pay Project Obligations, as further described below.

(b) The Developer agrees, upon written request of the CID, to promptly pay any operating costs in excess of the moneys available under (a)(1) above if the CID's revenues are insufficient for that purpose. Any such moneys paid by the Developer may be reimbursed by the CID when sufficient funding is available.

(c) If any Project Obligations have been issued by or on behalf of the CID in accordance with **Article IV** of the Redevelopment Agreement, the CID (1) may use the proceeds thereof to reimburse the Developer for the Reimbursable District Project Costs identified in all approved or deemed approved Certificates of Redevelopment Project Costs and (2) shall use the money available under (a)(2) to pay such Project Obligations; provided, however, that money in the Special Assessment Account shall only be used to pay those Project Obligations secured by the CID Special Assessment Revenues.

(d) If the CID Special Assessment Revenues collected and received by the CID exceed the amount necessary to pay in full Project Obligations payable from the CID Special Assessment Revenues, any excess funds shall be refunded to the owners of such tracts, lots or parcels that paid the final year of CID Special Assessments, pro rata relative to the amounts paid by such owners. Such refunds shall be made by December 31 of the year following the final year of the CID Special Assessments.

Section 13. Reimbursable TDD Project Costs and Project Obligations.

(a) The TDD shall establish the "TDD Trust Fund." All revenues received from the TDD Sales Tax shall be deposited in the TDD Trust Fund and disbursed as follows:

(1) first, to pay the TDD's operating costs (legal, administrative, insurance, audit, etc.), which amount shall not exceed $20,000 for calendar year 2024, plus a year-over-year increase of 3% for any subsequent year, or such greater amount as unanimously approved by the members of the TDD Board present at the meeting at which a quorum, including the City's two representatives, is present and the increase in the TDD's annual operating costs is considered; and

(2) second, to pay Project Obligations, as further described below.

(b) The Developer agrees, upon written request of the TDD, to promptly pay any operating costs in excess of the moneys available under (a)(1) above if the TDD's revenues are insufficient for that purpose. Any such moneys paid by the Developer may be reimbursed by the TDD when sufficient funding is available.

(c) If any Project Obligations have been issued by or on behalf of the TDD in accordance with **Article IV** of the Redevelopment Agreement, the TDD (1) may use the proceeds thereof to reimburse the Developer for the Reimbursable District Project Costs identified in all approved or deemed approved Certificates of Redevelopment Project Costs and (2) shall use the money available under (a)(2) to pay such Project Obligations.

Section 14. Federal Work Authorization Program. Simultaneously with the execution of this Agreement, the Developer shall provide the CID, the TDD, and the City with an affidavit, in substantially the form of **Exhibit D** to the Redevelopment Agreement, and documentation to evidence the Developer's compliance with Section 285.530 of the Revised Statutes of Missouri, as amended.

Section 15. Insurance.

(a) The CID and the TDD will each maintain reasonable levels of insurance throughout its respective existence. Without limiting the generality of the foregoing, the CID and the TDD shall, simultaneously with the execution of this Agreement and annually thereafter through the term of this Agreement, each provide evidence of a directors and officers liability or similar policy (in form and substance reasonably acceptable to the City Attorney) that includes coverage for all suits, claims, costs of defense, damages, injuries, liabilities, costs and/or expenses, including court costs and attorneys' fees and expenses, resulting from, arising out of, or in any way connected with the proceedings of the CID Board or the TDD Board, as applicable, pursuant to the CID Act or the TDD Act, as applicable, and Chapter 610 of the Revised Statutes of Missouri, as amended.

(b) The policies of insurance required pursuant to clause (a) above shall be placed with MOPERM or financially sound and reputable insurers licensed to transact business in the State of Missouri with a financial strength rating of not less than A- and a financial size category of not less than VIII as designated in the most currently available "A.M. Best's" insurance reports. The CID and the TDD, as applicable, shall deliver or cause to be delivered to the City copies of all insurance policies maintained hereunder.

Section 16. Hold Harmless. Notwithstanding anything herein to the contrary, the City shall not be liable to the Fee Owner, the Developer, the CID, or the TDD for damages or otherwise if all or any part of the CID, the TDD, the CID Project, or the TDD Project or any ordinance or resolution of the City adopted in connection therewith is declared invalid or unconstitutional in whole or in part by any court of competent jurisdiction.

Section 17. Successors and Assigns. This Agreement may be assigned by the Fee Owner and/or the Developer in the same manner as allowed for the assignment of the Redevelopment Agreement in **Section 6.4** of the Redevelopment Agreement.

Section 18. Severability. If any term or provision of this Agreement is held to be unenforceable by a court of competent jurisdiction, the remainder shall continue in full force and effect, to the extent the remainder can be given effect without the invalid term or provision.

Section 19. Waiver. The City's failure at any time hereafter to require strict performance by the CID, the TDD, the Fee Owner or the Developer of any provision of this Agreement shall not waive, affect, or diminish any right of the City thereafter to demand strict compliance and performance therewith.

Section 20. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, but all of which shall constitute one and the same agreement.

Section 21. Anti-Discrimination Against Israel Act. Pursuant to Section 34.600 of the Revised Statutes of Missouri, as amended, the Fee Owner, the Developer, the CID, and the TDD each certifies that it is not currently engaged in and shall not, for the duration of this Agreement, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed in their respective names and attested as of the date first above written.

CITY OF CREVE COEUR, MISSOURI

By: _____
Mark Perkins, City Administrator

[SEAL]

ATTEST:

_____
Kellie Henke, City Clerk

OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT

By: _____
Name: _____
Title: Chair

[SEAL]

ATTEST:

By: _____
Name: _____
Title: Secretary

OLIA VILLAGE TRANSPORTATION DEVELOPMENT DISTRICT

By: _____
Name: _____
Title: Chair

[SEAL]

ATTEST:

By: _____
Name: _____
Title: Secretary

10300 OLIVE LLC

By: **10300 Olive Holdings LLC**,
its sole member

By: _____
Name: _____
Title: _____

10300 OLIVE DEV LLC

By: _____
Name: _____
Title: _____

EXHIBIT J

ORDINANCE NO. _____ APPROVING THE DEVELOPMENT PLAN

EXHIBIT K

ESTIMATED PROJECT BUDGET

Table 1: Sources & Uses for Site Preparation and Land Development

Project Cost Sources (Until Development & Lease-Up Complete)			
Debt	$	132,248,826	69.0%
Mezz	$	-	0.0%
Other Sources of Outside Capital	$	-	0.0%
NOI	$	-	0.0%
Exit Proceeds	$	-	0.0%
LP & GP Equity (Excl. Other Capital Need 7 Reserve)	$	59,432,452	31.0%
Project Capital	**$**	**191,681,278**	**100%**

Project Cost Uses			
Land Cost	$	54,750,000	28.6%
Land Closing Costs	$	821,250	0.4%
Non-Cash Adjustment for Land Value	$	-	0.0%
Land Development Costs	$	-	0.0%
Hard Costs	$	113,409,571	59.2%
Soft costs	$	21,370,000	11.1%
Loan Fees	$	234,810.00	0.1%
Loan Interest	$	1,095,648.00	0.6%
Operating losses	$	-	0.0%
Holding Costs on For-Sale	$	-	0.0%
Less Costs Paid by Exit Proceeds During Development	$	-	0.0%
Project Capital	**$**	**191,681,279**	**100%**

Table 2: Sources for Lots Developer Plans to Retain Less than 10% Equity Position

Est. Project Cost Sources (Lots 1-6 & 14)			
Debt (Loan @ 7.5% interest)	$	192,434,550	54%
Equity	$	161,338,523	46%
Project Capital	**$**	**353,773,073**	**100%**

Project Cost Uses (Lots 1-6 & 14)			
Parcel Development of Lots (Incl. Hard Costs, Soft Cost & Interest Payments	$	353,773,073	100%
Project Capital	**$**	**353,773,073**	**100%**

Table 3: Sources for Lots to be Developed by Unaffiliated Developer

Est. Project Cost Sources (Lots 7-13, 15, & 16)			
Debt	$	263,615,378	60%
Equity	$	175,743,585	40%
Project Capital	**$**	**439,358,963**	**100%**

Project Cost Uses (Lots 7-13, 15, & 16)			
Parcel Development of Lots (Incl. Hard Costs, Soft Cost & Interest Payments	$	439,358,963	100%
Project Capital	**$**	**439,358,963**	**100%**

ESTIMATED EXTRAORDINARY EXPENSES TO COMPLETE THE SITE WORK

Table of Extraordinary Expenses				
No.	**Item**	**Cost ($ Million)**		**Explanation**
1	Utility Infrastructure	$	16.2	Currently served from Bayer East, removal & new install
2	City of St Louis Water Main fixed Improvements	$	9.7	
	Locating, engineering, coordination of exisitng and new utilities.	$	1.0	Major coordination with existing conduit and new utilities.
	Temporary bridging locations to protect conduits from const loads.	$	0.4	Temporary crossings to limit loads on existing conduits.
	Width of main street impacted by easements.	$	1.5	Lost land use due to easement requirements.
	Structures required to permanently bridge conduits at deep fills.	$	3.2	Required by City Water Division
	Relocation and installation of air blow valves	$	1.1	Required by City Water Division
	Imports and fills required for site grades to work with conduit elevations.	$	2.5	Fills required to make land usable and street grades work.
3	Missouri Department of Transportation Improvements	$	4.4	
	Roadway improvements	$	2.8	Olive Blvd
	Signalization	$	1.2	Olive at Pavillion
	Irrigation	$	0.2	Olive median
	Shared use path along Lindbergh	$	0.1	Cloverleaf to Vantage
	Olive Crosswalk	$	0.1	Olive at Pavilion
4	Lindbergh at Bayer Drive Overpass	$	2.3	$180,000 maintenance/def maintenance cost. 50% ownership 25 years at $90,000 = $2.25 Million
5	Demolition, abatement and repurpose of existing improvements	$	31.7	
	Building decommissioned for repurpose	$	2.5	K-café, G, F, and J buildings decommissioned for reuse in lieu of landfill/waste/FF&E.
	Hazardous material abatement	$	5.5	asbestos removal
	Demolition to allow for re-purpose in lieu of landfill	$	20.0	39 N Global Plan - Includes costs of interior demolition/deconditioning to re-purpose bldgs G and K. Full demolition/tear down is much cheaper.
	K-Café, Lot #9 land impact to ensure feasable to reuse and protect	$	3.7	Desire for k-Café to be repurposed by citizens and historians of the Historical Society. Includes costs associated with decomissioning of utilities, emptying out scrap metal and other trash/debris manually throughout the building
6	Structured Parking	$	51.0	3,000 spacs of structured parking at $17k premium
7	Topography, protected wetlands, stormwater detention	$	16.1	
	Environmental engineering and wetlands mitigation	$	2.0	Existing COE, MSD, EPA issues on-site
	Mass demo and grading	$	3.0	Sitework
	Stormwater system to improve exiting velocities	$	5.0	Back to grass numbers
	Earth retaining systems	$	4.7	Create upper plateau for high density and main street
	Dealing with overland flow onto property	$	1.4	133 acres of off-site watershed
8	Relocation of Old Olive Intersection	$	2.5	Improves intersection for future west parcel
	Onsite improvements	$	1.0	
	Offsite improvements	$	1.5	
	Total	$	133.9	
	Total (Less Lindbergh Overpass)	$	131.6	

Olia Village Development - Question and Answer

What will the Olia Village Project consist of?

A site concept plan for the 96-acre Olia Village development was approved by the City Council on November 13, 2023. It includes a mix of retail, restaurant, hotel, office and housing over 17 separate lots. The development is centered around a "Main Street", providing a pedestrian-oriented environment which the city's comprehensive plan has referenced as a major objective for the city for many years.

The proposed development is a joint venture between Jack Matthews Development LLC and a family trust whose trustee is a principal of Fireside Financial LLC.

What tax incentives are proposed?

- Real Property Tax abatement, as provided under Chapter 353 of the Missouri Revised Statutes.
    - 75% of real property taxes abated years 1-10 for each of the 17 lots (except as noted below), starting upon completion of development of each lot, exclusive of land value and improvements as of 2023
    - 50% of real property taxes abated years 11-25
    - Notwithstanding the above, there will be no tax abatement on any lot upon which townhomes or other single-family residences are constructed
- Formation of a Community Improvement District (CID) – 1% sales tax for up to 27 years and a special assessment in coordination with the proposed tax abatement
- Formation of a Transportation Development District (TDD) – ½% sales tax for up to 40 years
- Sales and use tax exemption on qualified building materials for construction of site work, as provided under Chapter 100 of the Missouri Revised Statutes

Why is Creve Coeur considering tax incentives for the Olia Village development?

The City of Creve Coeur has provided tax incentives on very few occasions over the last 25 years. However, the size and location of this parcel makes it unique not only in Creve Coeur but in all of St. Louis County.

The proposed development is consistent with the city's long term comprehensive land use plan, Creve Coeur 2030, by offering a high quality, mixed-use, pedestrian-oriented development with amenities such as a walking trail and 'Main Street' design.

The development will also serve to further the growth and development of the 39 North Agtech Innovation District, which already is home to over 30 agtech businesses and organizations. The core organizations of 39 North – The Danforth Plant Science Center, BRDG Park and the Helix Center Biotech Incubator -- result in a $450 million annual economic impact. Olia Village will provide additional housing opportunities, hotels, restaurants, office space, walking trails and other amenities which are critical to the continued growth and success of 39 North.

All taxing districts including the Ladue School District and the City of Creve Coeur will benefit from additional tax revenues throughout the life of the project. The new revenues created by the Olia Village development will provide additional funding for city services such as police protection, public works and parks as well as the schools and other taxing jurisdictions.

Absent incentives, the property could remain vacant or underutilized for years with no guarantee of attracting a development desirable by the Creve Coeur community, resulting in little or no additional tax revenue for schools or other jurisdictions.

These tax incentives can be beneficial to the development by enhancing the financial viability of a project which, absent incentives, may not be viable. Cities in the St. Louis region and elsewhere are using these incentives as effective tools to attract new development.

Is Tax Increment Financing (TIF) being used?

No. Only the incentives as outlined above.

Is there a cap on the amount of incentives the developer can receive?

Yes. The maximum amount of tax abatement is $34.1 million, and the maximum amount of all incentives excluding the sales tax exemption is $61.8 Million. These figures compare to total development costs projected to approach one billion dollars.

How do the proposed incentives compare to other developments in the region?

The proposed incentives are proportionally smaller than those for other nearby developments.

According to PGAV, the net present value (NPV) of assistance has historically averaged 17% of total development costs across incentivized projects in the St. Louis region.

For Creve Coeur, the total NPV of all incentives is 6.7% of total development costs. This is based on a maximum incentive amount of $61.8 million, sales and use tax exemption on qualified materials of $4.6 million, and total estimated development costs of $984.8 million. This compares to other recent projects as follows:

- For the Streets of St. Charles project, the total NPV of incentives was 14.3% of total development costs.

- For the Chesterfield Downtown TIF project, the total NPV of incentives is 9% of estimated total development costs.

- For the Brentwood Manchester Corridor project, the total NPV of incentives is 11.6% of estimated total development costs.

The City's staff and consultants have not been able to identify any comparable projects in the St. Louis region which have *not* included tax incentives.

How was the amount of the proposed incentives determined?

The proposed incentives were negotiated between the city's staff and consultants and developer representatives over the course of many months and remain subject to Council approval. Factors considered included a review of similar projects in the St. Louis region and the unique characteristics and challenges of the proposed Olia Village development. The proposed ordinances currently before the City Council reflect compromise by both parties.

If the city provides tax incentives, will city, school district and other taxing entities lose money as a result?

No, current tax dollars will not be diverted to the proposed development. A portion of new tax dollars, created by the development, will be abated. New revenues for the Ladue School District are projected to exceed costs for educating new students residing in the development in all years, based upon an analysis completed by the city's consultant, PGAV Planners . In addition, the 130-unit townhome portion of the development, where families are most likely to reside and potentially increase enrollment in the Ladue School District, has been excluded from any tax abatement. The Ladue School District, and the other taxing jurisdictions, will receive 100% of the tax revenues on the townhome portion of the development that they would have received in the absence of tax abatement.

The City's projected revenues resulting from the development will exceed projected costs of providing services in all years. In fact, the economic activity projected to be generated by the Olia Village development will provide needed additional revenue for city services such as police protection, public works, leaf collection, parks and other services utilized by all city residents.

The Creve Coeur Fire Protection District, as an emergency service provider, has opted out of tax abatement so it will receive full tax payments resulting from the development.

Is the property truly 'blighted' as claimed?

A "blighted area" is defined in Missouri Statutes as follows: "an area which, by reason of the predominance of insanitary or unsafe conditions, deterioration of site improvements, or the existence of conditions which endanger life or property by fire and other causes, or any combination of such factors, retards the provision of housing accommodations or constitutes an economic or social liability or a menace to the public health, safety, or welfare in its present condition and use. "

An Analysis of Blighted Area Factors for the property (Olia Village Development Plan Exhibit D) was conducted by Steadfast City on behalf of the Developer, and concluded that the property is blighted as defined in the statute. This document states, "Based on the findings included in the Environmental Report completed by SCI Engineers and Steadfast City's in-person inspections of the site and analysis of the historical equalized assessed valuation of the site, the Redevelopment Area meets the definition of a "blighted area" according to Section 353.020(2) of the Revised Statutes of Missouri, as amended and Section 67.1401.2(3) of the Revised Statutes of Missouri, as amended."

The City Council will make the final finding on this issue.

How will a designation of blight affect nearby properties?

The blighting designation for the development site is a pre-qualification for tax abatement under Chapter 353 of the Missouri Revised Statutes.

The existing conditions are not positively contributing to the surrounding neighborhoods no matter the result of the current Council proceedings. Moving forward with this project and the Chapter 353, Chapter 100, CID, and TDD proceedings allows for the potential of this condition to be improved as opposed to continuing to stay stagnant or degrade. The proposed improvements are projected to include nearly a billion dollars of investment which will improve the tax base, stimulate further economic growth of 39N, and provide an amenity-rich mixed-use as recommended in the comprehensive plan.

A vacant or under-utilized office campus is not a helpful economic presence for Creve Coeur and for the surrounding neighborhoods. The incentive package being considered is meant to alleviate the property's current condition and redevelop the area to a more dynamic and productive use that will benefit the City, the local economy, and the values of neighboring properties.

With a CID and TDD, what will the sales tax rate be in Olia Village? How does this compare to other shopping districts in St. Louis?

The CID and TDD will collectively add 1.5% to the sales tax rate. These additional sales taxes only apply to sales within the Olia Village development. The table below compares the total proposed sales tax rate in Olia Village to other nearby developments.

City	State	County	City	CID	TDD	Total Rate
Rock Hill Market at McKnight	4.225%	2.513%	2.500%	1.00%	1.00%	11.238%
Brentwood Promenade	4.225%	2.513%	3.000%		1.00%	10.738%
Richmond Heights Blvd Project	4.225%	2.513%	2.750%		1.00%	10.488%
Creve Coeur Olia Village	**4.225%**	**2.513%**	**2.250%**	**1.00%**	**0.50%**	**10.488%**
University City-Costco	4.225%	2.513%	2.500%	1.00%		10.238%
Kirkwood Station	4.225%	2.513%	2.500%		1.00%	10.238%
Chesterfield Blue Valley Outlets	4.225%	2.513%	2.000%	1.00%	0.38%	10.113%
Manchester Highlands	4.225%	2.513%	2.250%		1.00%	9.988%
Richmond Heights Menard Project	4.225%	2.513%	2.750%	0.50%		9.988%

By providing incentives to the developer, what are the financial risks to the City should revenue projections fall short?

The City is not responsible for the repayment of any debt incurred as part of the development; this is entirely the developer's responsibility.

Incentives are directly tied to the developer's performance; as the assessed value and retail sales within the development grow, the developer will realize greater incentives up to the agreed-upon maximum reimbursement.

The city's operating costs for providing city services to the development are projected to be only 22% of the estimated revenue from the development. The city is not forwarding any funds or creating future liabilities for itself.

The project will not adversely affect the city's credit rating.

What performance guarantees does the city have in place?

A performance bond or escrow will be required to ensure completion of all site improvements, including streets, sidewalks, trails, storm water detention facilities, retaining walls, and street lighting. In addition, no notes will be issued to the developer until site work is completed. Such notes are a prerequisite to the developer receiving the incentives.

Under the Redevelopment Agreement, issuance of bonds by the developer has been limited until completion of the mixed-use portion of the development and completion of certain restaurant and retail requirements. Without issuance of bonds, the developer would only receive the benefit of the incentives over a period of many years.

In addition, if the mixed-use development and retail and restaurant requirements are not completed by 2030, interest on all notes issued to the developer shall cease until requirements are met.

Also, tax abatement may be reduced if sales taxes are outperforming projections. Tax abatement ends when all obligations secured by the CID special assessments are paid in full or cancelled.

What is the plan for oversight of the incentives?

All project costs must be submitted to the city for review and approval, including itemized invoices, receipts or other documentation evidencing that all such costs have been paid or incurred and qualify as reimbursable project costs under the Redevelopment Agreement.

The City will have two representatives on the CID and TDD Boards to oversee the finances and affairs of each of the special districts. No additional costs beyond those currently identified as extraordinary can be recovered without approval of the City's representatives.

The CID and TDD sales taxes must terminate once the incentive amount is paid. The taxes cannot be extended or applied to other purposes without approval of the City Council.

Where can I find more information on the development and incentives?

More details regarding the Olia Village development can be found on the City's website.

March 29, 2024

CITY COUNCIL MEETING

CITY OF CREVE COEUR, MISSOURI

300 NORTH NEW BALLAS ROAD

MONDAY, MARCH 25, 2024

7:00 P.M.

PUBLIC HEARING

Consideration of a Development Plan pursuant to Chapter 353 of the Revised Statutes of Missouri

Consideration for the Creation of a Community Improvement District pursuant to the CID Act

McLaughlin Court Reporting Services, Inc.

Deborah K. McLaughlin, RPR, MO-CCR #314, IL-CSR, KS-CCR
4772 Gatesbury Drive
St. Louis, MO 63128
(314) 974-1199

MAYOR BOB HOFFMAN: Call the meeting to order.

All rise.

(The Pledge of Allegiance was recited.)

MAYOR BOB HOFFMAN: Tonight we remember Peggy Vickroy, who was our first female Council Member and our first female member of the -- Mayor of the City. And she passed away in the last few days, so we just remember her a moment of silence.

(A moment of silence was had.)

MAYOR BOB HOFFMAN: Thank you.

Roll call.

MS. HENKE: Mayor Hoffman?

MAYOR BOB HOFFMAN: Here.

MS. HENKE: Council Member Silverman?

COUNCIL MEMBER SILVERMAN: Present.

MS. HENKE: Council Member Manlin?

COUNCIL MEMBER MANLIN: Present.

MS. HENKE: Council Member Greer?

COUNCIL MEMBER GREER: Present.

MS. HENKE: Council Member Carney?

COUNCIL MEMBER CARNEY: Present.

MS. HENKE: Council Member Hoffman?

COUNCIL MEMBER DAVID HOFFMAN: Here.

MS. HENKE: Council Member Neudorf?

COUNCIL MEMBER NEUDORF: Present.

MS. HENKE: Council Member Tierney?

COUNCIL MEMBER TIERNEY: Present.

MS. HENKE: Council Member Martinich?

COUNCIL MEMBER MARTINICH: Present.

MS. HENKE: A forum is present.

MAYOR BOB HOFFMAN: Thank you.

Next item, please.

MS. HENKE: Public Hearing: Consideration of a Development Plan pursuant to Chapter 353 of the Revised Statutes of Missouri.

In consideration for the Creation of a Community Improvement District pursuant to the CID Act.

MR. MARK PERKINS: We'd like any of the consultants that are going to be presenting tonight or owner/representatives to stand and be sworn at this point in time.

(The speakers were sworn in by the court reporter.)

MAYOR BOB HOFFMAN: We'll swear in the general public secondary to the presenters.

MR. MARK PERKINS: Good evening, Mayor and Members of the City Council.

I'm Mark Perkins. I'm the City Administrator for the City.

Tonight's City Council agenda includes three

ordinances related to the incentives for Olia Village Development.

We have Bill 6112, which will -- would approve the Development Plan, which is subject of this Public Hearing, and approve a Master Development Agreement.

MS. GREER: Mr. Perkins --

MR. MARK PERKINS: Yes.

COUNCIL MEMBER GREER: -- they're still saying they can't hear you.

MR. MARK PERKINS: Oh, okay.

We have Bill 6112 to approve the Development Plan, which is subject of this Public Hearing, and approve a Master Redevelopment Agreement.

Bill 6113 would Create a Community Development District, also the subject of this Public Hearing.

And Bill 6114 authorizing Chapter 100 bonds.

Proposed mixed-use development is located on 96 acres of the former Bayer property, 10300 Olive Boulevard, is a joint venture between Jack Matthews Development, LLC and 10300 Olive Dev, LLC, an afilliate of Fireside Financial, LLC.

The site concept plan for the development was approved by the City Council on November 13th, 2023.

It includes mix of retail, restaurants, hotel, office and housing, which the developer will further

review and discuss.

The ordinance is an agreement before you, the result of many months of review, analysis and negotiation.

City staff and its consulting team look forward to reviewing the proposed ordinances with you tonight.

First we'll hear from Matt Pfund of Jack Matthews Development, followed by other members of the developers, representatives. We'll then hear from the City's consultants.

MR. MATT PFUND: Thank you, Mark.

Mr. Mayor, City Council.

So, tonight we're here, again, to talk about an exciting opportunity for Creve Coeur, an upscale live/work/play destination on the ex Monsanto Bayer Campus.

This will be an important piece component of the 39 North District. Walkable, urban, mixed-use with a Main Street that's closable for city public events.

MR. LUMLEY: Matt, could you introduce yourself for the record.

MR. MATT PFUND: Oh, I'm sorry.

Matt Pfund with Jack Matthews Development.

MR. LUMLEY: Thank you.

MR. MATT PFUND: The development will be of upscale architecture. We've -- we've purposely chose to

do structured parking instead of large parking areas on site.

We'll have miles of pedestrian paths, public spaces, improved intersections. We're going to leave 30 acres of green space and reduce the stormwater velocities that leave from the south end of the site.

This site is not without its challenges and opportunities. The largest of which is the three City of St. Louis domestic water mains or conduits that run through the site.

They're 6 and 5 foot in diameter where you see the blue-dashed lines. So, everything we planned had to be worked around that, those conduits.

And, in fact, we have to do, also, some work to protect the conduits as directed by the city once construction starts.

Traffic. Pavilion Drive will be completely re-done, including some work on Olive Boulevard, as the main entrance to the site.

We're also improving the intersection at Old Olive to pull the current intersection to the south and allow for more stacking at that intersection.

The Lindbergh Cloverleaf will now be 24/7 open and not closed off after business hours.

We've purposely chose to re-purpose the existing

buildings on the campus and save historic structures, such as the K Cafe.

We've talked about the investment in structure parking. Again, that's purposeful to not have large parking areas, and make this feel like a traditional shopping center. This is going to be an urban more dense feel.

The -- the current campus that Bayer operated was completely fed by private utilities. So, now we are introducing all new public utilities to serve the new buildings.

We went through, last year, the zoning changes and, again, purposely stepped down the density so that our highest and most dense urban areas are to the north, and as you go to the south and the surrounding single-family homes, the density drops.

Topography was -- is also a challenge on this site from Olive Boulevard to the south, the site drops about 85 feet.

We also have a large amount of stormwater that comes in to this site from all of the surrounding areas.

So, to get to this meeting it's taken us eighteen months. A lot of planning and coordination to get the details right with all the approving authorities, the city and stakeholders.

There's a large team of experts on both sides from the city and also our side.

This plan requires incentives to offset extraordinary costs and the project can't move forward without.

We've negotiated an incentive plan that, to be clear, requires zero dollars of upfront investment. It maintains the current tax revenue to all districts as it stands today. It only produces incentive assistance as the project is successful.

I want to bring Shayla Meehan up now to go through some of the specifics.

MS. SHAYLA MEEHAN: Thank you.

My name is Shayla Meehan. I'm with Steadfast City Economic & Community Partners. We are consultants to the developer.

Our team also completed the Chapter 353 Plan and Blight Studies, so I'll spend the next couple of slides talking about those materials.

So, our team completed the plan in accordance to the City's code, which includes various still and contents and outlines abatement request.

VOICE: I'm sorry, we really cannot hear back here.

MS. SHAYLA MEEHAN: Oh, I'm sorry.

VOICE: We have to have (inaudible) microphone turned up.

COUNCIL MEMBER SILVERMAN: There's also some seats at the front if you're having trouble hearing in the back.

There are several open seats in the front row here and there's open seats over there.

MS. PATI TROUT: We can't hear her either, and we're sitting right here. Her voice is very low.

MS. SHAYLA MEEHAN: Okay.

Well, how's this? I'll just try to speak up.

MS. PATI TROUT: Lean into the microphone.

MS. SHAYLA MEEHAN: Okay.

(Inaudible conversation was going on with people in the audience.)

MS. SHAYLA MEEHAN: Okay. How's this? Better? Okay.

So, as I was saying, Steadfast City completed the Chapter 353 Plan and Blight Study.

Some notable contents of the plan include that the 97 acres is going to be subdivided into 17 lots. It's going to include combination of multi-family, townhomes, hotel, retail, common area and park area.

The project is going to re-purpose four of the five existing structures. Only one small utility

structure is to be demolished. And construction of the project will be phased out over a four-year period. First combination of lots are to come on in the year 2026 with all lots expected to be stabilized by 2030.

So Chapter 353 allows cities to utilize the tools set forth by Chapter 353 to assist in reducing or eliminating those factors or conditions that cause an area to qualify as blighted through the completion of a redevelopment project.

And Chapter 353 defines blight through the predominance of insanitary and unsafe conditions, deterioration of site improvements, conditions which endanger life or property by fire or other causes, and the constitution of economic liability or social liability or a menace to the public health, safety or welfare in its present condition and use.

So, some of the blighted conditions that we have up here on our slide are the insanitary and unsafe conditions.

There's been blighting and water seepage in one of the existing buildings due to poor stormwater management and grading changes.

The environmental reports found asbestos-containing materials in three of the buildings intended for adaptive use, creating an inability to occupy

the site until that's been remediated.

There's been damage to utility lines. The project aims for these utilities to be placed underground, which are the goals of the city and Ameren as well, and the project would do this to ensure any future risk of damage.

There's also deterioration of the roadways and curbing (inaudible).

Continuing with more of our blighted factors.

The site currently is an endangerment life of properties by fire and other causes.

There's inability to access utilities and an inadequate HVAC and fire suppression system increasing the risk of property damage or endangerment to life. So the minimum standards for fire protection, water access and fire suppression systems cannot be met in its current use.

The site superintendent has also highlighted incidences of criminal activity, which include trespassing, vandalism and theft.

And, lastly, using available data and information, Steadfast City reviewed the equalized assessed value of the property against market conditions, such as citywide commercial assessed value and local Consumer Price Index for the St. Louis region, as well as a comparable office campus.

And over time the site, in its current use, is not keeping pace with the current real estate market conditions that we would expect it to. It's actually seen, since 2018, a decrease in assessed valuation of 12.2 percent, whereas, the other factors that we considered are trending upward.

Okay. So, our extraordinary costs to the site, the -- as Matt previously discussed, the redevelopment area has many challenges that are unique to this site and are driving our extraordinary cost figure of 80.6 million.

So, in lieu of the extraordinary costs, and in order to attract private investment, the developer is seeking a maximum reimbursement value of 61.8 million in discounted incentives. Total investment through the completion of the projects through full 17-lot development is estimated at 984 million, so the incentives are approximately 6 percent of the overall project investment.

And, as you can see, the discounted value of 61.8 million, it does not reimburse the developer for all of the extraordinary costs.

Okay. Our estimated real property taxes to be paid with abatement. Currently the site is producing just over 1 million in real property taxes from 2023. In -- in the first year that there is to be a tax abatement in 2026, the real property taxes generated will be

1.6 million.

And then, as the city's consultants, PGAV, will discuss in their presentation, the tax impact analysis will show that approximately 127 million in real property taxes will be paid during the abatement period.

And now at this time, I'll ask Rob Klahr to come up.

MR. ROBERT KLAHR: Thank you.

Good evening, Mayor and Council, my name is Robert Klahr, and I'm with Armstrong Teasdale here on behalf of the property owner, Joint Venture Development.

Address is 7700 Forsyth Boulevard, St. Louis, Missouri 63105.

As part of this public hearing, not only are we considering the Development Plan that has been submitted to you pursuant to Chapter 353 of the Revised Statutes of Missouri, we are also here to consider the property owner's submission of a petition for the creation of a Community Improvement District, and that is part of tonight's Public Hearing.

A Community Improvement District, if formed, would be a separate taxing district. As you see from the slide here, it would be funded for the purpose of raising additional revenue to pay for some of the extraordinary costs that Shayla Meehan has described.

It would do so through a sales tax collected within the boundaries of the development at a rate of up to 1 percent, as well as a special assessment that would be levied on the real property in an amount generally equal to the tax abatement value.

The CID, as I indicated, would use those dollars to fund some portion of the extraordinary costs, which, as Shayla indicated, are limited to the $61.8 million total, although the overall site work is significantly in excess of that.

The other thing that is not part of tonight's Public Hearing, but we thought it would be important to mention as part of the discussion, is that the property owner also intends to seek the creation of Transportation Development District that would be formed to fund the road improvements that are part of the development, specifically the MoDOT improvements that were listed in the list of extraordinary costs, as well as the other street infrastructure within the boundaries of the development. That Transportation Development District would levy a sales tax of up to an additional half-cent, again, with -- within the boundaries of the development only.

Obviously, those districts do not generate any additional revenue unless there is some type of

development that occurs, and it would be paid solely by the owners or the users of that development.

One of the reasons we are pursuing those additional special taxing districts is because it will allow us to cap value of the tax abatement over the abatement period.

As you see on the last point at the bottom, the sales taxes are expected to fund at least 27.7 million of the 61.8 million of extraordinary costs, and that would be eligible for reimbursement, which means that the tax abatement value would be capped at 34.1 million over time.

Lastly, and, again, although not part of the Public Hearing this evening, we thought it would be important to mention the request for sales tax exemption on construction materials, which, if approved, would be provided pursuant to Chapter 100 of the Revised Statutes of Missouri.

In this instance it would apply to construction materials purchased specifically for the site work, the infrastructure work that we've described that would be undertaken as part of the initial phase, not any of the vertical construction that would happen in future phases.

The expectation is that the only two impacted taxing districts of -- with respect to this sales tax exemption would be the State of Missouri and St. Louis

County. We don't expect there to be any impacts on the city or other taxing districts who does not have a sales tax, obviously.

The estimated tax savings listed here would be about 4.6 million. This would be on overall site costs, site work costs, of approximately $134.8 million.

The city special counsel, Mark Grimm, will, I think, discuss these items in more detail in his presentation.

Before I turn it over to PGAV to discuss their impact analysis, happy to open it up to any questions for the development team.

MAYOR BOB HOFFMAN: Any questions?

If not, we'll turn it over.

MR. MATT PFUND: Okay.

MS. LINDSEY EVANS: Hi, there. I'm Lindsey Evans with PGAV Planners.

And we are going to review the Tax Impact Statement.

So, the Tax Impact Statement estimates the impact of the proposed project and the requested tax abatement on real property tax revenues for each political subdivision that may be impacted pursuant to Chapter 353.

And the Tax Impact Statement reflects one of the property tax abatement considered in many of the

negotiated options. So, this is sort of one of the options of all of the different negotiated tax abatement percentages that we've looked at.

And there are more detailed tax abatement examples included in the Redevelopment Agreement. This will provide an overview of what that tax abatement looks like, but there are more detailed examples in the additional products -- the additional documents that have been submitted.

And the notable assumptions that are made in the Tax Impact Statement are 75 percent abatement for years one through ten, and 50 percent abatement for years eleven through twenty-five.

As the developer explained, there are multiple lots within this project site, and one of the lots is proposed to have townhomes on them. The property tax abatement is assumed to be not applicable to the townhomes.

And the abatement period begins for each phase independently in the Tax Impact Statement. So, there are four phases proposed by the developer, and the way that the Tax Impact Statement is calculated is each of those phases begins independently.

The assumption in the Tax Impact Statement is that the base value is 2023 land and improvements, so the

starting point that is paid, no matter what, is the 2023 land and improvements value. And those are assumed to be commercial rates because that's how the property is currently assessed.

Each lot is expected to be allocated a proportionate share of that base. So, there are some portions of the lot that have improvements on them and some portions that are just land, and there's a table in the Tax Impact Statement that describes how each of those proportions are allocated to the individual lots.

And then the other assumption is that the 2023 residential and commercial property tax rates are held steady throughout. Property tax rates change throughout time, but the assumption in the Tax Impact Statement is that they're held steady.

And then the Creve Coeur Fire District receives 100 percent of what they would have received in the absence of tax abatement.

So, the assumption you'll see in the Tax Impact Statement is that the Creve Coeur Fire District gets paid whatever they would have if the abatement was not in place and the project moved forward.

The abatement is applied to incremental taxes, so anything above the base and anything that isn't paid to the Fire District is what the abatement is applied to.

So, what that means is that there's a limited ability for negative impact on the taxing jurisdictions, and the Redevelopment Agreement takes that even further to minimize a greater than requirement.

This Tax Impact Statement is based on the developer anticipated components, each of the lots and phases, and the completion dates that the developer has put in front of the Council.

And the market values and assessed values are based on comparable properties in St. Louis County.

The market value is assumed to grow at 2 percent in each reassessment year, so each of these assumptions is presented in a fairly conservative manner to really make sure that no over assumptions are made and extra growth is taken into account.

There's a number of tables that are included in the Tax Impact Statement.

There's a Table 4, which shows the build versus no-build. What this looks at is if the project was not built and the property stayed how it is right now, what that would look like in tax revenue as compared to if the property was developed as the developer has proposed and the abatement was in place.

And that's an additional 93 million in real property tax revenues across all jurisdictions for all of

the phases.

Tables 5 through 8 show the estimated real property tax abatement and taxes paid during the abatement period for each phase.

And then Table 9 shows that same information for all of the phases.

And that shows a total gross abatement value of 86 million over 29 years.

Table 10, 11 and 12 are showing the tax abatement separated by jurisdiction. So, the first table is the estimated taxes paid if abatement was not in place for each of the taxing jurisdictions. Table 11 is the estimated taxes paid with the abatement in place. And then Table 12 is the estimated taxes abated with the abatement in place.

So, you have the without abatement and then the with, what is paid and what is abated, separated in each of those tables.

Again, the abatement value being the 86 million and the paid value being 127 million for all phases.

Table 13 -- Tables 13 through 15 are the estimated taxes paid separated by those jurisdictions and summarized by different terms. So 1 through 29 versus 1 through 10 looking at different time periods for each of those jurisdictions.

This slide summarizes the impact to the school district, the fire district and the city.

So, you can see in this first table at the top the Ladue School District.

I'll start with the top. The estimated no-build paid is the first column. So in the instance that nothing happens on the site, the first column is what would be paid in revenues.

The second column is the estimated build abatement paid. So, in the instance that the project is built and the abatement is in place, this is the amount that is estimated to be paid.

The Ladue School District would see 14 million in a no-build scenario -- is projected to see 14 million in a no-build scenario. And 52, almost 53 million, in a build scenario with the abatement in place. That's a project increase of approximately 39 million in revenues.

The Creve Coeur Fire District is projected in a no-build scenario to see 4.3 million in revenues, and in a build scenario, 27 million. So that's an increase of approximately 23 million to the school district.

VOICE: (Inaudible.)

MS. LINDSEY EVANS: I'm sorry. It's the Fire District. Thank you. Good catch. Keep on top of it.

And then the third row is the City of Creve

Coeur. And the estimated no-build is 603,000. The estimated build is approximately 2.2 million, and that's a projected increase of 1.6 million.

These are all across 29 years for all of the phases, as the developer has scheduled it.

And, again, that summarizes to, in a no-build situation, approximately 34 million revenues paid, and in a build scenario with the abatement in place, approximately 127 million, so that's the projected increase of approximately 93 million.

And the table at the bottom of the page shows the impact to the Ladue School District by year.

So, we've looked at this to analyze the projected enrollment from the project as compared to the projected revenues from the project.

What this does is it looks at it on an annual basis. The enrollment amounts and the -- the enrollment amounts were estimated by Steadfast, and the additional cost of 17,000 per student were estimated by the School District themselves.

But looking at the property taxes paid, there is no year of this chart that goes negative. So I -- if the project is built out on schedule and the school enrollment is projected to be a high enrollment as opposed to an average or low from comparable properties, then the School

District would have enough revenue to offset the increase in enrollment from this project.

So, in summary, the Tax Impact Statement mitigates the negative impact of the risk because it uses the 2023 base as the land and improvements. So, whatever the taxing jurisdictions are collecting today or this year off of the property, they will continue to collect that same amount.

The Fire District receives 100 percent reimbursement. They have the option of getting that reimbursement as part of Chapter 353, and they've chosen that, and 100 percent will be paid to the Fire District.

And then the School District is projected to cover those estimated costs, that's that last chart that we just reviewed.

And the Redevelopment Agreement does include those greater than clauses, so in the instance that the base changes or the assessment goes down over the next few years for any of the phases, then that would be a greater than payment to make sure that there's no negative risk to the taxing jurisdictions.

And then the city is projected to cover the estimated costs when the sales tax and utility tax are included in the revenue assumptions.

The projected costs are approximately 14 percent

of the projected revenues that the city is looking to collect from this project.

And I think I turn it over to Mark Grimm.

MAYOR BOB HOFFMAN: Can I ask before --

MS. LINDSEY EVANS: Yes.

MAYOR BOB HOFFMAN: -- just to clarify.

If there's abatement, there'll be a positive of 93 million, as opposed to the cost of 86 or 84 million in abatement?

Am I asking it the correct way?

MS. LINDSEY EVANS: So, if there is abatement in place, there will be an additional 93 million collected as compared to a no-build scenario.

The 86 million abated is in a build scenario.

The 127 million is collected as revenue and the 86 million is abated and not collected.

MAYOR BOB HOFFMAN: And not gained?

MS. LINDSEY EVANS: Correct.

MAYOR BOB HOFFMAN: Okay. Thank you.

MR. MARK GRIMM: Good evening. I'm Mark Grimm with Gilmore & Bell. Our firm served as special counsel to the city on this project.

As has been discussed, there's -- there are three ordinances before the Council tonight.

One is to approve the designation of the areas,

blighted area under Chapter 353, and to adopt the Development Plan and to enter into -- authorize the execution of a Master Redevelopment Agreement.

Second is to approve the establishment of a Community Improvement District.

And the third is to facilitate the sales tax exemption on construction materials.

You've heard quite a bit already about the blight findings and the Development Plan, so, I'm going to focus on the Master Redevelopment Agreement.

This is a -- a portion of the -- of the site plan, which is the mixed-use area at the northern portion of the project.

One of the City's objectives on this project has been to keep a Main Street feel along the northern end.

In the Redevelopment Agreement you'll see references to Main Street and to the mixed-use development, which encompasses Lots 1 through 7, plus the Village Green, and that's what's shown here.

One of the goals of the Redevelopment Agreement is to get these areas constructed as quickly as possible, and for these lots to have a substantial amount of retail and restaurant uses as an amenity for the city's residents.

In that regard, the documents require Lots 1

through 7 to include at least 200,000 square feet of restaurant and retail space, of which at least 30,000 square feet must be restaurant space.

The area must have at least, ultimately, three full-service sit-down restaurants at street level located among Lots 2, 4, 5, 6 and 7. So, that's Lot 2 is northern in the middle, pink, and then 4, 5, 6 and 7 are the blue lots along what's designated as Main Street.

Before issuing bonds for the project, the developer must have at least two full-service sit-down restaurants located at street level and a rooftop dining establishment among Lots 2, 4 and 5.

And a portion of the bond proceeds would have to be escrowed until a third restaurant is completed.

In either -- in either case, if Lot 2 has a restaurant, it has to include outdoor dining space.

The Council also felt that it was important to have some -- some standards for any hotel that might be constructed. So, it's not shown here, but Lot 11 is at the very northern portion, and if a hotel is constructed there, it must be in the luxury or upper upscale category, or -- or be one of the following: AC Hotels by Marriott, Aloft Hotel, Drury Plaza, Element by Westin or Hyatt Place, unless otherwise approved by the Council.

So, you've heard about the -- the four different

components of the incentives. And just to, again, make clear how these fit together.

The real property tax abatement occurs under Chapter 353, and then a CID special assessment is imposed in lieu of the abated property taxes.

The property -- the special assessments, along with the sales tax from the CID and the sales tax from the TTD are then co-mingled and used to repay notes and bonds that -- that -- that would be issued.

And, so, the developer is, basically, charged -- or construction of the project. And then if and when special assessments and sale taxes and -- are generated, the developer has an opportunity to be reimbursed for a portion of its costs through these programs.

And one thing I want to make clear is is there's a lot of numbers floating around, and you've heard us talk about that $61.8 million of incentives will be provided, but you've also heard the phrase "$86 million".

And, so, think about, and, so, the confusion, I think, lies in the difference between present value and gross.

And so if you think about buying a house, if you buy a $250,000 house, you think of it as a $250,000 house, but over a 30-year mortgage you pay probably $500,000 in principal and interest, $250,000 of interest to the bank.

And, so, when we talk about $61.8 million of -- of notes or incentive to the developer, that's the present cost, and the rest of this is just an interest component.

So, I think when you -- when you talk about what is the amount of incentives going to this project, most of us think about the -- the net benefit to the developer, which would be the -- in this case, $61.8 million number.

So, you know, when we talked about the -- the site plan, we -- we want to see Main Street developed as quickly as possible. And the developer, understand, has an incentive to do that. The developer will have invested more than $100 million in the project before it has an opportunity to recoup any of that investment through the construction of new buildings, so there's a big financial incentive for the developer to proceed as quickly as possible.

Nevertheless, we -- we were charged by city administration with -- with drafting a Redevelopment Agreement that seeks to ensure that the Main Street component, the mixed-use development, occurs as quickly as possible.

And, so, we've -- the Redevelopment Agreement includes several provisions that attempt to do that.

Number one, there's no abatement on any lot until all of the site work is done. So, the site work,

all the horizontal work must be substantially completed before any of the abatement can occur on any of the lots.

No notes can be issued, and, remember, the notes are what goes to the developer's lender as evidence of the developer's right to receive reimbursement from the special assessments and sales tax revenues, so no notes can be issued, again, until the site work is substantially completed.

No bonds can be issued for Lots 1 and 2 -- or no bonds can be issued until Lots 1 and 2 are substantially completed. 25 percent of those proceeds, again, have to be escrowed to -- until the mixed-use development is completed.

Now, what -- what's important with this is the developer's lender wants to be able to refinance, the developer wants to be able to refinance to put more money into the project. And, so, by -- by limiting when bonds can be issued, by requiring these escrow proceeds, that's going to encourage the development of this northern portion of the mixed-use development as quickly as possible.

No other bonds can be issued after Lots 1 and 2 until the mixed-use development is substantially completed.

If the mixed-use development is not completed by

March 1, 2030, then interest abates on the notes until the mixed-use development is substantially completed.

That's -- so, when you talk about this is a -- a massive project that's going to require time for -- to -- to do the horizontal work, time for market absorption of this, we felt like this is a fairly aggressive schedule with a significant penalty.

So, if you assume that $60 million of notes are outstanding at 8 percent, that's almost $5 million in potential loss per year if -- if this is not done in -- in -- in that timeframe.

So, again, in addition to the developer having a -- a financial incentive just to start recouping investment, another financial incentive for the developer to complete the project as quickly as possible.

There's provisions in the -- in the Redevelopment Agreement that attempt to, both, limit the amount of abatement and incentivize the developer to bring in large -- high -- high-generating sales tax producers.

So, if the developer hits a home run on the retail sales, then it's possible that the tax abatement could end before the 25-year period.

As Mr. Klahr mentioned, and you've heard it several times, the -- the amount of the -- the portion of that $61.8 million that can be paid from the special

assessment of the tax abatement is capped, and so it -- that's a -- that's a hard cap, regardless of what happens with the assessed valuations.

So, the second ordinance, creation of the -- of the Community Improvement District.

Again, we've talked about the developers filed a petition seeking approval of the -- of the CID, and the CID blight finding is the same as the 353 blight finding.

There's a five-party Cooperation Agreement from the City, the CID, the TDD, the owner of the property and the developer that facilitates all these other things that we've been talking about.

The Redevelopment Agreement is -- is between the City and the property owner and the developer, but not the CID and the TDD. So, this brings the CID and the TDD into the fold, if you will. Where we've said, you know, once these things occur, the CI -- once the sales tax pays off the debt, the sales tax goes away; once the special assessment gets to that $34 million level, the special assessment goes away.

So the Cooperation Agreement implements those provisions.

So, it also has provisions regarding governance. In essence, it limits what the CID can do without the Council's approval.

So, the CID revenues would, you've heard me talk about them, goes to specifically to pay off the $61 million in notes. Once that occurs, the CID goes away, the TDD goes away. CID, TDD can't do anything else without the Council's approval.

The final ordinance is the ordinance proven that Chapter 100 bonds and -- and the sales tax exemption. Now, this is a -- a somewhat complicated structure, but very common structure under Missouri law to -- where these type -- these bonds are typically used to provide both abatement, property tax abatement, and sales tax exemption on construction materials.

Most recently, you all are probably familiar with the $1.8 billion Boeing expansion, and this tool was used to provide tax abatement and sales tax exemption on that project.

In this case, the property tax abatement is being provided under Chapter 353, and so it's only being used for the sales tax exemption.

What's important to note is -- is this. Number one, it's -- it's a tool to facilitate property tax abatement. It's not a financing tool. So it's not bonds like -- like the city would issue normally for a city hall or police station or a school district might issue for new school buildings. It's a -- it's a tool that's used

solely to facilitate the property tax -- the sales tax exemption on construction materials.

Importantly, does not result in any liability in any way, shape, or form to the city.

That's all I have, Mayor.

I'm happy to answer any questions.

MAYOR BOB HOFFMAN: Any questions from the City Council? Nobody?

Thank you, Mr. Grimm.

What we're going to do now is swear in any and everybody that wishes to speak. You have to be sworn in.

So, if you'll just stand up. I have about eleven cards here.

(The speakers were sworn in by the court reporter.)

MAYOR BOB HOFFMAN: I would ask, as we do with all our City Council hearings, try to limit our talk to three minutes. We have a clock, which will go off in three minutes.

I'm just simply going to take these in the order that they're sitting on the desk -- on the dais. And please address your comments to the dais.

Glenn Wilen. You're first.

Yeah, please, and identify yourself with name and address too.

MR. GLENN WILEN: Good evening. My name is Glenn Wilen. I live at 4 Spoede Acres.

MS. PATI TROUT: Can you use the microphone, please.

MR. GLENN WILEN: Oh.

MS. PATI TROUT: A handheld. Thank you.

MR. GLENN WILEN: Hi, my name is Glenn Wilen. I live at 4 Spoede Acres.

And two observations. One is I hear a lot about the no-build scenario, and then I also hear about the 30-year home-run scenario.

My observation with a lot of projects like these is 30 years never seems to happen, even 30 years from now.

So, I would wonder if the City has considered the risk of the project not being the home run that PGAV is assuming, gets built slower, the wonderful retail turns out to be mundane retail, and it just kind of muddles along.

And my second comment has to do with since the property is already owned by the developers, and all the risks they pointed out were certainly well-known to them before they bought it, what would happen to the build scenario if there were no abatements, and they just went forward at the market rate? Where would -- I haven't seen that scenario as well.

So, I would encourage the City to look at kind of a higher risk component, and things don't always work out the way everyone thinks they will.

Thank you.

MAYOR BOB HOFFMAN: Thank you.

Brett Berger.

MR. BRETT BERGER: Hi, everybody. Thank you for having me.

Mr. Mayor, Council, Everybody, thank you.

Nice job to the developers. The property and everything up here looks great to me. I mean I'm --

MAYOR BOB HOFFMAN: Name and address.

MR. BRETT BERGER: Oh, Brett Berger. 10 Winfield Pointe.

Thank you for having me.

The demonstration looks great. I'm very much in favor of development of this unused property.

I think that's what's alarming and why there's a considerable amount of neighbors here is just the magnitude of the abatement and the numbers that we think would be withheld from the School District.

I think that it's, you know, unjustifiable to consider it a blighted property. I think it's a strategic maneuver to qualify for the tax abatement.

I think classification is just inaccurate and

unfair.

Certainly, you know, it seems like water seepage and issues with electricity or utility is kind of common maintenance. That's not, to me, enough to qualify as blighted.

I would think the properties that are built in the '60s are probably going to have asbestos and utility and some maintenance issues.

I would think that a developer would anticipate those types of issues, typically speaking.

I also think kind of the important thing is, really, for us to understand the magnitude of the abatement and why it's really important that that number is the number that is necessary for the project to be successful. Like all the numbers and everything looks great. But like as a citizen looking at all the documents, like I don't understand why it needs to be so much money.

So those are -- those are kind of my concerns.

MAYOR BOB HOFFMAN: Thank you.

Pati Trout.

MS. PATI TROUT: Me?

I think that's what he said.

MAYOR BOB HOFFMAN: Yes. Please identify.

MS. PATI TROUT: Pati Trout, 309 South Mosley

Road.

I'm going to jump around because you have so many different things on here.

A state law allows a CID to be formed and taxes and assessments to be imposed without adequate public scrutiny or sufficient public protections.

State law also allows the sales taxes to be imposed without voter approval and for significant conflicts of interest to potentially occur because they don't have to be disclosed to the public.

State law allows these CIDs to overtax the public and remit the excess taxation to the conflicted parties.

You really need to consider that because it also does not comply with Missouri Sunshine Law.

Jumping to blighting is my biggest thing.

Without even reading my comments, do you know what you'll be doing to the neighborhood around it, living next door to an area that has been blighted?

And according to this, how long it's going to take, they won't be able to sell their houses because of the fear of a blighted neighborhood.

It's going to impose horrible things on those homeowners and other property owners in the area. They're afraid the blight will spread as opposed to this being

fixed.

I would suggest not using the term "blight" ever again.

If you consider the etymology of the word "blight", it's a consequence legacy of intentional disinvestment.

You know, it's not the case here. It was sold. It was repurchased. It was not abandoned. Chump down, do whatever, and they moved. That's not blight. That does not fall into this.

So, I see nothing positive in any of this for our police and other employees.

How many police are they going to pay for? How many new employees are they going to pay for to inspect these projects, the safety hazards, all of that kind of thing.

I could go on and on, but you've heard enough from me probably. Except I really like development. I sat where you are and had to really contemplate and dig into these things. But I want the ones that benefit the residents more than the developers. I want oversight by informed residents who understand the full impact of this development. I don't think we have that.

One other thing I forgot.

I know when I go to buy something, whatever

municipality I'm in, I have to pay the sales tax.

Now, I know that we don't have hardware stores, we don't have plumbing supply, we don't have cement companies, so they're not going to be buying anything in Creve Coeur for this construction.

So what we're doing, if you approve that, that they don't have to pay tax on their construction materials, you're hurting somebody else. I don't think we should have the right to impose that on any other entity, that we take away their taxable right.

So, you know, I'm not afraid to be on this appointed board for the oversight. Consider that.

Thank you.

MAYOR BOB HOFFMAN: Thank you.

Mr. Caldwell.

MR. DAVID CALDWELL: Mayor Hoffman, Members of the Council, my name is David Caldwell. And my wife and I have live at 257 Brooktrail Court since 1976.

We also own 1and office warehouse building at 1248 Andes Boulevard in the Light Industrial District.

First, I want to thank you for serving the residents of Creve Coeur. You do this at very low compensation. And you have a big responsibility to represent the residents of Creve Coeur.

In matters such as the subject of this hearing,

your responsibility extends far beyond the residents. Your decisions will affect sales taxpayers, property taxpayers and business owners and employees who do not reside in Creve Coeur.

Let me speak about the commercial property taxpayers from a personal perspective.

We bought our building in 2000 and moved our wholesale distribution business from Overland to Creve Coeur. Over the 23 years we've owned the building, the value of the building has increased by roughly 75 percent, but the property taxes have more than tripled.

I was shocked to learn at tonight's hearing that we are paying approximately 95 percent in property taxes of what they're paying on that whole 96-acre complex right now.

Can you believe that?

My lot and building in Creve Coeur is paying 95 percent of the property taxes that is your base point for this consideration. That's ridiculous.

This is -- our property taxes have increased despite numerous appeals over the years. Why did this happen? Because the recipients of property taxes wanted more money, and maybe needed more money, and tax rates were increased by voting -- votes or otherwise.

And it also happened because the property

owners were given -- because some property owners were given special treatment, which reduced the available money -- money available to distribute.

This is totally unfair to longterm property owners and businesses which must compete with those given special treatment.

What about the restaurants and the -- and the -- and, again, stores? They're paying their property taxes, either directly or through rent, for all these years, and then these people come along and want to get special treatment. It is taxation without representation beyond the doubt.

Now, the last 23 years were not a period of high inflation. Who knows what will happen over the next 23 years. They throw these numbers around, but the estimates of the lost revenue are most likely extremely low.

I strongly urge the Council to represent the entire community of those impacted by your decision, and to deny the request totally.

However, you get the snow job here while you're going to wind up with more money anyway, but that doesn't -- like former speaker said, that's all wishful thinking.

If you grant this deal, it must be at a much shorter time period and the cap must be much lower.

Thank you.

MAYOR BOB HOFFMAN: Thank you.

Mr. Schein.

MR. RAPHAEL SCHEIN: Hi, Mayor Hoffman and City Council. Thank you for letting me speak.

My name is Raphael Schein. I'm 28-year resident of Creve Coeur.

And I want to express my opposition in an tax abatement, CID and TTD.

It's hard for me to understand, I'm not an accountant, but this is a $985 million project.

It's hard for me to understand how the developer's able to hold the city hostage for $61 million, which represents only 6 percent of the cost of the project.

As a previous speaker said, if you own a restaurant or a small office building or you develop a small shopping center, you have to do it on its own economic merits.

It's hard for me to understand why this developer, I guess, thinks that because it's a large amount of money involved that he's entitled to special treatment.

I think the previous speaker was also right that with the cost of living rising over -- over 25 years, that

the foregone tax revenue is going to be substantially more than what was put up on the slides.

I think all the taxpayers in the city are entitled to fair treatment.

And projects that are built, even though this is -- looks like a wonderful project, should stand on their own economic merits.

Furthermore, the people that come into Creve Coeur and shop in the restaurants, stay in the hotels, all going to have to pay sales taxes in a vicinity of 10 percent. They may not want to come back, pay 10 percent sales tax, when you can go somewhere else in St. Louis County and pay 8 percent or 8 1/2 percent.

So, I'm not convinced that the project's going to be as successful as projected.

But the -- the major point is I think that all taxpayers should be -- should -- should be treated fairly, and that this project should stand on its own economic merits.

I believe that even without the $61 million, the project will still be profitable for the developer.

Thank you again.

MAYOR BOB HOFFMAN: Thank you.

Mr. Rovak.

MR. GENE ROVAK: Mayor, Council, thanks for

allowing us to speak.

My name is Gene Rovak. I reside at 766 Gascogne in Ward 4 of Creve Coeur. I'm a civil engineer with decades -- more decades than I want to admit, of experience, including familiarity with requirements in infrastructure, commercial and mixed residential development.

I don't harbor any illusions that my (inaudible) tax increment, CID, TDD Fireside Financial has requested, but the Council would do well to consider limits and conditions on their use.

Why? Well, these questions aren't entirely rhetorical.

Fireside's (inaudible) said the project can't go forward without tax incentives because the former office campus is blighted and redevelopment poses extraordinary costs, including new utility connections, new roads and sidewalks, land clearance and the need to work around water mains.

How are utility connection, road, sidewalks and avoiding a water main extraordinary?

And by what definition is a former office -- former office campus blighted?

Does blight here mean that the property needs improvement, some needed improvements, including the

removal or immobilization of asbestos, and improvements internal, utility and circulation features?

Aren't these development costs common with older buildings? Or do we accept the approach that a property, which is currently unused, is assumed to be blighted? Does that in the short, highest and best use automatically constitute blighting?

And we've heard Fireside is asking for the following. Pardon me. The tax abatement for 75 percent of the real estate tax due on improvements of the site for ten years then 50 percent of that due for another 45 -- for another fifteen years diverting over 85 or 61 million, and how it's used to interpret that from sixteen taxing districts.

The Community Improvement Districts, CID, a one-cent sales tax up to 25 years; Transportation Development District, TDD, a half-cent sales tax to pay for road and other costs. It's a big ask. Tax abatement, plus a CID, plus a TDD.

We need some perspective. Undoubtedly, some Council and staff members remember the concept of development impact fees. Under that system, developers were charged to pay for road and other improvements needed to handle the increased demand that their developments placed on public infrastructure.

In recent times use of those fees have not only diminished, but they've been turned on their head as municipalities fall all over themselves to provide enticements for developers.

Who now shoulders all the costs of improvements?

Then there's the butt-for test regarding tax abatements. But-for tests is used to ensure that new development and rendering property eligible for tax abatement would not have occurred but for the tax break.

This (inaudible) ensures that the benefits apply only when necessary to stimulate these developments.

I will submit this written to those rather than taking more time.

MAYOR BOB HOFFMAN: Thank you, Mr. Rovak.

Mr. Glantz.

MR. BARRY GLANTZ: Good evening, Mayor Hoffman and Members of the City Council.

Excuse me. My name is Barry Glantz. I reside at No. 6 Shardue Lane.

As you may know, I served as Mayor of Creve Coeur from 2012 to 2021. And full disclosure, have served as a consultant to the developers of this property for the past eighteen months, trying very hard to ensure that this project is a win/win/win for all parties involved.

Let me explain.

I think the rezoning process of the Bayer West Campus, while imperfect at times, showed the importance of city leaders, city staff residents and the development team working together for the betterment of the overall Creve Coeur community.

Tonight's public hearing is the next logical step in that process, and brings even more stakeholders to the table.

As leaders in the city, you have the opportunity to set policy tonight for the longterm financial stability of our community.

Taking a quick step back, Bayer and formerly Monsanto has always been a key corporate citizen in this community, and also the largest property owner in Creve Coeur.

For years the city has been concerned about the obsolescence of this property as at first employees at financial resources slowly migrated to their Chesterfield campus. And then, of course, we lost e-local executives to decision-makers from a corporation that is now headquartered overseas.

The reality of that dynamic came to fruition less than two years ago with the sale of the west campus, and truth be told, there's no telling what the future holds as well for the remainder of the Bayer property.

Please remember that vacant property, vacant buildings, serve no one in community well.

This proposed new development, however, is a logical and ideal use of the property; offers the community the opportunity to revitalize the East Olive Corridor, and, perhaps, most importantly, is an asset that is complimentary to the 39 North Innovation District, which is such an integral component to the future economic vitality in Creve Coeur.

The financial incentives being discussed this evening provide a critically important tool to help alleviate some of the extraordinary costs in the development of a project of this magnitude; have no upfront public investment, and only provide incentive assistance when the project itself is successful creating a longterm benefit for all stakeholders in Creve Coeur community.

Thank you for your time this evening.

MAYOR BOB HOFFMAN: Thank you, Mr. Glantz.

Linda Rezny.

MS. LINDA REZNY: Linda Rezny, 104 Graeser Acres.

And I would like to thank all the people who came here and have the expertise that I do not have, and make our -- making a wonderful presentation.

Thank you very much.

MAYOR BOB HOFFMAN: Hold the microphone closer to you.

MS. LINDA REZNY: I'm sorry.

And -- and I was going to --

MAYOR BOB HOFFMAN: Thank you.

MS. LINDA REZNY: I've done a lot of study and was going to talk about the blighting, and all these people are doing it for me.

And the only thing that I would say that they could use a little extra help with is the huge water pipe, perhaps, that could be blighted.

But, what concerns me most is the loss of the money to the Ladue schoolchildren. Half of the children in Creve Coeur attend the Ladue Schools.

And taking the numbers that the lady gave a little while ago, it would be 14 million to the schools if nothing happened and additional 39 or 52 million if it was full build without the -- I'm sorry -- with the abatement.

But, the abatement is 45 million, so I added those two together. That would have been a total of 97 million that would be coming to the Ladue Schools, in excess of 45 over what we're talking about with the abatement.

And thank you, Mr. Glantz, because you told --

you emphasized the real problem, and I'm sorry, I don't have my whiteboard, okay. Current plan with the abatement would provide some money. Vacant land, they're saying, would not provide any additional money. And all of that is true, but that is a false premise. That's not the situation that could be had.

If you did the current plan without the abatement and the full build, it would be, I got four dollar signs here, okay.

MAYOR BOB HOFFMAN: Could you stand to the --

MS. LINDA REZNY: And I'll turn it around to you too.

And if we did a partial build, that's another possibility, and so I've put in three dollar signs, if they didn't finish the whole thing out, and they were using the current plan, and they did not do the abatement. That's a possibility.

There's another possibility. They can do the current plan with a small abatement, for example, the abatement for the water thing, okay, and for that, I've given what would be coming to the School District, for example, I've got three dollar signs.

And if they only build it out partway with a smaller abatement, I've got in two dollar signs.

Then there's the possibility of the current plan

with the abatement, that's just one dollar sign.

And if it was only a partial build, that's less than a dollar sign.

Those are the other options that are out there.

When I talk to people on the Council, they're only seeing what Mr. Glantz speaks, and that's not the full range of options.

Thank you.

MAYOR BOB HOFFMAN: Thank you.

Mr. Lowenthal, I saved you for last.

MR. ANDREW LOWENTHAL: Hi. My name is Andy Lowenthal. I live at 772 Gascogne.

Listening to excellent presentation, by the way, people who did that.

I came -- I remember I think I heard it was $86 million over about 30 years, which is roughly $3 million a year, and how many residents are in Creve Coeur? 15,000? 20,000?

MAYOR BOB HOFFMAN: 18,000 now.

MR. ANDREW LOWENTHAL: 18,000. So that's, what, almost $200 per person per year. That's what we're talking about, right? Every year.

And I was wondering where they got -- is that really all that we're covering is 86 million, or is it really more?

Because I know in other TIFs they tend to run over dramatically what they -- what they need to abate, and I think that's wrong, it's, basically, double taxation.

MAYOR BOB HOFFMAN: Thank you.

MR. ANDREW LOWENTHAL: And even at the end, I also know, and many of you probably shared this experience, that TIFs really never go away. They never really go away. Because the city is somehow engrained the money into their budget, even though they're getting the money from property tax revenue now, and now is, my perspective, double taxation.

And I'm really concerned that you're not automatically reducing with no way of keeping the TIF. First of all, the step level for -- after ten years, and I know 30 years down -- 35 years down the road, who knows what's going to happen, but that, too.

Thank you.

MAYOR BOB HOFFMAN: Thank you.

And those are all the speaker cards I have.

Is there anyone else?

Oh, we have one other.

MR. CHRIS TUMBARELLO: Do you want to ask if people online want to say something, cause you have quite a few people?

MAYOR BOB HOFFMAN: Do you want to speak?

MR. ALFRED ROSENFELD: Yes, I do.

MAYOR BOB HOFFMAN: Okay. Did you get sworn in?

MR. ALFRED ROSENFELD: I did.

MAYOR BOB HOFFMAN: Okay.

Give your name and address then and --

MR. ALFRED ROSENFELD: My name is Alfred Rosen -- ready?

My name's Alfred Rosenfeld. I've been a resident of Creve Coeur for 40-some years.

And I'm very concerned about all the tax abatements that's required for this property.

And, first of all, it's very wrong and laughable to call this property blighted, as you can see from what the response you've gotten from a lot of the other people who are attending.

One of my other main concerns is, in the agenda here, the tax -- the bonds that need to be issued for this, industrial revenue bonds, is the city on the hook if this property doesn't work out the way that the developers are predicting?

Are the taxpayers then responsible for the principal interest on those bonds?

That's a -- should be a major consideration to the Board.

And my other concerns are all of the tax incentives that are required for this, is there any kind of a lifetime to these things -- to these taxes, or do they go on forever?

Experience has been in the past, down in the City of St. Louis, that developers are collecting sales taxes and -- and so on, and they go on forever, and they never need to report what their revenues are used for.

And a final concern is if this is such a wonderful property that's going to be developed, what happens to all of the other properties around here, businesses, that don't have any tax incentives allotted to them, the value of those businesses probably go down because people would rather own a restaurant at this fine new place than some of the older establishments.

So, those are my comments.

Thank you so much for listening.

MAYOR BOB HOFFMAN: Do you need to be sworn in?

MR. REX COUTURE: Yes.

(The speaker was sworn in by the court reporter.)

MAYOR BOB HOFFMAN: Thank you.

MR. REX COUTURE: Thank you for taking this, my comments, without prior arrangement.

My name is Rex Couture. I live at -- in Ward 4

of Creve Coeur at 13042 Gallagher Road.

I hear something like this, and I always hear a red flag. This word "blighted", many people have spoken to this.

The evidence I saw for blight struck me as normal maintenance. We would all like to get TIFs to cover our maintenance, but we can't have TIFs for our maintenance.

Instead we get taxes, which doesn't cover our maintenance. So you have, on the one hand, a rather upscale development, may reduce taxes, and the rest of us pay normal taxes and our own maintenance.

It was described as upscale, and, yet, most people, I think would agree, that what we need is not more upscale housing, but affordable housing. There's a critical need for that.

And I don't know how this budgeting would fit into that, but we're in the process now of many of us who live in modest houses now -- and businesses as well, who pay their share of taxes and now subsidizing a rather upscale development. So, people who could afford, perhaps, to pay the tax.

So blight leaves a very nasty place, I think --

MAYOR BOB HOFFMAN: Thank you, sir.

MR. REX COUTURE: -- for many of us.

That's all I have.

MAYOR BOB HOFFMAN: Thank you.

MR. REX COUTURE: Oh, no, one more comment.

All the costs for the cities are always upfront, but the taxes only come later. And present value and future value are easily mixed up, and we have to pay the costs in schools, traffic, housing, fire, ambulance service and so forth.

That's all.

MAYOR BOB HOFFMAN: Thank you very much.

MR. REX COUTURE: Thank you.

MAYOR BOB HOFFMAN: If there's no one else -- oh, online, I'm sorry.

MR. CHRIS TUMBARELLO: Ask if there's anyone?

MAYOR BOB HOFFMAN: Is there anyone online that would like to address the Council tonight?

MR. CHRIS TUMBARELLO: Raise your hand.

MAYOR BOB HOFFMAN: Raise your hand online.

No one?

MR. CHRIS TUMBARELLO: No.

MAYOR BOB HOFFMAN: Okay. Carl.

MR. LUMLEY: Mayor, I offer the following exhibits in the record of this Public Hearing: Documentation in possession of the City Clerk reflecting the public notice that was provided in advance of the

hearing of the three bills that are on the agenda; 6112, 6113, 6114, 353 Redevelopment Plan, the Chapter 100 Plan, the Tax Impact Statement, the amended CID petition, the draft documents that are attached to the various bills in reference therein, and the public file regarding the Olia Village Development.

MAYOR BOB HOFFMAN: Thank you, sir.

With that, Public Hearing closed.

Thank you, all.

(The Public Hearings were closed at 8:16 p.m.)

STATE OF MISSOURI)
) SS
COUNTY OF ST. LOUIS)

I, Deborah K. McLaughlin, Registered Professional Reporter, Missouri Certified Court Reporter, Illinois Certified Shorthand Reporter and Kansas Certified Court Reporter, do hereby certify that I reported the City Council Public Hearings stenographically and later reduced to typewriting; and that this is a true and accurate transcript of the Public Hearings.

Deborah K. McLaughlin, RPR, MO-CCR, IL-CSR, KS-CCR

Deborah K. McLaughlin, RPR, MO-CCR, IL-CSR, KS-CCR

CITY OF CREVE COEUR

March 20, 2024

To: Mayor and City Council

From: Mark Perkins, City Administrator

Re: Olia Village Development Incentives

The March 25 City Council agenda will include three ordinances related to incentives for the Olia Village development, located on 96 acres of the former Bayer property, 10300 Olive Boulevard. The proposed development is a joint venture between Jack Matthews Development LLC and 10300 Olive Dev LLC, an affiliate of Fireside Financial LLC.

A site concept plan for the development was approved by the City Council on November 13, 2023. Around the time of the application for development approval, the developers also submitted a request for economic incentives to offset certain extraordinary costs associated with the development. These incentives include:

- Real Property Tax abatement, as provided under Chapter 353 of Missouri Revised Statutes.
    - 75% of real property taxes abated years 1-10, exclusive of land value and improvements in the year prior to the acquisition thereof.
    - 50% of real property taxes abated years 11-25
- Formation of a Community Improvement District (CID) – 1% sales tax for up to 27 years and a special assessment in coordination with the proposed tax abatement
- Formation of a Transportation Development District (TDD) – ½% sales tax for 40 years
- Sales and use tax exemption on qualified building materials, as provided under Chapter 100 of the Missouri Revised Statutes

The total cost of the development is estimated at $984.8 million. The maximum net incentive under the proposed development agreement is $61.8 million, of which a maximum of $34.1 million can come from abatements and special assessments. These caps are exclusive of the sales tax exemption on construction materials.

Below is a summary of the legislation for Monday's Council meeting:

Bill No. 6112 - An ordinance designating the subject property as a blighted area; approving the Olia Village development plan; and approving a master redevelopment agreement in connection with the development plan

- The development plan for the property includes a description of the land and development, public infrastructure and amenities as previously approved in the site concept plan by the City Council, along with the proposed method of financing the development
- A blight analysis is included as Exhibit D to the development plan
- Master Redevelopment agreement – this document details the proposed agreement between the City of Creve Coeur, the developers and the Olia Village Redevelopment Corporation, including:
    - Detailing development incentives and establishing a maximum amount of incentives
    - Establishing certain requirements and standards for restaurants, retail and hotel
    - Providing certain performance guarantees to the city, in limiting the issuance of bonds and establishing a deadline for completion of the mixed-use development and certain retail/restaurant requirements
    - Providing for reimbursement of certain costs incurred by the developer and city
    - Establishing perimeters for the issuance of project notes and project bonds
    - Providing for a cooperation agreement between the city, Olia Village Community Improvement District, the Olia Village Transportation Development District and the developer.
    - Lot Development Agreement, establishing obligations related to individual lot development, including that such development complies with the redevelopment agreement.
    - Competitive bidding and performance bond requirements.
- A tax impact statement has been prepared, detailing impacts of the proposed tax abatement to the taxing districts, and this information has been provided to each of the districts.
- It should be noted that under state law that as an emergency service provider, the Creve Coeur Fire Protection District is exempt from tax abatement and will receive the full amount of taxes through payments in lieu of taxes (PILOTS) throughout the term of abatement.
- Tax abatement examples are provided as Exhibit H on the Master Redevelopment Agreement

Bill No. 6113 - Ordinance approving the creation of a community improvement district (CID):

- Providing for a 1% sales tax to be used for eligible development costs; these uses are listed in the CID Petition and include utility infrastructure and streets, water main improvements, demolition, abatement and repurposing of existing improvements, and topography, protected wetlands and stormwater

- Establishing a special assessment on lots within the proposed District in an amount not to exceed the greater of (a) the difference between (1) the property taxes that would have otherwise been payable on such real property and the improvements but for the property exemption granted by the City pursuant to Chapter 353 and (2) the sum of any taxes and payments in lieu of taxes paid.
- The CID boundaries include and are limited to the 96 acre Olia Village development.
- The CID will run for a term of 27 years or once all eligible district project costs have been paid, whichever is earlier.
- As provided in the CID Petition, the CID will be governed by a board of directors consisting of 5 members, appointed by the Mayor with consent of the City Council, with 3 of the five designated by the developer and 2 being City residents.

Bill No. 6114 - Ordinance authorizing the issuance of taxable industrial revenue bonds under Chapter 100:

- Adopting a plan for an industrial development project, to provide a sales and use tax exemption on qualified building materials related to site work.

The various proposed agreements are the result of months of analysis and negotiation. City staff and our consulting team look forward to reviewing the proposal and ordinances in detail on Monday evening.

SECOND AMENDED BILL NO. 6089 AMENDED ORDINANCE NO. 5862

AN ORDINANCE AUTHORIZING A CHANGE OF ZONING FROM "RO" RESEARCH OFFICE DISTRICT TO THE OLIA VILLAGE "PMD" PLANNED MIXED-USE DEVELOPMENT DISTRICT AND APPROVING THE SITE CONCEPT PLAN AND PHASE ONE SITE DEVELOPMENT PLAN FOR SUCH DEVELOPMENT ON THE APPROXIMATELY 96 ACRE PROPERTY LOCATED AT 10300 OLIVE BOULEVARD.

WHEREAS, Mr. Matt Pfund, of Jack Matthews Development, representing 10300 Olive, L.L.C., has submitted an application to amend the Official Zoning Map of the City of Creve Coeur to change the zoning on the property of approximately 96 acres located at 10300 Olive Boulevard, from "RO" Research Office District to "PMD" Planned Mixed-Use Development District for the Olia Village Development; and

WHEREAS, in accordance with Section 405.390 of the Zoning Ordinance, the applicant has submitted the Site Concept Plan and Phase One Site Development Plan for the Olia Village development on the subject property to the Department of Community Development; and

WHEREAS, a "PMD" Planned Mixed-Use Development district is a Planned Zoning District that will allow a unique mixture of commercial, residential, office, lodging and service uses subject to the criteria set forth in Section 405.390, Planned Zoning Districts, of the Zoning Code, the terms of this ordinance, and the conditions of approval; and

WHEREAS, a public hearing was held by the Creve Coeur Planning and Zoning Commission on Tuesday, September 5, 2023, beginning at 6:00 p.m. or immediately following the close of the previous public hearing, on said application; and

WHEREAS, notice of said public hearing had been previously published at least 15 days prior to the hearing, in the St. Louis Countian, a newspaper of general circulation in the City of Creve Coeur and otherwise posted and published in accordance with the Zoning Ordinance; and

WHEREAS, the Commission resumed the public hearing on September 18, 2023 and October 2, 2023; and

WHEREAS, the Planning and Zoning Commission reviewed and, by a 7-0 vote, recommended approval of the rezoning, Site Concept Plan and Phase One Site Development Plan subject to conditions at its meeting on October 2, 2023; and

WHEREAS, all parties desiring to be heard, either for or against said application, were given an opportunity to be heard, and a copy of the proposed ordinance has been made available for public inspection prior to its consideration by the Council; and this Bill having been read by title in open meeting two times before final passage by the City Council, and

WHEREAS, the City Council being fully informed finds that rezoning the property as set forth herein would be in harmony with and bear a substantial relation to the public welfare, health, safety, comfort and convenience of the citizens of the City of Creve Coeur and in the public interest and in good zoning practice; and

WHEREAS, the City Council further finds that the proposed development is eligible for consideration to be a Planned Mixed-Use Development under the planned zoning district process, because it exceeds three acres in size, could not be approved under any other Zoning District, is currently zoned "RO" Research Office, and the applicant has provided credible evidence that the proposal substantially complies with the purpose, objectives and provisions of

Section 405.390 and is generally consistent with the applicable provisions of the Comprehensive Plan, subject to the terms and conditions of approval set forth herein; and

WHEREAS, the City Council further finds that the proposed development as described in the Site Concept Plan meets the applicable design criteria set forth in Section 405.390.F.6(a) as hereby supplemented, modified and superseded and will provide sufficient public benefits as required by Section 405.390.E; and

WHEREAS, the City Council further finds that the Phase One Site Development Plan substantially complies with the Site Concept Plan and otherwise meets the requirements of Section 405.390.H subject to the conditions of approval set forth herein.

WHEREAS, on reconsideration the Council determined certain refining amendments were in order,

NOW, THEREFORE, be it ordained by the City Council of the City of Creve Coeur, Missouri, as follows:

SECTION 1: The Official Zoning Map of the City of Creve Coeur shall be amended to rezone the approximately 96-acre property located at 10300 Olive Boulevard, from "RO" Research Office to the Olia Village "PMD" Planned Mixed-Use Development District, subject to the regulations, requirements and conditions stated herein, which property is more specifically described on Exhibit A attached hereto.

SECTION 2: The zoning and development regulations of the Olia Village PMD District shall be as set forth on Exhibit B attached hereto. Exhibit B and the final concept and development plans shall meet the following overriding conditions:

1. There shall be a 20-foot-wide landscape greenspace on the development side of the retaining wall along the southern end of Lots 10 and 17. Landscaping screening in this area shall consist of evergreens and continuous evergreen screening at the top of the retaining wall and a row of deciduous trees along Lot 10 where the base of the retaining wall faces parking lots in the greenspace area.
2. On Lot 1, the height of the garage shall not exceed that of the adjacent buildings on Lot 1.
3. The parking garage on Lot 4 shall not exceed 81 feet in height on the southern portion.
4. The building on Lot 10 shall not exceed 150,000 square feet in floor area or 60 feet in height.

SECTION 3: The Site Concept Plan submitted for Olia Village on October 23, 2023, and attached hereto as Exhibit C is hereby approved, subject to this ordinance and the zoning and development regulations provided in Exhibit B and the following conditions:

1. All improvements for traffic mitigation as recommended by the Traffic Impact Study dated September 13, 2023 prepared by CMT shall be approved by MoDOT and the City's Department of Public Works prior to approval of a final occupancy permit by the Building Division in association with Phase 2 building construction.

2. Each phase as identified in the approved Site Concept Plan shall require Site Development Plan approval in accordance with Section 405.390.H. of the Zoning Code.

3. The residential buffer yard shall be a minimum width of 50-feet from the property line when the buffer yard is adjacent to the existing single family residential zoning districts.

SECTION 4: The Phase One Site Development Plan submitted for Olia Village on October 23, 2023 and attached hereto as Exhibit D is hereby approved subject to this ordinance, the zoning and development regulations provided in Exhibit B and the Site Concept Plan provided in Exhibit C, in lieu of a separate resolution, subject to the following conditions:

1. A final subdivision plat consistent with the approved preliminary plat for the property shall be submitted prior to issuance of any permits other than demolition and grading permits. The final subdivision plat shall include the restrictive covenants and deeds for the property; and shared parking and access agreements for review and approval by the City Attorney.

2. The Applicant shall submit Site Improvement Plans, showing all site improvements, to the Department of Public Works for review and issuance of a Site Improvement Permit. The Site Improvement Plans shall be in substantial conformance with the "Phase One Site Development Plan" received October 23, 2023 in conjunction with Application #23-028 by CMT as hereby modified. All regional, state and federal agency approvals shall be submitted to the Department of Public Works prior to the City's issuance of a site improvement permit.

3. Hold on Issuance of Site Improvement Permit for Phase One Site Development Plan. The City shall not be obligated to issue the Site Improvement Permit to commence construction at the property on the Phase One Site Development Plan unless and until the City takes formal action on any incentives request filed by the Applicant. Should the City deny any incentives request filed by Applicant, in whole or in part, or if the City's approval of any incentives request filed by Applicant is unacceptable to Applicant, in its sole discretion, the City shall nevertheless issue Site Improvement Permits upon Applicant's demonstration that there are sufficient funds to complete the portion of the development that relates to the approved Phase One Site Development Plan.

4. All street lighting shall substantially comply with the Site Lighting standards provided in the Phase One Site Development Plan, including fixture design.

5. A final landscape plan shall be submitted for staff approval in substantial compliance with the Conceptual Landscape Plan for Phase One Site Development Plan and the Tree Preservation Plan prepared by SWT and submitted to the City on October 23, 2023 subject to this ordinance and to the following additional requirements:
    a. All deciduous trees shall be a minimum size of 2.5-inch caliper in size at time of planting; evergreen or coniferous varieties shall be a minimum height of 6-feet at time of planting.

6. Residential Adjacent Buffer yard. The 40-foot buffer yard as shown on the submitted Site Concept Plan shall be increased to 50-feet as stated above and improved to the following standards:
    a. All new plantings as shown on the Phase 1 Planting Plan prepared by SWT Design with a sealed signature date of 10-23-23 shall be installed as part of this phase. The plantings shall be a minimum of 2.5-inch caliper in size for deciduous trees and 8-feet in height for evergreen or coniferous varieties at time of planting. Additional plantings may be required by the Zoning

Administrator, at the time of final inspection, to ensure a robust and dense landscaped screen to the maximum extent as conditions allow prior to a final inspection approval of the site improvement permit associated with Phase One.

SECTION 5: This Ordinance shall become effective in accordance with Section 3.11 (g) of the City Charter but not prior to the Ordinance and the approved Site Concept Plan and Phase One Site Development Plan being recorded by the applicant in the office of County Recorder of Deeds. In addition to meeting the foregoing conditions, the applicant must present proof to the City of such recording before any permits may be issued. If said Ordinance and Plans are not recorded within one (1) year of the date of approval, the Ordinance shall be deemed repealed and the approval of the Plans shall be deemed revoked. This Ordinance, the Site Concept Plan, and the Phase One Site Development Plan, and subsequently approved site development plans, shall govern the development and use of the subject property and no development or use, other than temporary uses allowed by the Zoning Code, shall be permitted within the area of the Olia Village Planned Mixed-Use Development District. The Site Concept Plan as herein approved shall be valid for a period of eight years from the date hereof, unless extended as provided in Section 405.390.N. The Phase One Site Development Plan as herein approved shall be valid for 12 months from the date hereof, subject to the provisions of Section 405.390.N. All building permits shall conform to the provisions of the Olia Village PMD District and the approved Site Concept Plan and Phase One Site Development Plan.

ADOPTED THIS 13th DAY OF NOVEMBER, 2023.

NICOLE GREER
PRESIDENT OF CITY COUNCIL

APPROVED THIS 14th DAY OF NOVEMBER, 2023.

DR. ROBERT HOFFMAN
MAYOR

ATTEST:

KELLIE HENKE
CITY CLERK

CITY OF CREVE COEUR, MO • 1949 •

EXHIBIT A LAND DESCRIPTION

A TRACT OF LAND BEING PART OF LOTS 9, 10, 11 AND 12 OF MAJOR THOMAS SUBDIVISION, SITUATED IN THE SOUTHWEST QUARTER AND NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 45 NORTH, RANGE 5 EAST, ST. LOUIS COUNTY, MISSOURI, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE WEST RIGHT OF WAY LINE OF STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH-PUBLIC RIGHT OF WAY) BOULEVARD WITH THE NORTH LINE OF LAND NOW OR FORMERLY OF VANTAGE CREDIT UNION, AS RECORDED BY DEED IN BOOK 23850, PAGE 141 OF THE ST. LOUIS COUNTY, MISSOURI RECORDER'S OFFICE;

THENCE ALONG SAID NORTH LINE AND THE NORTH LINE OF SUNSWEPT PLAT 3, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 4 AND SUNSWEPT PLAT 2, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 23, ALL OF SAID RECORDER'S OFFICE, NORTH 89 DEGREES 11 MINUTES 17 SECONDS WEST, A DISTANCE OF 1352.62 FEET TO THE EAST LINE OF LAND NOW OR FORMERLY OF DONALD J AND MARGRETTA CASSMEYER, ETAL, AS RECORDED BY DEED IN BOOK 11070, PAGE 767 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF LAND NOW OR FORMERLY OF JAVED MUHAMMAD ALI AND ALZUBEIDI DUHA, AS RECORDED BY DEED IN BOOK 23726, PAGE 3547; TIMOTHY C TOWNSEND, ETAL, AS RECORDED BY DEED IN BOOK 23562, PAGE 160, ALL OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 12 MINUTES 14 SECONDS EAST, A DISTANCE OF 500.19 FEET TO THE EAST LINE OF SPOEDE HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 54, PAGE 26 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF SPOEDE WOODS, A SUBDIVISION FORMERLY KNOWN AS GAS LIGHT SQUARE, AS RECORDED IN PLAT BOOK 104, PAGE 18 OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 08 MINUTES 11 SECONDS EAST, A DISTANCE OF 831.21 FEET TO THE NORTH LINE OF SAID SPOEDE WOODS;

THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 51 MINUTES 14 SECONDS WEST, A DISTANCE OF 826.36 FEET TO THE EAST LINE OF MISSION HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 36 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF RAMBLEWOOD, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 58 AND THE EAST LINE OF LAND NOW OR FORMERLY OF MDC COAST 22 LLC, AS RECORDED BY DEED IN BOOK 25302, PAGE 4186, ALL OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE, THE FOLLOWING COURSES AND DISTANCES: NORTH 01 DEGREES 12 MINUTES 15 SECONDS EAST, A DISTANCE OF 466.53 FEET; NORTH 88 DEGREES 57 MINUTES 33 SECONDS WEST, A DISTANCE OF 51.85 FEET AND NORTH 04 DEGREES 53 MINUTES 33 SECONDS WEST, A DISTANCE OF 682.38 FEET TO THE SOUTH RIGHT OF WAY LINE OF MISSOURI STATE HIGHWAY 340, A.K.A. OLIVE (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTH RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: ALONG A NON- TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 11,358.19 FEET, WITH A CENTRAL ANGLE OF 00 DEGREES 49 MINUTES 02 SECONDS, WHICH CHORD BEARS SOUTH 89 DEGREES 27 MINUTES 38 SECONDS EAST, A CHORD DISTANCE OF 162.03 FEET, THROUGH AN ARC LENGTH OF 162.03 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 427.12 FEET; NORTH 01 DEGREES 00 MINUTES 53 SECONDS EAST, A DISTANCE OF 20.00 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 723.00 FEET AND SOUTH 86 DEGREES 13 MINUTES 52 SECONDS EAST, A DISTANCE OF 200.26 FEET TO THE SOUTHWEST RIGHT OF WAY TRANSITION BETWEEN STATE HIGHWAY 340 AND STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTHWEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 65 DEGREES 03 MINUTES 50 SECONDS EAST, A DISTANCE OF 328.98 FEET;

SOUTH 43 DEGREES 48 MINUTES 52 SECONDS EAST, A DISTANCE OF 413.64 FEET; SOUTH 32 DEGREES 46 MINUTES 12 SECONDS EAST, A DISTANCE OF 248.25 FEET AND SOUTH 11 DEGREES 42 MINUTES 30 SECONDS EAST, A DISTANCE OF 250.82 FEET TO THE WEST RIGHT OF WAY LINE OF THE AFOREMENTIONED LINDBERGH BOULEVARD;

THENCE ALONG SAID WEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 01 DEGREES 00 MINUTES 47 SECONDS EAST, A DISTANCE OF 256.89 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 105.09 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 10.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 30.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 40.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 300.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 10.00 FEET AND SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 847.31 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND CONTAINING 4,171,444 SQUARE FEET OR 95.763 ACRES IS BASED UPON AN ACTUAL URBAN CLASS BOUNDARY SURVEY DONE IN ACCORDANCE WITH THE CURRENT MISSOURI STANDARDS FOR PROPERTY BOUNDARY SURVEYS, SUBJECT TO ALL EASEMENTS, RESTRICTIONS, RESERVATIONS, CONDITIONS OF RECORD AND NOT OF RECORD, IF ANY.

ATTACHMENT B
ON RECONSIDERATION 11-13-2023

All provisions of the City of Creve Coeur, MO City Code shall apply to this Planned Mixed-Use Development (PMD) District (subject to the terms thereof) except as specifically modified herein.

I SPECIFIC CRITERIA

A. PERMITTED USES

Permitted Uses within the PMD shall be as shown on Table A at the end of this Attachment B. The permitted uses are further broken down by the following sub-district categories which have been identified on the approved Site Concept Plan and further defined below in this Attachment B.

1. Sub-District Category A – Main Street Development (Lots 2, 4, 5, 6, 7, 11, 12)
2. Sub-District Category B – Mixed-Used Development (Lots 1, 3, 8, 9, 13, 14, 15)
3. Sub-District Category C – General Office Development (Lots 10 and 17)
4. Sub-District Category D – Residential Development (Lot 16)

B. SUB-DISTRICT CATEGORY STANDARDS

Within the PMD, four (4) sub-districts categories have been identified to provide varying levels of regulations. The location of each sub-district shall be as shown on the approved Site Concept Plan and have each been further defined below.

1. CATEGORY A – "Main Street" Development Pattern Building placement:
    - Building volume: Buildings may be constructed not to exceed (8) stories or (100) feet measured from the primary sidewalk entrance level. Additional lower levels accessed from the side or rear are permitted. The southern portion of the parking garage on Lot 4 shall not exceed 81 feet in height.
    - Building floor heights: Sidewalk commercial level shall be 12-30 feet, upper-level office or residential shall be 9-30 feet.
    - Projecting façade elements: Awnings, canopies, balconies, colonnades are permitted.
    - Bay windows permitted on upper stories.
    - Parking: Shall not be permitted as a primary use. Structured, public surface, or on-street parking permitted. Private off-street surface parking prohibited.

2. CATEGORY B – Mixed Use Development Pattern Building placement:
    - Building volume: Buildings may be constructed not to exceed (5) stories or (60) feet measured from the primary sidewalk entrance level, except for Lot 1, as identified on the Site Concept Plan, the height of the buildings cannot exceed (3) stories or (45) feet, and the height of the parking structure on Lot 1 cannot exceed the height of the adjacent buildings on Lot 1. Additional lower levels accessed from the side or rear are permitted.
    - Building floor heights: First floor level shall be 12-30 feet; upper levels shall be 9-30 feet.

- Projecting façade elements: Awnings, canopies, balconies, colonnades, porte-cocheres are permitted.
- Bay windows permitted on upper stories.
- Parking: Structured, public surface, on-street parking, private off-street parking permitted.

3. CATEGORY C – General Office Development Pattern Building Placement:
    - Building Volume: Buildings may be constructed not to exceed (4) stories or (70) feet measured from the primary building entrance, except for Lots 10 and 17, as identified on the Site Concept Plan, the height of buildings cannot exceed (3) stories or (45) feet, except that the building on Lot 10 shall not exceed (4) stories or 60 feet in height and shall not exceed 150,000 square feet of floor area. Additional lower levels accessed from the side or rear are permitted.
    - Building Floor Heights: All floor levels shall be 12-30 feet.
    - Projecting Façade Elements: Awnings, canopies, balconies, colonnades, porte-cocheres are permitted.
    - Outdoor Space: Outdoor amenity space such as patios or plazas serving building occupants are permitted.
    - Parking: Structured, public surface, on-street parking, private off-street parking permitted.

4. CATEGORY D – Residential Development Pattern Building placement:
    - Building Volume: Attached single-family dwellings may be constructed not to exceed 3 stories or (40) feet in height; detached single family dwellings may be constructed not to exceed 2 ½ stories or (35) feet in height.

C. DIMENSIONAL REGULATIONS

1. Maximum Site Coverage.

    a. Maximum site coverage shall be determined globally for the entire PMD District and shall not be calculated on an individual site/lot or sub-district basis. The total acreage used to define this calculation shall be the total PMD area, less any areas to be dedicated as public ROW or privately maintained streets, and shall be calculated as Site Coverage is defined in Section 405.120 of the City Code.

    b. Maximum site coverage for the entire PMD District shall not exceed 60%.

2. Maximum Floor Area Ratio (FAR).

    a. Floor Area Ratio shall be defined as the gross leasable floor area of all commercial buildings and all multifamily dwellings, and the dwelling unit floor area of all other residential buildings on any lot divided by the land area of such lots. Parking garages shall not be included in the Floor Area Ratio calculation.

    b. Maximum floor area ratio shall be determined globally for the entire PMD District and shall not be calculated on an individual site/lot or sub-district basis. The total acreage

used to define this calculation shall be the total PMD area less any land that has been dedicated for use as public ROW.

c. The Maximum Floor Area Ratio for the entire PMD District shall not exceed 0.70.

3. Lot Size Requirements:

   a. Minimum Lot Area. The permitted use of any given site or lot shall be determined by the size of the site or lot under single ownership or other common legal control as prescribed in Section 405.370(B).

   b. CATEGORY A – "Main Street" Sub-district:
      1. Minimum Lot Area. One-half (1/2) acre.
      2. Minimum Lot Width. One Hundred (100) feet.
      3. Minimum Lot Depth. One Hundred (100) feet.

   c. CATEGORY B – Mixed Use Sub-district:
      1. Minimum Lot Area. One-half (1/2) acre.
      2. Minimum Lot Width. Seventy-Five (75) feet.
      3. Minimum Lot Depth. One Hundred Fifty (150) feet.

   d. CATEGORY C – General Office Sub-district:
      1. Minimum Lot Size. One-half (1/2) acre.
      2. Minimum Lot Width. Seventy-Five (75) feet.
      3. Minimum Lot Depth. One Hundred Fifty (150) feet.

   e. CATEGORY D – Residential Sub-district:
      1. Minimum Lot Size. Eight hundred (800) square feet per lot.
      2. Minimum Lot Width. Fifteen (15) feet.
      3. Minimum Lot Depth. Forty (40) feet.

D. BULK REGULATIONS

1. Setback and Building Line Requirements within the Development (Internal):

   a. CATEGORY A – "Main Street" Sub-district:
      1. Minimum Front Yard. Zero (0) feet.
      2. Minimum Side Yard. Zero (0) feet.
      3. Minimum Rear Yard. Zero (0) feet.
      4. Buffer Yard. Not applicable internally.

   b. CATEGORY B – Mixed Use Sub-district:
      1. Minimum Front Yard. Zero (0) feet.
      2. Minimum Side Yard. Zero (0) feet.
      3. Minimum Rear Yard. Zero (0) feet.
      4. Buffer Yard. Not applicable internally.

   c. CATEGORY C – General Office Sub-district:
      1. Minimum Front Yard. Zero (0) feet.

2. Minimum Side Yard. Zero (0) feet.
3. Minimum Rear Yard. Zero (0) feet.
4. Minimum Distance Between Buildings or Unit Clusters. Zero (0) feet.
5. Buffer Yard. Not applicable internally.

d. CATEGORY D – Residential Sub-district:
   1. Minimum Front Yard. Five (5) feet.
   2. Minimum Side Yard. None or seven and a Half (7.5) feet.
   3. Minimum Rear Yard. Five (5) feet.
   4. Minimum Distance Between Buildings or Unit Clusters. Fifteen (15) feet.
   5. Buffer Yard. Not applicable internally.

2. Buffer, Setback and Building Line Requirements to Adjacent Zoning Parcels (External to the PMD District):

   a. Any tract of land site abutting or adjoining a commercial development shall not require a buffer yard. Any tract of land site abutting or adjoining a single-family residential development shall only be required to meet the following requirements below:

      i. Provide a fifty (50) foot buffer yard on all sides of the PMD development that abut a single-family development. Provide a twenty (20) foot greenspace on the development side of retaining wall along the southern end of Lots 10 and 17 with evergreen screening at the top of retaining wall. Where greenspace is at the bottom of the retaining wall, deciduous trees shall be planted in this area in addition to the evergreen trees. The buffer yard shall otherwise be as defined in amended Section 405.390 of the City of Creve Coeur's zoning ordinance.

      ii. No new commercial building may be located closer than twenty-five (25) feet to any required buffer yard.

   b. Setback and Building Line Requirements along Right-of-Ways:

      i. In every instance, the first ten (10) feet of the front yard setback measured from the right-of-way shall be provided with and maintained with sidewalks and/or landscaping including, but not limited to, deciduous street trees at regular intervals as shown on the concept plan.

      ii. No building or structure shall be closer than ten (10) feet when abutting a non-residential zoned property.

      iii. No maximum building line setback shall be enforced.

   c. Other CATEGORY D Regulations:

      1. Maximum number of units per acre. Twenty (20).
      2. Minimum dwelling unit floor area. Seven hundred fifty (750) square feet/unit.
      3. Garages. No district restrictions will be required on garage facing, recessing, architectural details, or street facing frontage.

E. PARKING AND LOADING REQUIREMENTS

1. Parking Requirements:

    a. Required parking for this entire PMD District shall be determined globally for the entire District and shall not be calculated on an individual site/lot or sub-district basis; and shall be calculated as follows:

        i. Required parking shall be calculated cumulatively per phase of development (as designated on the approved Phase Plan) based upon the sum of the square footage of individual land uses at the rate required by the City of Creve Coeur Code, less a fifteen percent (15%) reduction in the total number of spaces. Parking within the Residential Development District (CATEGORY D) shall not be provided with a fifteen percent (15%) reduction in the total number of spaces and shall adhere to the rate required by the City of Creve Coeur Code.

        ii. Required parking shall be allowed on surface parking lots, parking garages, and on-street locations.

        iii. No off-street surface parking locations will be allowed in any buffer yard or within the 10' yard setback along Right-of-Ways. Off-street surface parking locations shall be allowed in all other yards or setbacks within the development.

        iv. Joint Parking Facilities. In the case of mixed-use buildings, the parking spaces required shall be computed separately for each use except as provided in Sections 405.800(G)(3-4) and 405.820(H)(6)(b).

        v. On-street parking shall be allowed as approved by the City's Traffic Engineer and said parking shall count towards the required PMD parking noted in (i) above.

        vi. No individual lot Site Development Plan shall be approved which will result in parking provided at less than the amount set forth in prior paragraphs.

2. Loading Requirements:

    a. Purpose And Intent:

        i. It is the developers' intent to provide sufficient off-street loading areas and to ensure that such areas are located in a convenient location to the extent feasible. Loading areas shall be provided for trash collection as well as general deliveries.

        ii. The developer also acknowledges that the complexity of the proposed development will require flexibility in providing loading spaces and zones. The developer shall work with the City to find a balance of meeting the needs of the tenants and lot owners while respecting the safety and aesthetics of the traveling public. This may include actions such as restricting on-street parking during off-peak hours to allow for loading zones within on-street parking spaces to occur during early morning or late evening

hours. The developer shall work with the City to provide loading spaces and zones to meet the needs of the development.

iii. Loading areas utilized for the location of trash collection or compaction areas may coincide with the required building loading space.

b. Dimensions of Spaces:

i. Loading spaces, where designated, shall have a minimum dimension of twelve (12) feet width by thirty-five (35) feet length with a vertical clearance of at least fourteen (14) feet as shown on the approved individual lot Site Development Plan. In addition, some uses may require loading zones of larger dimension to accommodate larger tractor-trailers. These zones shall be at least sixty (60) feet in length, as shown on the approved individual lot Site Development Plan.

c. Schedule of Off-Street Loading Spaces:

i. Loading spaces and zones shall take a shared approach within Category A – Main Street, Category B – Mixed-Use, and Category C – General Commercial sub-districts. The required spaces and zones for each individual use will be determined based upon the sections below with the quantity to be provided for each lot based upon the minimum required for the highest individual use (not cumulative).

1. A combination of dedicated loading spaces and shared loading spaces / zones may be used by restricting on street parking during off peak hours to allow for loading spaces or zones within the on-street parking space areas to occur during early morning or late evening hours.

2. The required loading spaces shall be calculated based upon the maximum required uses as follows:

a. CATEGORIES A, B & C:

i. Residential & Transient Residential (Hotels, etc.) Uses. Any building containing more than fifty (50) apartment dwelling / room units shall provide one (1) loading space for each two hundred (200) units or fraction thereof.

ii. Office Uses. One (1) loading space shall be provided for each such use having greater than 6,000 square feet of gross floor space.

iii. Non-Residential or Non-Office Uses. The required loading spaces and/or zones shall be calculated upon the following table:

Floor Area (square foot)	Number of Spaces	Number of Zones
0 – 3,000	0	0
3,000 – 24,999	1	0
25,000 – 49,999	0	1
50,000 – 150,000	1	1
Each additional 150,000	1 additional	1 additional

b. CATEGORY D – Residential Sub-district: No loading spaces or zones shall be required within this sub-district.

3. The loading spaces required for Lots 8, 14 & 15 shall be shared. The existing underground tunnel network between the existing buildings to remain will provide access from each building to the existing loading docks on Lot 14. Additional loading spaces & zones may be provided to meet the requirements above on any of the 3 lots and will be shared and accessible from the existing tunnel system.

4. The loading spaces and zones shall be provided based upon the approved Site Development Plan for each individual lot.

F. LANDSCAPE AND TREE REQUIREMENTS

1. The developer shall adhere to the Resource Protection Standards (Article V) of the City of Creve Coeur Code with the following exceptions:

   a. Landscaping along Main Street within the City of St. Louis water main easement shall require City of St. Louis Water Department approval.

   b. All parking and/or loading spaces adjoining interior public rights-of-way shall be screened based on-site conditions.

   c. In addition to any landscaped front, back or side yard areas required by this or any other Section of the City of Creve Coeur code, a minimum of ten (10) square feet of interior landscaped area shall be provided within the parking lot for each five hundred (500) square feet of paved area within any surface parking lot including parking spaces and driving aisles. The landscaping shall be in one (1) or more areas so as to minimize and reduce the apparent size of parking areas. On-street parking provided within the development shall be exempt from this requirement. Existing surface parking lots to be repurposed as part of this development shall also be exempt from this requirement, even if maintenance is to be considered for said existing lots to remain.

   d. Landscape plans for each parcel shall be coordinated and consistent with a Landscape Concept Plan for the applicable Category of this ordinance. These plans should enhance the pedestrian experience, complement architectural features, provide shade, and screen utility areas.

e. All medians greater than 4' in width (3' of plant-able space) within the development are required to be landscaped and irrigated and will be maintained by the developer.

f. All existing surface parking lots to remain on Lots 9, 13, & 15 shall not be required to meet Article V of the City of Creve Coeur Code. Existing surface parking lots to remain on Lot 13 shall be required to provide additional landscaping where appropriate during the Site Development Plan for that lot.

g. In order to present a healthy, neat and orderly appearance, all landscaped areas within the Main Street sub-district category, as well as Lots 1 and 3 of the Mixed-Use sub-district categories, the "Village Green" as identified on the Site Concept Plan (with the exception of back of house and service areas), and Lots 10 and 17 within the General Office sub-district category shall be provided with an installed, operated and maintained underground irrigation system. All other landscaped areas outside of these areas shall be landscaped with plant materials adapted to the region and not requiring irrigation to thrive unless proposed plant selections deem irrigation necessary.

h. All landscaped areas in parking areas or adjacent to parking areas or loading areas, or that can be encroached upon by a motor vehicle, shall be provided with adequate, vehicular deterrent (such as curb, bollard, wheel stop, or other design alternative to be approved by the Director of Public Works) to restrict the destruction of the landscape areas by vehicles.

2. The following tree conservation standards apply throughout the PMD District:
   a. Any removal of individual trees 6-inches in diameter at breast height (DBH) or larger or any removal of tree masses as identified on the approved Tree Preservation Plan of the Site Concept Plan that exceeds 50 percent removal shall require replacement within the PMD District. When replacement is required, the following standards shall apply:
      i. Removed trees 6-inches at DBH or greater shall be replaced on the basis of a one-to-one ratio (1:1). All trees that are over 20-inches at DBH shall be replaced on the basis of a two-to-one ratio (2:1). All replacement trees shall be a minimum of two and one-half (2.5) caliper inches at time of planting. Such trees shall be of a species contained in the City's list of recommended trees and shall be in addition to any trees classified as street trees.
      ii. The removal of any trees that are hazardous, in poor condition, dead, diseased or considered invasive by the Missouri Department of Conservation as determined by a licensed landscape architect, architect, engineer or International Society of Arboriculture (ISA) certified arborist or other evidence as deemed credible by the City, is not subject to these requirements.

G. SIGN REQUIREMENTS

1. Signs shall be permitted in accordance with a comprehensive plan of signage subject to the recommendation of the Planning and Zoning Commission and approval of the City Council in accordance with Section 405.955 of the Creve Coeur Sign Regulations. The comprehensive plan for signage shall show the location, size, height, extent and design of all proposed signs.

H. LIGHT REQUIREMENTS

1. Provide a lighting plan in accordance with the City of Creve Coeur Code for each phase of the PMD District as a component of the Site Development Plan submission.
2. All lighting proposed on lots within the development that are immediately adjacent to existing single family residential zoning districts (currently shown on the Site Concept Plan as Lots 10 & 17) shall provide occupancy sensors and full cut-off/shielded fixtures. The maximum light pole height within any surface or structured parking lots adjacent to existing single-family districts is 16-feet.

3. Individual Lighting Plans, including fixture types, shall be consistent with a Lighting Fixture Plan for the applicable category in this ordinance. The proposed Lighting Fixture Plan must provide for consistent and complementary fixture designs and styles throughout the PMD District.

I. ARCHITECTURAL REQUIREMENTS

1. For individual lot developments only, the developer shall submit a design package including, but not limited to, architectural elevations, colored renderings and building materials. The proposed package shall give consideration to creating a visually appealing development pattern consistent with the intent and purpose of this PMD District. Architectural information is to be reviewed and approved by the Planning and Zoning Commission.

2. Building facades should be articulated by using color, arrangement or change in materials to emphasize the façade elements. The planes of the exterior walls may be varied in height, depth or direction. Extremely long facades shall be designed with sufficient building articulation and landscaping to avoid a monotonous or overpowering appearance.

3. Building finish material types in Olia Village shall be generally specified as any combination of white, off-white, light grey, wood grain, or light beige. Accents are acceptable as dark grey, black, or dark bronze. Red, orange, or yellow brick or other bold color finish materials are prohibited. Masonry and glass are preferred. Metal, cementitious siding, and EFIS should not be used as the primary material on the building.

4. Trash enclosures: The location, material, and elevation of any trash enclosure will be as approved on the Site Development Plan. Trash receptacles shall be located indoors or be enclosed with an eight (8) foot high sight-proof enclosure with materials that match the adjacent structures and complemented by adequate landscaping as approved on the individual lot-specific landscape plans.

5. Mechanical equipment placed on the ground shall be adequately screened with six (6) foot high sight proof enclosures or to a height equal to the height of the equipment (whichever is greater).

6. Rooftop mechanical equipment shall be screened on roofs with architecturally designed, fully enclosed screening materials that complement the building design at a height equal to or greater than the height of the equipment.

7. Flat roof surfaces below 5 stories shall incorporate ballast, green roof, artificial turf, or medium tone colored membrane to reduce daytime glare for upper-level tenants in adjacent buildings.

J. ACCESS/ACCESS MANAGEMENT

1. Street and drives related to this development shall be designed and located as directed by the Department of Public Works.

2. The location of public streets within the PMD District shall be determined by the Site Concept Plan.

3. The location of lot access points shall be determined by individual lot-specific Site Development Plans within the PMD District.

4. Access to the development from external roadways shall be as shown on the Site Concept Plan and as directed by the City of Creve Coeur, the Missouri Department of Transportation, and St. Louis County Department of Transportation, as applicable.

5. Adequate sight distance shall be provided. If adequate sight distance cannot be provided at the access location(s), acquisition of right-of-way, reconstruction of pavement and other off-site improvements may be required to provide the required sight distance as required by the City of Creve Coeur and the agency in control of the right of way off which the access is proposed.

6. Driveway access to internal streets shall comply with City Code.

7. No construction-related parking shall be permitted within right-of-way or on an existing roadway. All construction related to parking shall be confined to the development's boundary.

8. Any improvements within the Missouri Department of Transportation (MoDOT) right-of-way will require a permit from MoDOT. The entrance geometries and drainage design shall be in accordance with MoDOT standards.

9. Any request to install a gate in this development must be approved by the City of Creve Coeur and the agency in control of the right-of-way off of which the entrance is constructed. No gate installation will be permitted on public right-of-way.

    a. If a gate is allowed to be installed on a street in the development, the street(s) within the development or that portion of the development that is gated shall be private.

K. PUBLIC/PRIVATE ROAD IMPROVEMENTS, INCLUDING PEDESTRIAN CIRCULATION

1. Approvals are to be obtained from the City of Creve Coeur Department of Public Works and/or the Missouri Department of Transportation as applicable.

2. The National Association of City Transportation Officials (NACTO) has an Urban Street Design Guide. All intersections of Olia Village shall conform to the principles of the NACTO Urban Street Design Guide.

3. Internal streets and sidewalks shall be private unless an agreement is reached and executed between the City of Creve Coeur and Olia Village whereby the City of Creve Coeur accepts the internal streets and/or sidewalks as public. All public streets shall be designed to meet the City of Creve Coeur's Code for the Development of Streets (Section 410.240), unless otherwise described herein.

4. Provide sidewalks, conforming to Americans with Disabilities Act (ADA) standards, along all frontages of the site and along internal roadways as shown on the Site Concept Plan. The sidewalk shall provide for future connectivity to adjacent developments and/or roadway projects. The sidewalk may be located within right-of-way controlled by another agency, if permitted by that agency, or on private property within a sidewalk, maintenance, and utility easement dedicated to the City Creve Coeur for public use.

5. Pedestrian crossings for Olive Boulevard shall be provided as required by MoDOT.

6. Mid-block crossings internal to the PMD District shall be provided as shown on the approved Site Concept Plan, or as otherwise approved by the City's Traffic Engineer.

7. Obtain approvals from the City of Creve Coeur and Missouri Department of Transportation, as necessary, for locations of proposed curb cuts and access points, areas of new dedication, and roadway improvements.

8. Additional right-of-way and road improvements shall be provided, as required by the City of Creve Coeur and/or the Missouri Department of Transportation.

9. Provide a minimum 8-foot-wide shared use path for public use which connects to the existing sidewalk in right-of-way along the south side of Olive Boulevard.

    a. The location of the shared use path within the PMD District shall be as shown in the approved Site Concept Plan.

10. Pedestrian circulation to be as shown on the approved Site Concept Plan.

11. Public Street Design Standards:

a.	Minimum Right-Of-Way	26'
b.	Maximum Grade at Centerline	10%
c.	Minimum Grade at Centerline	1.0% Concrete
d.	Minimum Pavement Width (Back-to-Back of Curb)	26'
e.	Minimum Site Distance at Crest of Curve	150'
f.	Minimum Horizontal Radius	150'

	of Centerline	
g.	Minimum Horizontal Tangent Distance Between Reverse Curves	None
h.	Sidewalks	As shown on approved Site Concept Plan
i.	Curb & Gutter	Vertical Or Lip (Rolled) Concrete

12. Public Street Pavement Standards:

    a. Concrete = minimum 8 inches on 4-inch compacted crushed limestone (typ. 1" minus rock)

13. Private Street Design Standards:

a.	Minimum Right-Of-Way	N/A
b.	Maximum Grade at Centerline	10%
c.	Minimum Grade at Centerline	1.0% Asphalt / 1.0% Concrete
d.	Minimum Pavement Width (Back-to-Back of Curb)	24'
e.	Minimum Site Distance at Crest of Curve	150'
f.	Minimum Horizontal Radius of Centerline	150'
g.	Minimum Horizontal Tangent Distance Between Reverse Curves	None
h.	Sidewalks	As shown on approved Site Concept Plan
i.	Curb & Gutter	Vertical or Lip (Rolled) Concrete

14. Private Street Pavement Standards:

    a. Asphalt or Concrete. Pavement sections to be determined based upon recommendations from Geotechnical Report prepared for this development.

L. TRAFFIC IMPACT STUDY

1. External Roadway Network:

    a. The developer shall provide a traffic impact study as directed by the City of Creve Coeur & the Missouri Department of Transportation for impacts to the existing adjacent public roadway network. The scope of the study shall include external circulation and may be limited to specific impacts, such as the need for additional lanes, entrance configuration, geometries, sight distance, traffic signal modifications or other improvements required, as long as the density of the proposed development remains consistent with the Site Concept Plan. The proposed trip generations included as part of this study shall be used as a baseline for the overall development of the PMD District and shall not be reviewed or required to be adhered to for each individual lot development. Should the actual trip generations for the entire PMD District increase by more than 10% from the density assumed in the traffic impact study approved by MoDOT within five (5) years of the initial

approved Site Concept Plan, an updated traffic study may be required by the City of Creve Coeur.

2. Internal Roadway Network:

    a. Both the City and the developer acknowledge that this development will include a built environment that is meant to encourage pedestrian activity and improve pedestrian mobility. This approach will include intentional roadway & sidewalk design geometries to be established to promote pedestrian access over vehicular where possible, while respecting the safety of both pedestrians and vehicles as well as emergency personnel. This will include a design which considers how people interact with the space to increase access for all community members, including ADA compliancy. As such, a comprehensive traffic impact study including traffic counts, trip generations, signal warrants, accessory warrants, etc. for the internal roadway network will not be required. Approval will be required by the City's Traffic Engineer, which may include more detailed analysis of isolated locations.

M. MISCELLANEOUS

1. Kiosks are allowed in the PMD District provided they do not impede pedestrian traffic on the sidewalk and meet ADA accessibility requirements. Kiosks can be an arrangement of mobile units, fixed units, or a mixture of both joined together to form a structure not to exceed 100 sq. feet. Uses within the kiosk will be the approved uses in this Attachment A. Locations and numbers of kiosks shall be as approved on the Site Concept Plan for the PMD District.

2. Loading docks, overhead doors and service entries will be permitted only on the side or rear of a tenant space. Deliveries shall be made on the side or rear of a tenant space with the exception of designated street delivery and loading areas as approved on the Site Concept Plan.

3. The height of retaining walls required for the development shall conform to the approved Site Concept Plan or Site Development Plan corresponding with each phase, as appropriate.

4. Stream Buffer Protection Ordinance Requirements:

    a. Stream bank shall be defined as the "ordinary high-water mark" as defined by the US Army Corps of Engineers.

    b. Existing impervious encroachments into existing Stream Buffer Protection setbacks from any existing stream shall not be required to meet the Stream Buffer Protection Regulations in Chapter 430 of the City of Creve Coeur code regardless of whether improvements are proposed to be made to said existing impervious areas. No further impervious encroachment into existing Stream Buffer setbacks will be allowed.

5. The addition of Electric Vehicle (EV) charging stations will be provided where appropriate as determined during the Site Development Plan stage for individual lots.

6. Internal bus stops shall not be required within the development. The existing bus stop along the south side of Olive Boulevard, west of Pavilion shall be upgraded to include an architectural bus shelter meeting the following minimum criteria as acceptable to MoDOT & Metro:

N. Pre-finished or painted steel 6' x 13' bus shelter with wind screen side, rear panels and shed roof. Shelter accessories to include a coordinating bench and waste receptacle. New 7' x 14' slab to match adjacent sidewalk finish and provide flush connection. The final bus stop shelter design will follow the Site Development Plan approval process.

O. PUBLIC ART REQUIREMENTS

1. A separate public art package shall be required and follow the City of Creve Coeur review processes for public art which include review and recommendation by the City's Arts Committee to the Planning and Zoning Commission with City Council approval of public art agreements for public access easements and owner maintenance.

PGAV PLANNERS

Community Planning
Economic Development
Urban Design

Saint Louis Place
200 North Broadway, Suite 1000
St. Louis, Missouri 63102
(314) 231-7318

TECHNICAL MEMORANDUM

Re: Olia Village Tax Impact Statement
Creve Coeur, Missouri

Date: March 26, 2024

To: Mark Perkins, City Administrator
Jason Jaggi, Director of Community Development

CC: Mark Grimm, Special Counsel to City

From: Andy Struckhoff, President
Lindsey Evans, Senior Project Manager

I. INTRODUCTION

This memorandum and the accompanying tables comprise the Tax Impact Statement (the "Memo") for Olia Village, a mixed-use, multi-phase development (the "Project") proposed by 10300 Olive Dev LLC (the "Developer") for the 10300 Olive Boulevard Redevelopment Area (the "Redevelopment Area" or "Area"). The Area was formerly the Bayer West Campus and is located at the southwest corner of North Lindbergh Boulevard and Olive Boulevard. The Area is within the corporate limits of the City of Creve Coeur, Missouri (the "City"), which is located in St. Louis County (the "County") in the State of Missouri (the "State").

The Developer purchased the approximately 96-acre Area in 2022 after Bayer decided to sell the property, citing a reduced need for physical office space post-pandemic. The Developer plans to utilize some of the now vacant, existing buildings and is proposing a mix of new buildings to house commercial and residential components with a town center feel. The Project is anticipated to feature a variety of building uses including commercial, restaurant, mixed-use with ground floor retail/commercial and multifamily above, hotels, apartments, parking, office, research, and attached townhomes. Table 1 shows a breakdown of the Project components and the four phases the Developer is proposing to complete between 2026 and 2030. The Developer is also proposing an initial phase for the land development.

A rendering of the Project is shown in Figure 1; an aerial image of existing conditions and the site boundary is shown in Figure 2; and a site plan of the Project with lot numbers is shown in Figure 3. At approximately $985 million in estimated total development costs, this Project is a large-scale endeavor and will have a major impact on the City. The Developer is projecting it will incur approximately $135 million in extraordinary site costs including utility infrastructure and improvements, transportation improvements, demolition and remediation of existing buildings, as well as stormwater improvements.

To render the Project financially feasible, the Developer has requested tax abatement pursuant to the Urban

Redevelopment Corporations Law, Chapter 353 of the Revised Statutes of Missouri, as amended ("Chapter 353"), an additional 1% sales tax and a real property special assessment imposed by a Community Improvement District ("CID") pursuant to the Community Improvement District Act (the "CID Act"), an additional 0.5% sales tax imposed by a Transportation Development District ("TDD") , and Chapter 100 sales tax exemption on construction materials ("Chapter 100"). The City engaged PGAV Planners, LLC ("PGAV") to review portions of the materials submitted by the Developer and to develop this Memo per the requirements of Chapter 353 and the CID Act.

II. TAX REVENUE PROJECTIONS

Four major sources of revenue for local jurisdictions include real property taxes, personal property taxes, sales taxes, and utility taxes. This Memo estimates the impact of the Project and requested tax abatement on real property tax revenues. This Memo provides a written statement that includes an estimate of the amount of ad valorem tax revenues of each political subdivision that may be affected by the proposed real property tax abatement pursuant to Chapter 353.

This analysis is for a Project that is not yet constructed and is based on the improvement of a currently underutilized parcel and vacant existing buildings. The user of this analysis is cautioned to study the assumptions noted on each of the attached tables, in addition to the assumptions stated in the following paragraphs.

III. REAL PROPERTY TAX ABATEMENT REQUEST

The Developer has requested Chapter 353 real property tax abatement on the Project site and improvements, excluding Lot 16 (where the townhomes will be located). Lot 16 is expected to be included within the Redevelopment Area, but property owners are expected to pay 100% taxes on their lots/homes. Each Lot, besides Lot 16, may, subject to a redevelopment agreement among the City, the Developer, and a redevelopment corporation receive real property tax abatement for up to 25 years after title to such Lot is transferred to the redevelopment corporation.

It is anticipated that the Lots will be developed in four phases with the following anticipated terms:

- Phase 1 (abatement term 2026-2050): Lots 1, 3, 4, & 9
- Phase 2 (abatement term 2027-2051): Lots 2, 5, 6, 8, 14, and 15
- Phase 3 (abatement term 2029-2053): Lots 7, 11, & 12
- Phase 4 (abatement term 2030-2054): Lots 10, 13 & 17

In each year before a Lot is subject to abatement, the Developer is expected to pay either (1) 100% of the real estate taxes actually due on such Lot and any improvements thereon or (2) 100% of such Lot's allocable share of the base equalized assessed value of the entire Area as of January 1, 2023 (the "Base EAV"), whichever is greater.

In each of the first 10 years that a Lot is subject to abatement, the Developer is expected to pay (a) 100% of the real estate taxes payable to the Creve Coeur Fire Protection District ("CCFD") with respect to such Lot and any improvements thereon, plus (b) 100% of the real estate taxes owing to the other taxing districts associated with such Lot's allocable share of the Base EAV, plus (c) 25% of the real estate taxes owing to the other taxing districts on the incremental assessed valuation of such Lot and any improvements thereon (75% abatement).

In each of the next 15 years that a Lot is subject to abatement, the Developer is expected to pay (i) 100% of the real estate taxes payable to the CCFD with respect to such Lot and any improvements thereon, plus (ii) 50% of the real estate taxes owing to the other taxing districts on the assessed valuation of such Lot and any improvements thereon (50% abatement).

IV. NOTABLE ASSUMPTIONS

1. Projected Market Value and Assessed Value

See Table 1 attached, in Appendix A. The assumptions used in this analysis to project future market values are based on information on comparable facilities obtained from the St. Louis County Assessor (the "Assessor"). At the time the buildings are completed, the Assessor will appraise the actual Project as constructed. Since the Project has not yet been built, the Assessor cannot determine the future appraised value for purposes of levying real property taxes.

2. Real Property Tax Rates

See Table 2 attached, in Appendix A. The total real property tax rate levied against Area commercial property is $9.2401 per $100 of assessed valuation, inclusive of the commercial surcharge rate of $1.70 per $100 of assessed valuation. The total commercial real property tax rate exclusive of the CCFD rate of $1.1460 per $100 of assessed valuation is $8.0941 per $100 of assessed valuation.

The total real property tax rate levied against Area residential property is $6.9462 per $100 of assessed valuation. The total residential real property tax rate exclusive of the CCFD rate of $0.9080 per $100 of assessed valuation is $6.0382 per $100 of assessed valuation.

Actual tax rates will vary from year-to-year due to changes in adopted tax rates, State mandated rollbacks resulting from increased assessed value through reassessment, and/or bond issues and debt retirement.

3. Creve Coeur Fire Protection District

Pursuant to Chapter 353, a fire district is entitled to request reimbursement in an amount that is at least 50% but not more than 100% of the amount of ad valorem real, personal, and other tangible property tax revenues that the fire district would have received in the absence of tax abatement. CCFD has requested reimbursement of 100% of the amount of ad valorem tax revenues that CCFD would have received in the absence of tax abatement (the "CCFD Reimbursement"). The attached tables illustrate this CCFD Reimbursement.

4. Base Equalized Assessed Value

See Table 3 attached, in Appendix A. The Base EAV of the Area is $10,860,160 and represents the most recent equalized assessed value of the existing Project site and existing improvements as of January 1, 2023.

The Area is currently assessed as commercial property. For the purposes of this Memo, the base taxes were calculated using the commercial tax rate and are estimated to be $1,003,490 ("Base Taxes"). The attached tables illustrate the Base EAV and Base Taxes. It should be noted that the Area's assessment may change to reflect its use upon redevelopment.

The Project site is expected to be subdivided into 17 Lots and common ground that will contain one or more buildings and improvements. Each Lot, along with any existing improvements if applicable, is expected to be allocated a proportionate share of the Base EAV as illustrated on Table 3.

The tax proceeds attributable to all real property within the Area in excess of the Base Taxes and the CCFD Reimbursement are defined as the "Incremental Taxes" or "Incremental Revenues." This Memo estimates the impact of the requested tax abatement on these Incremental Revenues that may be generated from the Project.

5. Growth in Market Value

The market value of each of the Project's phases is projected to grow two percent (2%) in each reassessment year (i.e. odd-numbered years) beginning after construction completion of each phase.

V. REAL PROPERTY TAXES FISCAL IMPACT

1. Estimated Real Property Taxes

See Table 4 attached, in Appendix A. This table illustrates the estimated tax proceeds attributable to all real property within the Area if the Project were to not move forward (the "No-Build Scenario").

See Tables 5 through 9 attached, in Appendix A. These tables illustrate the estimated total residential and commercial real property taxes that may be generated annually during the tax abatement period pursuant to the Project and its anticipated implementation schedule. These table illustrate the real property taxes by phase as well as totaling all phases.

These tables also illustrate the estimated CCFD Reimbursement (labeled on the tables as "Total Res and Comm Taxes Paid to CCFD") as well as the estimated Base Taxes (labeled on the tables as "Base Taxes Paid (Non-CCFD)") paid annually. The Base Taxes do not include the CCFD portion because that portion is included in the CCFD Reimbursement.

After determining the estimated annual Incremental Taxes, the estimated annual abated portion of Incremental Taxes (labeled on the tables as "Incremental (and Total) Taxes Abated") and estimated annual unabated portion of Incremental Taxes (labeled on the tables as "Incremental Taxes Paid") are included in the table. The estimated "Total Taxes Paid" annually is included in the table, which is defined as the sum of the CCFD Reimbursement, the Base Taxes Paid (Non-CCFD), and the Incremental Taxes Paid.

2. Taxes by Jurisdiction

See Tables 10 through 12 attached, in Appendix A, which are separated by jurisdiction and illustrate the estimated real property taxes paid or abated during the tax abatement period (with or without abatement in place) pursuant to the Project and its anticipated implementation schedule. Table 10 estimates the real property taxes paid annually without any abatement in place. Table 11 estimates the real property taxes paid annually with the requested abatement in place. Table 12 estimates the real property taxes abated annually with the requested abatement in place.

3. Taxes by Jurisdiction – Various Time Periods

See Tables 13 through 15 attached, in Appendix A, which are totals for various time periods of the annual information included in Tables 10 through 12.

VI. GENERAL CONDITIONS AND ASSUMPTIONS

This Memo is based on assumptions, projections, and information provided by the Developer and various other sources considered reliable. PGAV neither verified nor audited the information that was provided by the other sources. Information provided by others is assumed to be reliable, but PGAV assumes no responsibility for its accuracy or certainty.

These projections are intended to be interpreted and used based on the assumptions used for their preparation. Projections formulated in this document are based on currently available information and the assumptions as stated. PGAV believes that the assumptions used in this analysis constitute a reasonable basis for its preparation.

In addition to the impact on these projections of actual implementation activities, external factors may influence these assumptions and projections as well. Changes in the

national, regional, and local economic and real estate market conditions and trends may impact the real estate market and redevelopment activity. Changes or modifications may also be caused by economic, environmental, legislative, or physical events or conditions. PGAV assumes no liability should market conditions change or the development schedule not be met.

The tax revenue projections contained in this report represent prospective information, opinions, and estimates regarding a development project that is not yet constructed. These projections are not provided as predictions or assurances that a certain level of performance will be achieved or that certain events will occur. The actual results will vary from the projections described herein and the variations may be material. Because the future is uncertain, there is risk associated with achieving the results projected. PGAV assumes no responsibility for any degree of risk involved.

This report and the information included herein are intended for the purposes of providing a preliminary concept of the performance of this potential project for use by the City and should not be used for other purposes with the exception of sharing with overlapping taxing districts as required by Chapter 353.

Neither this document nor its contents may be referred to or quoted, in whole or in part, for any purpose including, but not limited to, any official statement for a bond issue and consummation of a bond sale, any registration statement, prospectus, loan, or other agreement or document, without prior review and written approval by PGAV regarding any representation therein with respect to PGAV's organization and work product.

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PGAV PLANNERS

OLIA VILLAGE TAX IMPACT STATEMENT
CREVE COEUR, MISSOURI

MARCH 26, 2024

APPENDIX A

List of Figures and Tables
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Figure / Table	Title
Figure 1	Project Site Rendering
Figure 2	Aerial Image and Site Boundary
Figure 3	Project Site Plan
Table 1	Project Development Summary - Projected Market and Assessed Values Upon Redevelopment
Table 2	Real Property Tax Rates per $100
Table 3	Most Recent Equalized Assessed Valuation ("Base EAV") and Allocable Share Methodology
Table 4	No-Build Scenario - Estimated Real Property Taxes Paid 2026 through 2054 (All Phases)
Table 5	Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 1)
Table 6	Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 2)
Table 7	Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 3)
Table 8	Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 4)
Table 9	Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (All Phases)
Table 10	Estimated Real Property Taxes Paid - without Abatement in Place - Separated by Jurisdiction
Table 11	Estimated Real Property Taxes Paid - with Abatement in Place - Separated by Jurisdiction
Table 12	Estimated Real Property Taxes Abated - with Abatement in Place - Separated by Jurisdiction
Table 13	Estimated Real Property Taxes Paid - without Abatement in Place - Separated by Jurisdiction - Totaled for Various Time Periods
Table 14	Estimated Real Property Taxes Paid - with Abatement in Place - Separated by Jurisdiction - Totaled for Various Time Periods
Table 15	Estimated Real Property Taxes Abated - with Abatement in Place - Separated by Jurisdiction - Totaled for Various Time Periods

Figure 1 - Project Site Rendering



Figure 2 – Aerial Image and Site Boundary

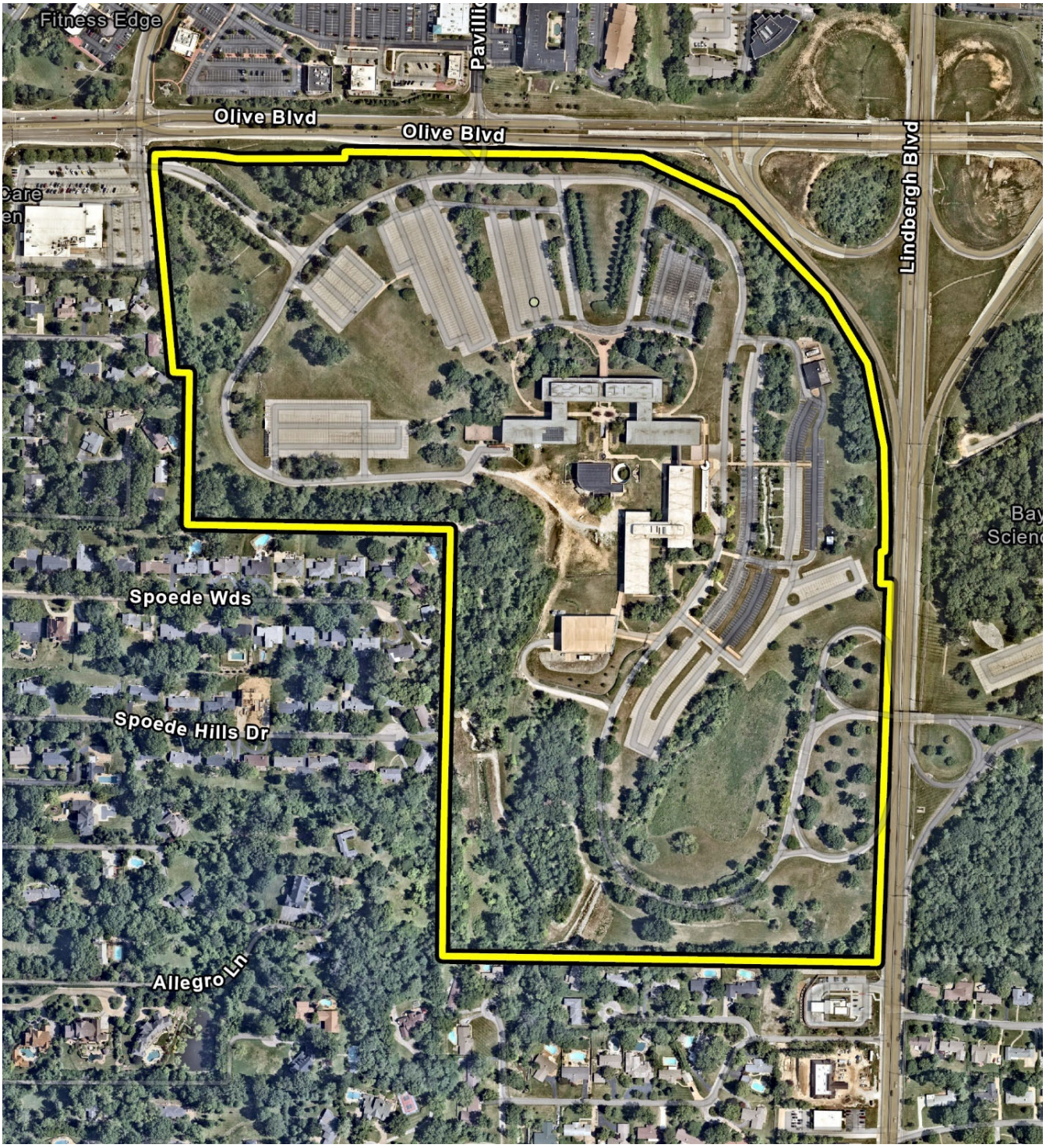


Figure 3 – Project Site Plan

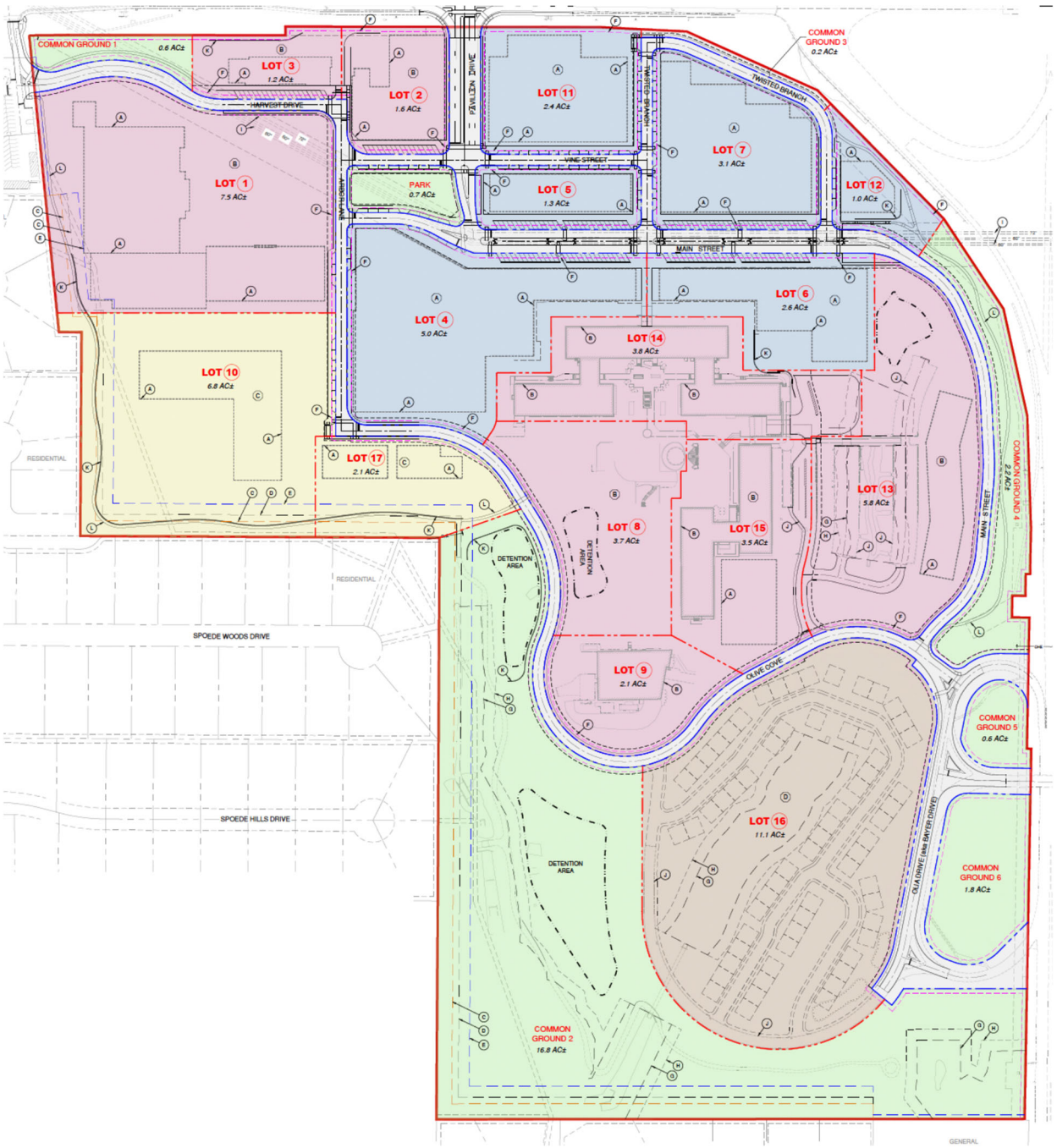


Table 1

Project Development Summary - Projected Market and Assessed Values Upon Redevelopment

Olia Village - 10300 Olive Boulevard Redevelopment Project

Creve Coeur, Missouri

Phase	Parcel	Anticipated Year of Completion	Project Component	Improvement Size (SF)	Estimated Market Value per SF	Estimated Market Value at Completion [1]	Assessment Rate	Estimated Assessed Value per SF	Estimated Assessed Land Value at Completion	Estimated Assessed Improvement Value at Completion	Estimated Assessed Total Value at Completion
Phase One											
One	1	2026	Grocery	70,000	$ 170	$ 11,891,250	32%	$ 54	$ 2,219,700	$ 1,585,500	$ 3,805,200
One	1	2026	Jr. Box	50,000	$ 117	$ 5,856,250	32%	$ 37	$ 501,500	$ 1,372,500	$ 1,874,000
			Subtotal	**120,000**		**$ 17,747,500**			**$ 2,721,200**	**$ 2,958,000**	**$ 5,679,200**
One	3	2026	Coffee	2,435	$ 332	$ 808,572	32%	$ 106	$ 140,475	$ 118,268	$ 258,743
One	3	2026	Storefront	4,245	$ 264	$ 1,119,088	32%	$ 84	$ 160,121	$ 197,987	$ 358,108
One	3	2026	Storefront	3,654	$ 264	$ 963,286	32%	$ 84	$ 137,829	$ 170,423	$ 308,251
One	3	2026	Storefront	3,600	$ 264	$ 949,050	32%	$ 84	$ 135,792	$ 167,904	$ 303,696
			Subtotal	**13,934**		**$ 3,839,996**			**$ 574,217**	**$ 654,581**	**$ 1,228,799**
One	4	2026	159 Apartments	183,669	$ 182	$ 33,476,092	19%	$ 35	$ 710,799	$ 5,649,658	$ 6,360,457
One	4	2026	Jr Box	12,746	$ 117	$ 1,492,875	32%	$ 37	$ 127,842	$ 349,878	$ 477,720
One	4	2026	Café	2,453	$ 332	$ 814,549	32%	$ 106	$ 141,514	$ 119,142	$ 260,656
One	4	2026	Storefront	3,416	$ 264	$ 900,543	32%	$ 84	$ 128,852	$ 159,322	$ 288,174
One	4	2026	132 Apartments	150,273	$ 182	$ 27,389,232	19%	$ 35	$ 581,557	$ 4,622,397	$ 5,203,954
One	4	2026	Jr Box	36,952	$ 117	$ 4,328,003	32%	$ 37	$ 370,629	$ 1,014,332	$ 1,384,961
One	4	2026	Storefront	2,001	$ 264	$ 527,514	32%	$ 84	$ 75,478	$ 93,327	$ 168,804
One	4	2026	Storefront	3,867	$ 264	$ 1,019,438	32%	$ 84	$ 145,863	$ 180,357	$ 326,220
One	4	2026	Storefront	4,167	$ 264	$ 1,098,525	32%	$ 84	$ 157,179	$ 194,349	$ 351,528
One	4	2026	Restaurant	4,070	$ 270	$ 1,096,992	32%	$ 86	$ 130,159	$ 220,879	$ 351,038
			Subtotal	**403,614**		**$ 72,143,763**			**$ 2,569,870**	**$ 12,603,642**	**$ 15,173,512**
One	9	2026	Data Center	36,476	$ 109	$ 3,986,143	32%	$ 35	$ 316,612	$ 958,954	$ 1,275,566
			Subtotal	**36,476**		**$ 3,986,143**			**$ 316,612**	**$ 958,954**	**$ 1,275,566**
Phase One Subtotal				**574,024**		**$ 97,717,402**			**$ 6,181,899**	**$ 17,175,177**	**$ 23,357,077**
			Phase One Commercial	240,082		$ 36,852,079			$ 4,889,544	$ 6,903,121	$ 11,792,665
			Phase One Residential	333,942		$ 60,865,323			$ 1,292,356	$ 10,272,056	$ 11,564,411
Phase Two											
Two	2	2027	2nd Floor Office	6,658	$ 172	$ 1,144,344	32%	$ 55	$ 99,870	$ 266,320	$ 366,190
Two	2	2027	Storefront	6,658	$ 264	$ 1,755,215	32%	$ 84	$ 251,140	$ 310,529	$ 561,669
Two	2	2027	Restaurant	11,300	$ 192	$ 2,174,191	32%	$ 62	$ 187,128	$ 508,613	$ 695,741
			Subtotal	**24,616**		**$ 5,073,750**			**$ 538,138**	**$ 1,085,462**	**$ 1,623,600**
Two	5	2027	2 Story Office	54,862	$ 78	$ 4,279,236	32%	$ 25	$ 275,956	$ 1,093,400	$ 1,369,356
Two	5	2027	Restaurant	10,000	$ 192	$ 1,924,063	32%	$ 62	$ 165,600	$ 450,100	$ 615,700
Two	5	2027	Storefront	2,700	$ 264	$ 711,788	32%	$ 84	$ 101,844	$ 125,928	$ 227,772
Two	5	2027	Storefront	3,050	$ 264	$ 804,056	32%	$ 84	$ 115,046	$ 142,252	$ 257,298
Two	5	2027	Restaurant	10,000	$ 192	$ 1,924,063	32%	$ 62	$ 165,600	$ 450,100	$ 615,700
			Subtotal	**80,612**		**$ 9,643,205**			**$ 824,046**	**$ 2,261,780**	**$ 3,085,826**
Two	6	2027	172 Apartments	174,962	$ 182	$ 31,889,127	19%	$ 35	$ 677,103	$ 5,381,831	$ 6,058,934
Two	6	2027	Storefront	3,934	$ 264	$ 1,037,101	32%	$ 84	$ 148,390	$ 183,482	$ 331,872
Two	6	2027	Storefront	2,375	$ 264	$ 626,109	32%	$ 84	$ 89,585	$ 110,770	$ 200,355
Two	6	2027	Storefront	3,218	$ 264	$ 848,345	32%	$ 84	$ 121,383	$ 150,088	$ 271,470
Two	6	2027	Café	2,113	$ 332	$ 701,648	32%	$ 106	$ 121,899	$ 102,628	$ 224,527
Two	6	2027	Retail/Auto	35,178	$ 156	$ 5,498,761	32%	$ 50	$ 806,280	$ 953,324	$ 1,759,604
			Subtotal	**221,780**		**$ 40,601,091**			**$ 1,964,640**	**$ 6,882,123**	**$ 8,846,763**
Two	8	2027	Amenity	55,549	$ 109	$ 6,075,672	32%	$ 35	$ 444,392	$ 1,499,823	$ 1,944,215
Two	14	2027	186 Apartments	307,610	$ 182	$ 56,065,970	19%	$ 35	$ 1,190,451	$ 9,462,084	$ 10,652,534
Two	15	2027	Office	158,940	$ 109	$ 17,369,162	32%	$ 35	$ 1,379,599	$ 4,178,533	$ 5,558,132
			Subtotal	**522,099**		**$ 79,510,804**			**$ 3,014,442**	**$ 15,140,439**	**$ 18,154,881**
Phase Two Subtotal				**849,107**		**$ 134,828,849**			**$ 6,341,266**	**$ 25,369,804**	**$ 31,711,069**
			Phase Two Commercial	366,535		$ 46,873,753			$ 4,473,712	$ 10,525,889	$ 14,999,601
			Phase Two Residential	482,572		$ 87,955,097			$ 1,867,554	$ 14,843,915	$ 16,711,468

[1] **Market values based on comparable properties in St. Louis County as appraised by the County Assessor.**

Table 1 (Cont.)

Project Development Summary - Projected Market and Assessed Values Upon Redevelopment

Olia Village - 10300 Olive Boulevard Redevelopment Project

Creve Coeur, Missouri

Phase	Parcel	Anticipated Year of Completion	Project Component	Improvement Size (SF)	Estimated Market Value per SF	Estimated Market Value at Completion [1]	Assessment Rate	Estimated Assessed Value per SF	Estimated Assessed Land Value at Completion	Estimated Assessed Improvement Value at Completion	Estimated Assessed Total Value at Completion
Phase Three											
Three	7	2029	219 Multi Units	241,416	$ 182	$ 44,001,243	19%	$ 35	$ 934,280	$ 7,425,956	$ 8,360,236
Three	7	2029	Storefront	3,161	$ 264	$ 833,319	32%	$ 84	$ 119,233	$ 147,429	$ 266,662
Three	7	2029	Storefront	3,544	$ 264	$ 934,287	32%	$ 84	$ 133,680	$ 165,292	$ 298,972
Three	7	2029	Jr Box	15,096	$ 117	$ 1,768,119	32%	$ 37	$ 151,413	$ 414,385	$ 565,798
Three	7	2029	Storefront	3,032	$ 264	$ 799,311	32%	$ 84	$ 114,367	$ 141,412	$ 255,780
Three	7	2029	Restaurant	4,761	$ 270	$ 1,283,238	32%	$ 86	$ 152,257	$ 258,379	$ 410,636
			Subtotal	**271,010**		**$ 49,619,516**			**$ 1,605,229**	**$ 8,552,855**	**$ 10,158,084**
Three	11	2029	Hotel (123 Key)	81,470	$ 83	$ 6,721,275	32%	$ 26	$ 408,165	$ 1,742,643	$ 2,150,808
Three	11	2029	Restaurant	7,542	$ 231	$ 1,741,966	32%	$ 50	$ 183,044	$ 374,385	$ 557,429
			Subtotal	**89,012**		**$ 8,463,241**			**$ 591,209**	**$ 2,117,028**	**$ 2,708,237**
Three	12	2029	Hotel (128 Key)	66,510	$ 83	$ 5,487,075	32%	$ 26	$ 333,215	$ 1,422,649	$ 1,755,864
			Subtotal	**66,510**		**$ 5,487,075**			**$ 333,215**	**$ 1,422,649**	**$ 1,755,864**
Phase Three Total				**426,532**		**$ 63,569,833**			**$ 2,529,653**	**$ 12,092,532**	**$ 14,622,185**
			Phase Three Commercial	185,116		$ 19,568,590			$ 1,595,373	$ 4,666,575	$ 6,261,949
			Phase Three Residential	241,416		$ 44,001,243			$ 934,280	$ 7,425,956	$ 8,360,236
Phase Four											
Four	10	2030	Office/Research	145,403	$ 109	$ 15,889,822	32%	$ 35	$ 1,262,098	$ 3,822,645	$ 5,084,743
Four	13	2030	Office	64,618	$ 78	$ 5,040,204	32%	$ 25	$ 325,029	$ 1,287,837	$ 1,612,865
Four	16	2030	Townhomes	207,000	$ 161	$ 33,239,842	19%	$ 31	$ 1,285,470	$ 5,030,100	$ 6,315,570
Four	17	2030	Office	25,000	$ 78	$ 1,950,000	32%	$ 25	$ 125,750	$ 498,250	$ 624,000
			Subtotal	**442,021**		**$ 56,119,868**			**$ 2,998,347**	**$ 10,638,832**	**$ 13,637,178**
Phase Four Total				**442,021**		**$ 56,119,868**			**$ 2,998,347**	**$ 10,638,832**	**$ 13,637,178**
			Phase Four Commercial	235,021		$ 22,880,026			$ 1,712,877	$ 5,608,732	$ 7,321,608
			Phase Four Residential	207,000		$ 33,239,842			$ 1,285,470	$ 5,030,100	$ 6,315,570
Total Project											
			Total Commercial	1,026,754		$ 126,174,447			$ 12,671,506	$ 27,704,317	$ 40,375,823
			Total Residential	1,264,930		$ 226,061,505			$ 5,379,659	$ 37,572,027	$ 42,951,686
Total Project				**2,291,684**		**$ 352,235,952**			**$ 18,051,165**	**$ 65,276,344**	**$ 83,327,509**

[1] Market values based on comparable properties in St. Louis County as appraised by the County Assessor.

Table 2
Real Property Tax Rates per $100
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Taxing Jurisdiction	2023 Residential Rate [1]	2023 Commercial Rate [1]
State of Missouri	0.0300	0.0300
County General	0.1490	0.1750
County Health Fund	0.1000	0.1180
County Park Maintenance	0.0360	0.0420
County Bond Retire	0.0190	0.0190
Roads and Bridges	0.0750	0.0880
St. Louis Community College	0.2619	0.2619
Special School District	0.9616	0.9616
Metropolitan Zoo Museum District	0.2340	0.2340
County Library	0.1870	0.2320
Ladue School District	3.6100	3.8129
Metropolitan Sewer District	0.0997	0.0997
Sewer - Deer Creek	0.0620	0.0770
Creve Coeur Fire District ("CCFD") [2]	0.9080	1.1460
City of Creve Coeur	0.1490	0.1620
Dev. Disability - Productive Living Board	0.0640	0.0810
Subtotal Tax Rate	**6.9462**	**7.5401**
Commercial Surcharge	0.0000	1.7000
Total Tax Rate	**6.9462**	**9.2401**
Emergency Services (CCFD) Total	0.9080	1.1460
Total Tax Rate (Less Emergency - CCFD)	**6.0382**	**8.0941**

[1] Actual tax rates will vary from year-to-year due to changes in adopted tax rates, State mandated rollbacks resulting from increased assessed value through reassessment, and/or bond issues and debt retirement.

[2] Pursuant to Chapter 353, a fire district is entitled to request reimbursement in an amount that is at least 50% but not more than 100% of the amount of ad valorem real, personal, and other tangible property tax revenues that the fire district would have received in the absence of tax abatement. CCFD has requested reimbursement of 100% of the amount of ad valorem tax revenues that CCFD would have received in the absence of tax abatement.

Table 3

Most Recent Equalized Assessed Valuation ("Base EAV") and Allocable Share Methodology

Olia Village - 10300 Olive Boulevard Redevelopment Project

Creve Coeur, Missouri

	Total Project 2023 Base EAV [1]	Total Project 2023 Base Taxes (Comm. Rate) [2]	Total Project 2023 Base EAV Land [1]	Total Developed Acreage	2023 Base EAV Land per Developed Acre	Total Project 2023 Base EAV Improvements [1]	Total Acreage with Existing Improvements	Base EAV Improvements per Acre
	$ 10,860,160	$ 1,003,490	$ 6,445,152	64.66	$ 99,678	$ 4,415,008	13.08	$ 337,539

Phase	Parcel	Anticipated Year of Completion	Project Component	Developed Parcel Acreage	Existing Improvements	Allocable Share of Base EAV Land	Allocable Share of Base EAV Improvements	Allocable Share of Base EAV Total	Allocable Share of Base Taxes (Comm. Rate)
Phase One									
One	1	2026	Grocery						
One	1	2026	Jr. Box						
			Subtotal	**7.54**	**No**	**$ 751,569**	**$ -**	**$ 751,569**	**$ 69,446**
One	3	2026	Coffee						
One	3	2026	Storefront						
One	3	2026	Storefront						
One	3	2026	Storefront						
			Subtotal	**1.20**	**No**	**$ 119,613**	**$ -**	**$ 119,613**	**$ 11,052**
One	4	2026	159 Apartments						
One	4	2026	Jr Box						
One	4	2026	Café						
One	4	2026	Storefront						
One	4	2026	132 Apartments						
One	4	2026	Jr Box						
One	4	2026	Storefront						
One	4	2026	Storefront						
One	4	2026	Storefront						
One	4	2026	Restaurant						
			Subtotal	**5.02**	**No**	**$ 500,381**	**$ -**	**$ 500,381**	**$ 46,236**
One	9	2026	Data Center						
			Subtotal	**2.09**	**Yes**	**$ 208,326**	**$ 705,456**	**$ 913,782**	**$ 84,434**
Phase One Subtotal				**15.85**		**$ 1,579,890**	**$ 705,456**	**$ 2,285,346**	**$ 211,168**
Phase Two									
Two	2	2027	2nd Floor Office						
Two	2	2027	Storefront						
Two	2	2027	Restaurant						
			Subtotal	**1.61**	**No**	**$ 160,481**	**$ -**	**$ 160,481**	**$ 14,829**
Two	5	2027	2 Story Office						
Two	5	2027	Restaurant						
Two	5	2027	Storefront						
Two	5	2027	Storefront						
Two	5	2027	Restaurant						
			Subtotal	**1.27**	**No**	**$ 126,591**	**$ -**	**$ 126,591**	**$ 11,697**
Two	6	2027	172 Apartments						
Two	6	2027	Storefront						
Two	6	2027	Storefront						
Two	6	2027	Storefront						
Two	6	2027	Café						
Two	6	2027	Retail/Auto						
			Subtotal	**2.60**	**No**	**$ 259,162**	**$ -**	**$ 259,162**	**$ 23,947**
Two	8	2027	Amenity	3.66	Yes	$ 364,820	$ 1,235,392	$ 1,600,212	$ 147,861
Two	14	2027	186 Apartments	3.85	Yes	$ 383,759	$ 1,299,525	$ 1,683,283	$ 155,537
Two	15	2027	Office	3.48	Yes	$ 346,878	$ 1,174,635	$ 1,521,513	$ 140,589
			Subtotal	**10.99**		**$ 1,095,457**	**$ 3,709,552**	**$ 4,805,008**	**$ 443,988**
Phase Two Subtotal				**16.47**		**$ 1,641,690**	**$ 3,709,552**	**$ 5,351,241**	**$ 494,460**

[1] Source St. Louis County Assessor, 2023.

[2] The Project is currently assessed as commercial property, and the base taxes are projected from the commercial tax rate. It should be noted that each parcel's assessment may change to reflect its use upon redevelopment.

Table 3 (Cont.)

Most Recent Equalized Assessed Valuation ("Base EAV") and Allocable Share Methodology

Olia Village - 10300 Olive Boulevard Redevelopment Project

Creve Coeur, Missouri

	Total Project 2023 Base EAV [1]	Total Project 2023 Base Taxes (Comm. Rate) [2]	Total Project 2023 Base EAV Land [1]	Total Developed Acreage	2023 Base EAV Land per Developed Acre	Total Project 2023 Base EAV Improvements [1]	Total Acreage with Existing Improvements	Base EAV Improvements per Acre
	$ 10,860,160	$ 1,003,490	$ 6,445,152	64.66	$ 99,678	$ 4,415,008	13.08	$ 337,539

Phase	Parcel	Anticipated Year of Completion	Project Component	Developed Parcel Acreage	Existing Improvements	Allocable Share of Base EAV Land	Allocable Share of Base EAV Improvements	Allocable Share of Base EAV Total	Allocable Share of Base Taxes (Comm. Rate)
Phase Three									
Three	7	2029	219 Multi Units						
Three	7	2029	Storefront						
Three	7	2029	Storefront						
Three	7	2029	Jr Box						
Three	7	2029	Storefront						
Three	7	2029	Restaurant						
			Subtotal	**3.11**	**No**	**$ 309,997**	**$ -**	**$ 309,997**	**$ 28,644**
Three	11	2029	Hotel (123 Key)						
Three	11	2029	Restaurant						
			Subtotal	**2.46**	**No**	**$ 245,207**	**$ -**	**$ 245,207**	**$ 22,657**
Three	12	2029	Hotel (128 Key)						
			Subtotal	**1.01**	**No**	**$ 100,674**	**$ -**	**$ 100,674**	**$ 9,302**
Phase Three Total				**6.58**		**$ 655,878**	**$ -**	**$ 655,878**	**$ 60,604**
Phase Four									
Four	10	2030	Office/Research	6.69	No	$ 666,843	$ -	$ 666,843	$ 61,617
Four	13	2030	Office	5.82	No	$ 580,123	$ -	$ 580,123	$ 53,604
Four	16 [3]	2030	Townhomes	11.14	No	$ 1,110,408	$ -	$ 1,110,408	$ 102,603
Four	17	2030	Office	2.11	No	$ 210,320	$ -	$ 210,320	$ 19,434
			Subtotal	**25.76**		**$ 2,567,694**	**$ -**	**$ 2,567,694**	**$ 237,258**
Phase Four Total				**25.76**		**$ 2,567,694**	**$ -**	**$ 2,567,694**	**$ 237,258**
Total Project				**64.66**		**$ 6,445,152**	**$ 4,415,008**	**$ 10,860,160**	**$ 1,003,490**

[1] Source St. Louis County Assessor, 2023.

[2] The Project is currently assessed as commercial property, and the base taxes are projected from the commercial tax rate. It should be noted that each parcel's assessment may change to reflect its use upon redevelopment.

[3] The Developer has requested Chapter 353 real property tax abatement on the Project site and improvements, excluding Lot 16. Lot 16 is expected to be included within the Redevelopment Area, but property owners are expected to pay 100% taxes on their lots/homes.

Table 4
No-Build Scenario - Estimated Real Property Taxes Paid 2026 through 2054 (All Phases)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

All Phases	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total Estimated Real Property Values and Taxes															
Commercial Market Value [1]	$ 34,616,760	$ 35,309,095	$ 35,309,095	$ 36,015,277	$ 36,015,277	$ 36,735,583	$ 36,735,583	$ 37,470,294	$ 37,470,294	$ 38,219,700	$ 38,219,700	$ 38,984,094	$ 38,984,094	$ 39,763,776	$ 39,763,776
Commercial Assessed Value	$ 11,077,363	$ 11,298,910	$ 11,298,910	$ 11,524,889	$ 11,524,889	$ 11,755,386	$ 11,755,386	$ 11,990,494	$ 11,990,494	$ 12,230,304	$ 12,230,304	$ 12,474,910	$ 12,474,910	$ 12,724,408	$ 12,724,408
Total Taxes Paid (No-Build Scenario)	**$ 1,023,559**	**$ 1,044,031**	**$ 1,044,031**	**$ 1,064,911**	**$ 1,064,911**	**$ 1,086,209**	**$ 1,086,209**	**$ 1,107,934**	**$ 1,107,934**	**$ 1,130,092**	**$ 1,130,092**	**$ 1,152,694**	**$ 1,152,694**	**$ 1,175,748**	**$ 1,175,748**
Total Taxes Paid (Build Scenario)	**$ 1,571,019**	**$ 2,531,600**	**$ 2,531,600**	**$ 2,901,612**	**$ 3,239,960**	**$ 3,292,922**	**$ 3,292,922**	**$ 3,346,943**	**$ 3,346,943**	**$ 3,402,045**	**$ 3,719,515**	**$ 4,073,627**	**$ 4,073,627**	**$ 4,391,956**	**$ 4,467,065**
Additional Taxes Paid (Build vs. No-Build Scenario)	**$ 547,459**	**$ 1,487,569**	**$ 1,487,569**	**$ 1,836,701**	**$ 2,175,049**	**$ 2,206,712**	**$ 2,206,712**	**$ 2,239,009**	**$ 2,239,009**	**$ 2,271,952**	**$ 2,589,423**	**$ 2,920,933**	**$ 2,920,933**	**$ 3,216,208**	**$ 3,291,317**
Gross Total Taxes Paid (No-Build Scenario)	**$ 34,378,121**														
Gross Total Taxes Paid (Build Scenario)	**$ 127,176,622**														
Gross Total Additional Taxes Paid (Build vs. No-Build)	**$ 92,798,501**														

[1] Market values are projected to increase at an average rate of 2% each reassessment (odd) year.

Table 4 (Cont.)
No-Build Scenario - Estimated Real Property Taxes Paid 2026 through 2054 (All Phases)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

All Phases	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Total Estimated Real Property Values and Taxes														
Commercial Market Value [1]	$ 40,559,052	$ 40,559,052	$ 41,370,233	$ 41,370,233	$ 42,197,637	$ 42,197,637	$ 43,041,590	$ 43,041,590	$ 43,902,422	$ 43,902,422	$ 44,780,470	$ 44,780,470	$ 45,676,080	$ 45,676,080
Commercial Assessed Value	$ 12,978,897	$ 12,978,897	$ 13,238,474	$ 13,238,474	$ 13,503,244	$ 13,503,244	$ 13,773,309	$ 13,773,309	$ 14,048,775	$ 14,048,775	$ 14,329,750	$ 14,329,750	$ 14,616,345	$ 14,616,345
Total Taxes Paid (No-Build Scenario)	**$ 1,199,263**	**$ 1,199,263**	**$ 1,223,248**	**$ 1,223,248**	**$ 1,247,713**	**$ 1,247,713**	**$ 1,272,668**	**$ 1,272,668**	**$ 1,298,121**	**$ 1,298,121**	**$ 1,324,083**	**$ 1,324,083**	**$ 1,350,565**	**$ 1,350,565**
Total Taxes Paid (Build Scenario)	**$ 4,556,406**	**$ 4,556,406**	**$ 4,647,534**	**$ 4,647,534**	**$ 4,740,485**	**$ 4,740,485**	**$ 4,835,295**	**$ 4,835,295**	**$ 4,932,001**	**$ 4,932,001**	**$ 6,099,672**	**$ 7,509,421**	**$ 7,659,610**	**$ 8,301,122**
Additional Taxes Paid (Build vs. No-Build Scenario)	**$ 3,357,143**	**$ 3,357,143**	**$ 3,424,286**	**$ 3,424,286**	**$ 3,492,772**	**$ 3,492,772**	**$ 3,562,627**	**$ 3,562,627**	**$ 3,633,880**	**$ 3,633,880**	**$ 4,775,589**	**$ 6,185,338**	**$ 6,309,045**	**$ 6,950,557**

Gross Total Taxes Paid (No-Build Scenario)	**$ 34,378,121**
Gross Total Taxes Paid (Build Scenario)	**$ 127,176,622**
Gross Total Additional Taxes Paid (Build vs. No-Build)	**$ 92,798,501**

Table 5
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 1)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 1	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Phase 1 Estimated Real Property Values and Taxes															
Residential Market Value [2]	$ 60,865,323	$ 62,082,630	$ 62,082,630	$ 63,324,283	$ 63,324,283	$ 64,590,768	$ 64,590,768	$ 65,882,584	$ 65,882,584	$ 67,200,235	$ 67,200,235	$ 68,544,240	$ 68,544,240	$ 69,915,125	$ 69,915,125
Residential Assessed Value	$ 11,564,411	$ 11,795,700	$ 11,795,700	$ 12,031,614	$ 12,031,614	$ 12,272,246	$ 12,272,246	$ 12,517,691	$ 12,517,691	$ 12,768,045	$ 12,768,045	$ 13,023,406	$ 13,023,406	$ 13,283,874	$ 13,283,874
Commercial Market Value [2]	$ 36,852,079	$ 37,589,120	$ 37,589,120	$ 38,340,903	$ 38,340,903	$ 39,107,721	$ 39,107,721	$ 39,889,875	$ 39,889,875	$ 40,687,672	$ 40,687,672	$ 41,501,426	$ 41,501,426	$ 42,331,454	$ 42,331,454
Commercial Assessed Value	$ 11,792,665	$ 12,028,518	$ 12,028,518	$ 12,269,089	$ 12,269,089	$ 12,514,471	$ 12,514,471	$ 12,764,760	$ 12,764,760	$ 13,020,055	$ 13,020,055	$ 13,280,456	$ 13,280,456	$ 13,546,065	$ 13,546,065
Total Res and Comm Assessed Value	$ 23,357,077	$ 23,824,218	$ 23,824,218	$ 24,300,702	$ 24,300,702	$ 24,786,717	$ 24,786,717	$ 25,282,451	$ 25,282,451	$ 25,788,100	$ 25,788,100	$ 26,303,862	$ 26,303,862	$ 26,829,939	$ 26,829,939
Total Residential Taxes	$ 803,287	$ 819,353	$ 819,353	$ 835,740	$ 835,740	$ 852,455	$ 852,455	$ 869,504	$ 869,504	$ 886,894	$ 886,894	$ 904,632	$ 904,632	$ 922,724	$ 922,724
Total Commercial Taxes	$ 1,089,654	$ 1,111,447	$ 1,111,447	$ 1,133,676	$ 1,133,676	$ 1,156,350	$ 1,156,350	$ 1,179,477	$ 1,179,477	$ 1,203,066	$ 1,203,066	$ 1,227,127	$ 1,227,127	$ 1,251,670	$ 1,251,670
Total Res and Comm Taxes	$ 1,892,941	$ 1,930,800	$ 1,930,800	$ 1,969,416	$ 1,969,416	$ 2,008,804	$ 2,008,804	$ 2,048,980	$ 2,048,980	$ 2,089,960	$ 2,089,960	$ 2,131,759	$ 2,131,759	$ 2,174,394	$ 2,174,394
Total Res and Comm Taxes Paid to CCFD	$ 240,149	$ 244,952	$ 244,952	$ 249,851	$ 249,851	$ 254,848	$ 254,848	$ 259,945	$ 259,945	$ 265,144	$ 265,144	$ 270,447	$ 270,447	$ 275,855	$ 275,855
Base Assessed Value [3]	$ 2,285,346	$ 2,285,346	$ 2,285,346	$ 2,285,346	$ 2,285,346	$ 2,285,346	$ 2,285,346	$ 2,285,346	$ 2,285,346	$ 2,285,346					
Base Taxes Paid (Non-CCFD)	$ 184,978	$ 184,978	$ 184,978	$ 184,978	$ 184,978	$ 184,978	$ 184,978	$ 184,978	$ 184,978	$ 184,978					
Incremental Assessed Value	$ 21,071,731	$ 21,538,872	$ 21,538,872	$ 22,015,357	$ 22,015,357	$ 22,501,371	$ 22,501,371	$ 22,997,105	$ 22,997,105	$ 23,502,754	$ 25,788,100	$ 26,303,862	$ 26,303,862	$ 26,829,939	$ 26,829,939
Incremental Taxes	$ 1,467,814	$ 1,500,870	$ 1,500,870	$ 1,534,587	$ 1,534,587	$ 1,568,978	$ 1,568,978	$ 1,604,057	$ 1,604,057	$ 1,639,838	$ 1,824,816	$ 1,861,313	$ 1,861,313	$ 1,898,539	$ 1,898,539
Tax Abatement [1]	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	50%	50%	50%	50%	50%
Incremental Taxes Paid	$ 366,954	$ 375,218	$ 375,218	$ 383,647	$ 383,647	$ 392,245	$ 392,245	$ 401,014	$ 401,014	$ 409,960	$ 912,408	$ 930,656	$ 930,656	$ 949,269	$ 949,269
Incremental (and Total) Taxes Abated	**$ 1,100,861**	**$ 1,125,653**	**$ 1,125,653**	**$ 1,150,940**	**$ 1,150,940**	**$ 1,176,734**	**$ 1,176,734**	**$ 1,203,043**	**$ 1,203,043**	**$ 1,229,879**	**$ 912,408**	**$ 930,656**	**$ 930,656**	**$ 949,269**	**$ 949,269**
Total Taxes Paid	**$ 792,081**	**$ 805,147**	**$ 818,476**	**$ 818,476**	**$ 832,071**	**$ 832,071**	**$ 845,937**	**$ 845,937**	**$ 860,081**	**$ 1,177,552**	**$ 1,201,103**	**$ 1,201,103**	**$ 1,225,125**	**$ 1,225,125**	

[1] Abatement period begins for each phase independently at 75% for the first 10 years and 50% for the following 15 years.
[2] Market values are projected to increase at an average rate of 2% each reassessment (odd) year.
[3] Base EAV is $10,860,160 and represents the most recent equalized assessed value of the existing Project site and existing improvements allocated per Lot, land independent of improvements, based on acreage as illustrated at the top of Table 3.

Table 6
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 2)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 2	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Phase 2 Estimated Real Property Values and Taxes															
Residential Market Value [2]	$ -	$ 87,955,097	$ 87,955,097	$ 89,714,199	$ 89,714,199	$ 91,508,483	$ 91,508,483	$ 93,338,652	$ 93,338,652	$ 95,205,425	$ 95,205,425	$ 97,109,534	$ 97,109,534	$ 99,051,724	$ 99,051,724
Residential Assessed Value	$ -	$ 16,711,468	$ 16,711,468	$ 17,045,698	$ 17,045,698	$ 17,386,612	$ 17,386,612	$ 17,734,344	$ 17,734,344	$ 18,089,031	$ 18,089,031	$ 18,450,811	$ 18,450,811	$ 18,819,828	$ 18,819,828
Commercial Market Value [2]	$ 8,889,172	$ 46,873,753	$ 46,873,753	$ 47,811,228	$ 47,811,228	$ 48,767,452	$ 48,767,452	$ 49,742,801	$ 49,742,801	$ 50,737,657	$ 50,737,657	$ 51,752,411	$ 51,752,411	$ 52,787,459	$ 52,787,459
Commercial Assessed Value	$ 2,844,535	$ 14,999,601	$ 14,999,601	$ 15,299,593	$ 15,299,593	$ 15,605,585	$ 15,605,585	$ 15,917,696	$ 15,917,696	$ 16,236,050	$ 16,236,050	$ 16,560,771	$ 16,560,771	$ 16,891,987	$ 16,891,987
Total Res and Comm Assessed Value	$ 2,844,535	$ 31,711,069	$ 31,711,069	$ 32,345,291	$ 32,345,291	$ 32,992,196	$ 32,992,196	$ 33,652,040	$ 33,652,040	$ 34,325,081	$ 34,325,081	$ 35,011,583	$ 35,011,583	$ 35,711,814	$ 35,711,814
Total Residential Taxes	$ -	$ 1,160,812	$ 1,160,812	$ 1,184,028	$ 1,184,028	$ 1,207,709	$ 1,207,709	$ 1,231,863	$ 1,231,863	$ 1,256,500	$ 1,256,500	$ 1,281,630	$ 1,281,630	$ 1,307,263	$ 1,307,263
Total Commercial Taxes	$ 262,838	$ 1,385,978	$ 1,385,978	$ 1,413,698	$ 1,413,698	$ 1,441,972	$ 1,441,972	$ 1,470,811	$ 1,470,811	$ 1,500,227	$ 1,500,227	$ 1,530,232	$ 1,530,232	$ 1,560,836	$ 1,560,836
Total Res and Comm Taxes	$ 262,838	$ 2,546,790	$ 2,546,790	$ 2,597,726	$ 2,597,726	$ 2,649,680	$ 2,649,680	$ 2,702,674	$ 2,702,674	$ 2,756,728	$ 2,756,728	$ 2,811,862	$ 2,811,862	$ 2,868,099	$ 2,868,099
Total Res and Comm Taxes Paid to CCFD	$ 32,598	$ 323,636	$ 323,636	$ 330,108	$ 330,108	$ 336,710	$ 336,710	$ 343,445	$ 343,445	$ 350,314	$ 350,314	$ 357,320	$ 357,320	$ 364,466	$ 364,466
Base Assessed Value [3]	$ -	$ 5,351,241	$ 5,351,241	$ 5,351,241	$ 5,351,241	$ 5,351,241	$ 5,351,241	$ 5,351,241	$ 5,351,241	$ 5,351,241	$ 5,351,241				
Base Taxes Paid (Non-CCFD)	$ -	$ 433,135	$ 433,135	$ 433,135	$ 433,135	$ 433,135	$ 433,135	$ 433,135	$ 433,135	$ 433,135	$ 433,135				
Incremental Assessed Value	$ 2,844,535	$ 26,359,828	$ 26,359,828	$ 26,994,049	$ 26,994,049	$ 27,640,955	$ 27,640,955	$ 28,300,799	$ 28,300,799	$ 28,973,840	$ 28,973,840	$ 35,011,583	$ 35,011,583	$ 35,711,814	$ 35,711,814
Incremental Taxes	$ 230,240	$ 1,790,020	$ 1,790,020	$ 1,834,483	$ 1,834,483	$ 1,879,835	$ 1,879,835	$ 1,926,095	$ 1,926,095	$ 1,973,279	$ 1,973,279	$ 2,454,542	$ 2,454,542	$ 2,503,633	$ 2,503,633
Tax Abatement [1]	0%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	50%	50%	50%	50%
Incremental Taxes Paid	$ 230,240	$ 447,505	$ 447,505	$ 458,621	$ 458,621	$ 469,959	$ 469,959	$ 481,524	$ 481,524	$ 493,320	$ 493,320	$ 1,227,271	$ 1,227,271	$ 1,251,817	$ 1,251,817
Incremental (and Total) Taxes Abated	**$ -**	**$ 1,342,515**	**$ 1,342,515**	**$ 1,375,862**	**$ 1,375,862**	**$ 1,409,876**	**$ 1,409,876**	**$ 1,444,571**	**$ 1,444,571**	**$ 1,479,959**	**$ 1,479,959**	**$ 1,227,271**	**$ 1,227,271**	**$ 1,251,817**	**$ 1,251,817**
Total Taxes Paid	**$ 262,838**	**$ 1,204,275**	**$ 1,204,275**	**$ 1,221,864**	**$ 1,221,864**	**$ 1,239,804**	**$ 1,239,804**	**$ 1,258,103**	**$ 1,258,103**	**$ 1,276,768**	**$ 1,276,768**	**$ 1,584,591**	**$ 1,584,591**	**$ 1,616,283**	**$ 1,616,283**

[1] Abatement period begins for each phase independently at 75% for the first 10 years and 50% for the following 15 years.
[2] Market values are projected to increase at an average rate of 2% each reassessment (odd) year.
[3] Base EAV is $10,860,160 and represents the most recent equalized assessed value of the existing Project site and existing improvements allocated per Lot, land independent of improvements, based on acreage as illustrated at the top of Table 3.

Table 7
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 3)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 3	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Phase 3 Estimated Real Property Values and Taxes															
Residential Market Value [2]	$ -	$ -	$ -	$ 44,001,243	$ 44,001,243	$ 44,881,267	$ 44,881,267	$ 45,778,893	$ 45,778,893	$ 46,694,471	$ 46,694,471	$ 47,628,360	$ 47,628,360	$ 48,580,927	$ 48,580,927
Residential Assessed Value	$ -	$ -	$ -	$ 8,360,236	$ 8,360,236	$ 8,527,441	$ 8,527,441	$ 8,697,990	$ 8,697,990	$ 8,871,949	$ 8,871,949	$ 9,049,388	$ 9,049,388	$ 9,230,376	$ 9,230,376
Commercial Market Value [2]	$ 3,551,344	$ 3,593,156	$ 3,593,156	$ 19,568,590	$ 19,568,590	$ 19,959,962	$ 19,959,962	$ 20,359,161	$ 20,359,161	$ 20,766,344	$ 20,766,344	$ 21,181,671	$ 21,181,671	$ 21,605,305	$ 21,605,305
Commercial Assessed Value	$ 1,136,430	$ 1,149,810	$ 1,149,810	$ 6,261,949	$ 6,261,949	$ 6,387,188	$ 6,387,188	$ 6,514,932	$ 6,514,932	$ 6,645,230	$ 6,645,230	$ 6,778,135	$ 6,778,135	$ 6,913,698	$ 6,913,698
Total Res and Comm Assessed Value	$ 1,136,430	$ 1,149,810	$ 1,149,810	$ 14,622,185	$ 14,622,185	$ 14,914,629	$ 14,914,629	$ 15,212,921	$ 15,212,921	$ 15,517,180	$ 15,517,180	$ 15,827,523	$ 15,827,523	$ 16,144,074	$ 16,144,074
Total Residential Taxes	$ -	$ -	$ -	$ 580,719	$ 580,719	$ 592,333	$ 592,333	$ 604,180	$ 604,180	$ 616,263	$ 616,263	$ 628,589	$ 628,589	$ 641,160	$ 641,160
Total Commercial Taxes	$ 105,007	$ 106,244	$ 106,244	$ 578,610	$ 578,610	$ 590,183	$ 590,183	$ 601,986	$ 601,986	$ 614,026	$ 614,026	$ 626,306	$ 626,306	$ 638,833	$ 638,833
Total Res and Comm Taxes	$ 105,007	$ 106,244	$ 106,244	$ 1,159,329	$ 1,159,329	$ 1,182,516	$ 1,182,516	$ 1,206,166	$ 1,206,166	$ 1,230,289	$ 1,230,289	$ 1,254,895	$ 1,254,895	$ 1,279,993	$ 1,279,993
Total Res and Comm Taxes Paid to CCFD	$ 13,023	$ 13,177	$ 13,177	$ 147,673	$ 147,673	$ 150,626	$ 150,626	$ 153,639	$ 153,639	$ 156,712	$ 156,712	$ 159,846	$ 159,846	$ 163,043	$ 163,043
Base Assessed Value [3]	$ -	$ -	$ -	$ 655,878	$ 655,878	$ 655,878	$ 655,878	$ 655,878	$ 655,878	$ 655,878	$ 655,878	$ 655,878	$ 655,878		
Base Taxes Paid (Non-CCFD)	$ -	$ -	$ -	$ 53,087	$ 53,087	$ 53,087	$ 53,087	$ 53,087	$ 53,087	$ 53,087	$ 53,087	$ 53,087	$ 53,087		
Incremental Assessed Value	$ 1,136,430	$ 1,149,810	$ 1,149,810	$ 13,966,307	$ 13,966,307	$ 14,258,750	$ 14,258,750	$ 14,557,043	$ 14,557,043	$ 14,861,301	$ 14,861,301	$ 15,171,645	$ 15,171,645	$ 16,144,074	$ 16,144,074
Incremental Taxes	$ 91,984	$ 93,067	$ 93,067	$ 958,569	$ 958,569	$ 978,802	$ 978,802	$ 999,440	$ 999,440	$ 1,020,490	$ 1,020,490	$ 1,041,962	$ 1,041,962	$ 1,116,950	$ 1,116,950
Tax Abatement [1]	0%	0%	0%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	50%	50%
Incremental Taxes Paid	$ 91,984	$ 93,067	$ 93,067	$ 239,642	$ 239,642	$ 244,700	$ 244,700	$ 249,860	$ 249,860	$ 255,123	$ 255,123	$ 260,490	$ 260,490	$ 558,475	$ 558,475
Incremental (and Total) Taxes Abated	**$ -**	**$ -**	**$ -**	**$ 718,927**	**$ 718,927**	**$ 734,101**	**$ 734,101**	**$ 749,580**	**$ 749,580**	**$ 765,368**	**$ 765,368**	**$ 781,471**	**$ 781,471**	**$ 558,475**	**$ 558,475**
Total Taxes Paid	**$ 105,007**	**$ 106,244**	**$ 106,244**	**$ 440,403**	**$ 440,403**	**$ 448,414**	**$ 448,414**	**$ 456,586**	**$ 456,586**	**$ 464,922**	**$ 464,922**	**$ 473,424**	**$ 473,424**	**$ 721,518**	**$ 721,518**

[1] Abatement period begins for each phase independently at 75% for the first 10 years and 50% for the following 15 years.
[2] Market values are projected to increase at an average rate of 2% each reassessment (odd) year.
[3] Base EAV is $10,860,160 and represents the most recent equalized assessed value of the existing Project site and existing improvements allocated per Lot, land independent of improvements, based on acreage as illustrated at the top of Table 3.

Table 5 (Cont.)
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 1)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 1	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Phase 1 Estimated Real Property Values and Taxes														
Residential Market Value [2]	$ 71,313,427	$ 71,313,427	$ 72,739,696	$ 72,739,696	$ 74,194,490	$ 74,194,490	$ 75,678,379	$ 75,678,379	$ 77,191,947	$ 77,191,947	$ 78,735,786	$ 78,735,786	$ 80,310,502	$ 80,310,502
Residential Assessed Value	$ 13,549,551	$ 13,549,551	$ 13,820,542	$ 13,820,542	$ 14,096,953	$ 14,096,953	$ 14,378,892	$ 14,378,892	$ 14,666,470	$ 14,666,470	$ 14,959,799	$ 14,959,799	$ 15,258,995	$ 15,258,995
Commercial Market Value [2]	$ 43,178,084	$ 43,178,084	$ 44,041,645	$ 44,041,645	$ 44,922,478	$ 44,922,478	$ 45,820,928	$ 45,820,928	$ 46,737,346	$ 46,737,346	$ 47,672,093	$ 47,672,093	$ 48,625,535	$ 48,625,535
Commercial Assessed Value	$ 13,816,987	$ 13,816,987	$ 14,093,326	$ 14,093,326	$ 14,375,193	$ 14,375,193	$ 14,662,697	$ 14,662,697	$ 14,955,951	$ 14,955,951	$ 15,255,070	$ 15,255,070	$ 15,560,171	$ 15,560,171
Total Res and Comm Assessed Value	$ 27,366,538	$ 27,366,538	$ 27,913,869	$ 27,913,869	$ 28,472,146	$ 28,472,146	$ 29,041,589	$ 29,041,589	$ 29,622,421	$ 29,622,421	$ 30,214,869	$ 30,214,869	$ 30,819,167	$ 30,819,167
Total Residential Taxes	$ 941,179	$ 941,179	$ 960,003	$ 960,003	$ 979,203	$ 979,203	$ 998,787	$ 998,787	$ 1,018,762	$ 1,018,762	$ 1,039,138	$ 1,039,138	$ 1,059,920	$ 1,059,920
Total Commercial Taxes	$ 1,276,703	$ 1,276,703	$ 1,302,237	$ 1,302,237	$ 1,328,282	$ 1,328,282	$ 1,354,848	$ 1,354,848	$ 1,381,945	$ 1,381,945	$ 1,409,584	$ 1,409,584	$ 1,437,775	$ 1,437,775
Total Res and Comm Taxes	$ 2,217,882	$ 2,217,882	$ 2,262,240	$ 2,262,240	$ 2,307,485	$ 2,307,485	$ 2,353,634	$ 2,353,634	$ 2,400,707	$ 2,400,707	$ 2,448,721	$ 2,448,721	$ 2,497,696	$ 2,497,696
Total Res and Comm Taxes Paid to CCFD	$ 281,373	$ 281,373	$ 287,000	$ 287,000	$ 292,740	$ 292,740	$ 298,595	$ 298,595	$ 304,567	$ 304,567	$ 310,658	$ 310,658	$ 316,871	$ 316,871
Base Assessed Value [3]														
Base Taxes Paid (Non-CCFD)														
Incremental Assessed Value	$ 27,366,538	$ 27,366,538	$ 27,913,869	$ 27,913,869	$ 28,472,146	$ 28,472,146	$ 29,041,589	$ 29,041,589	$ 29,622,421	$ 29,622,421	$ 30,214,869	$ 30,214,869	$ 30,819,167	$ 30,819,167
Incremental Taxes	$ 1,936,510	$ 1,936,510	$ 1,975,240	$ 1,975,240	$ 2,014,745	$ 2,014,745	$ 2,055,040	$ 2,055,040	$ 2,096,140	$ 2,096,140	$ 2,138,063	$ 2,138,063	$ 2,180,824	$ 2,180,824
Tax Abatement [1]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	0%	0%	0%	0%
Incremental Taxes Paid	$ 968,255	$ 968,255	$ 987,620	$ 987,620	$ 1,007,372	$ 1,007,372	$ 1,027,520	$ 1,027,520	$ 1,048,070	$ 1,048,070	$ 2,138,063	$ 2,138,063	$ 2,180,824	$ 2,180,824
Incremental (and Total) Taxes Abated	**$ 968,255**	**$ 968,255**	**$ 987,620**	**$ 987,620**	**$ 1,007,372**	**$ 1,007,372**	**$ 1,027,520**	**$ 1,027,520**	**$ 1,048,070**	**$ 1,048,070**	**$ -**	**$ -**	**$ -**	**$ -**
Total Taxes Paid	**$ 1,249,627**	**$ 1,249,627**	**$ 1,274,620**	**$ 1,274,620**	**$ 1,300,112**	**$ 1,300,112**	**$ 1,326,115**	**$ 1,326,115**	**$ 1,352,637**	**$ 1,352,637**	**$ 2,448,721**	**$ 2,448,721**	**$ 2,497,696**	**$ 2,497,696**

Table 6 (Cont.)
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 2)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 2	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Phase 2 Estimated Real Property Values and Taxes														
Residential Market Value [2]	$ 101,032,759	$ 101,032,759	$ 103,053,414	$ 103,053,414	$ 105,114,482	$ 105,114,482	$ 107,216,772	$ 107,216,772	$ 109,361,107	$ 109,361,107	$ 111,548,330	$ 111,548,330	$ 113,779,296	$ 113,779,296
Residential Assessed Value	$ 19,196,224	$ 19,196,224	$ 19,580,149	$ 19,580,149	$ 19,971,752	$ 19,971,752	$ 20,371,187	$ 20,371,187	$ 20,778,610	$ 20,778,610	$ 21,194,183	$ 21,194,183	$ 21,618,066	$ 21,618,066
Commercial Market Value [2]	$ 53,843,208	$ 53,843,208	$ 54,920,072	$ 54,920,072	$ 56,018,474	$ 56,018,474	$ 57,138,843	$ 57,138,843	$ 58,281,620	$ 58,281,620	$ 59,447,252	$ 59,447,252	$ 60,636,197	$ 60,636,197
Commercial Assessed Value	$ 17,229,827	$ 17,229,827	$ 17,574,423	$ 17,574,423	$ 17,925,912	$ 17,925,912	$ 18,284,430	$ 18,284,430	$ 18,650,118	$ 18,650,118	$ 19,023,121	$ 19,023,121	$ 19,403,583	$ 19,403,583
Total Res and Comm Assessed Value	$ 36,426,051	$ 36,426,051	$ 37,154,572	$ 37,154,572	$ 37,897,663	$ 37,897,663	$ 38,655,616	$ 38,655,616	$ 39,428,729	$ 39,428,729	$ 40,217,303	$ 40,217,303	$ 41,021,649	$ 41,021,649
Total Residential Taxes	$ 1,333,408	$ 1,333,408	$ 1,360,076	$ 1,360,076	$ 1,387,278	$ 1,387,278	$ 1,415,023	$ 1,415,023	$ 1,443,324	$ 1,443,324	$ 1,472,190	$ 1,472,190	$ 1,501,634	$ 1,501,634
Total Commercial Taxes	$ 1,592,053	$ 1,592,053	$ 1,623,894	$ 1,623,894	$ 1,656,372	$ 1,656,372	$ 1,689,500	$ 1,689,500	$ 1,723,290	$ 1,723,290	$ 1,757,755	$ 1,757,755	$ 1,792,910	$ 1,792,910
Total Res and Comm Taxes	$ 2,925,461	$ 2,925,461	$ 2,983,971	$ 2,983,971	$ 3,043,650	$ 3,043,650	$ 3,104,523	$ 3,104,523	$ 3,166,613	$ 3,166,613	$ 3,229,946	$ 3,229,946	$ 3,294,545	$ 3,294,545
Total Res and Comm Taxes Paid to CCFD	$ 371,756	$ 371,756	$ 379,191	$ 379,191	$ 386,774	$ 386,774	$ 394,510	$ 394,510	$ 402,400	$ 402,400	$ 410,448	$ 410,448	$ 418,657	$ 418,657
Base Assessed Value [3]														
Base Taxes Paid (Non-CCFD)														
Incremental Assessed Value	$ 36,426,051	$ 36,426,051	$ 37,154,572	$ 37,154,572	$ 37,897,663	$ 37,897,663	$ 38,655,616	$ 38,655,616	$ 39,428,729	$ 39,428,729	$ 40,217,303	$ 40,217,303	$ 41,021,649	$ 41,021,649
Incremental Taxes	$ 2,553,706	$ 2,553,706	$ 2,604,780	$ 2,604,780	$ 2,656,876	$ 2,656,876	$ 2,710,013	$ 2,710,013	$ 2,764,213	$ 2,764,213	$ 2,819,498	$ 2,819,498	$ 2,875,887	$ 2,875,887
Tax Abatement [1]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	0%	0%	0%
Incremental Taxes Paid	$ 1,276,853	$ 1,276,853	$ 1,302,390	$ 1,302,390	$ 1,328,438	$ 1,328,438	$ 1,355,007	$ 1,355,007	$ 1,382,107	$ 1,382,107	$ 1,409,749	$ 2,819,498	$ 2,875,887	$ 2,875,887
Incremental (and Total) Taxes Abated	**$ 1,276,853**	**$ 1,276,853**	**$ 1,302,390**	**$ 1,302,390**	**$ 1,328,438**	**$ 1,328,438**	**$ 1,355,007**	**$ 1,355,007**	**$ 1,382,107**	**$ 1,382,107**	**$ 1,409,749**	**$ -**	**$ -**	**$ -**
Total Taxes Paid	**$ 1,648,608**	**$ 1,648,608**	**$ 1,681,581**	**$ 1,681,581**	**$ 1,715,212**	**$ 1,715,212**	**$ 1,749,516**	**$ 1,749,516**	**$ 1,784,507**	**$ 1,784,507**	**$ 1,820,197**	**$ 3,229,946**	**$ 3,294,545**	**$ 3,294,545**

Table 7 (Cont.)
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 3)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 3	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Phase 3 Estimated Real Property Values and Taxes														
Residential Market Value [2]	$ 49,552,546	$ 49,552,546	$ 50,543,597	$ 50,543,597	$ 51,554,469	$ 51,554,469	$ 52,585,558	$ 52,585,558	$ 53,637,269	$ 53,637,269	$ 54,710,014	$ 54,710,014	$ 55,804,215	$ 55,804,215
Residential Assessed Value	$ 9,414,984	$ 9,414,984	$ 9,603,283	$ 9,603,283	$ 9,795,349	$ 9,795,349	$ 9,991,256	$ 9,991,256	$ 10,191,081	$ 10,191,081	$ 10,394,903	$ 10,394,903	$ 10,602,801	$ 10,602,801
Commercial Market Value [2]	$ 22,037,411	$ 22,037,411	$ 22,478,159	$ 22,478,159	$ 22,927,722	$ 22,927,722	$ 23,386,277	$ 23,386,277	$ 23,854,002	$ 23,854,002	$ 24,331,082	$ 24,331,082	$ 24,817,704	$ 24,817,704
Commercial Assessed Value	$ 7,051,971	$ 7,051,971	$ 7,193,011	$ 7,193,011	$ 7,336,871	$ 7,336,871	$ 7,483,609	$ 7,483,609	$ 7,633,281	$ 7,633,281	$ 7,785,946	$ 7,785,946	$ 7,941,665	$ 7,941,665
Total Res and Comm Assessed Value	$ 16,466,955	$ 16,466,955	$ 16,796,294	$ 16,796,294	$ 17,132,220	$ 17,132,220	$ 17,474,865	$ 17,474,865	$ 17,824,362	$ 17,824,362	$ 18,180,849	$ 18,180,849	$ 18,544,466	$ 18,544,466
Total Residential Taxes	$ 653,984	$ 653,984	$ 667,063	$ 667,063	$ 680,405	$ 680,405	$ 694,013	$ 694,013	$ 707,893	$ 707,893	$ 722,051	$ 722,051	$ 736,492	$ 736,492
Total Commercial Taxes	$ 651,609	$ 651,609	$ 664,641	$ 664,641	$ 677,934	$ 677,934	$ 691,493	$ 691,493	$ 705,323	$ 705,323	$ 719,429	$ 719,429	$ 733,818	$ 733,818
Total Res and Comm Taxes	$ 1,305,593	$ 1,305,593	$ 1,331,705	$ 1,331,705	$ 1,358,339	$ 1,358,339	$ 1,385,506	$ 1,385,506	$ 1,413,216	$ 1,413,216	$ 1,441,480	$ 1,441,480	$ 1,470,310	$ 1,470,310
Total Res and Comm Taxes Paid to CCFD	$ 166,304	$ 166,304	$ 169,630	$ 169,630	$ 173,022	$ 173,022	$ 176,483	$ 176,483	$ 180,012	$ 180,012	$ 183,613	$ 183,613	$ 187,285	$ 187,285
Base Assessed Value [3]														
Base Taxes Paid (Non-CCFD)														
Incremental Assessed Value	$ 16,466,955	$ 16,466,955	$ 16,796,294	$ 16,796,294	$ 17,132,220	$ 17,132,220	$ 17,474,865	$ 17,474,865	$ 17,824,362	$ 17,824,362	$ 18,180,849	$ 18,180,849	$ 18,544,466	$ 18,544,466
Incremental Taxes	$ 1,139,289	$ 1,139,289	$ 1,162,075	$ 1,162,075	$ 1,185,316	$ 1,185,316	$ 1,209,023	$ 1,209,023	$ 1,233,203	$ 1,233,203	$ 1,257,867	$ 1,257,867	$ 1,283,025	$ 1,283,025
Tax Abatement [1]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	0%
Incremental Taxes Paid	$ 569,645	$ 569,645	$ 581,037	$ 581,037	$ 592,658	$ 592,658	$ 604,511	$ 604,511	$ 616,602	$ 616,602	$ 628,934	$ 628,934	$ 641,512	$ 1,283,025
Incremental (and Total) Taxes Abated	**$ 569,645**	**$ 569,645**	**$ 581,037**	**$ 581,037**	**$ 592,658**	**$ 592,658**	**$ 604,511**	**$ 604,511**	**$ 616,602**	**$ 616,602**	**$ 628,934**	**$ 628,934**	**$ 641,512**	**$ -**
Total Taxes Paid	**$ 735,948**	**$ 735,948**	**$ 750,667**	**$ 750,667**	**$ 765,681**	**$ 765,681**	**$ 780,994**	**$ 780,994**	**$ 796,614**	**$ 796,614**	**$ 812,546**	**$ 812,546**	**$ 828,797**	**$ 1,470,310**

Table 8
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 4)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 4	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Phase 4 Estimated Real Property Values and Taxes [4]															
Residential Market Value [2]	$ -	$ -	$ -	$ -	$ 33,239,842	$ 33,904,639	$ 33,904,639	$ 34,582,732	$ 34,582,732	$ 35,274,386	$ 35,274,386	$ 35,979,874	$ 35,979,874	$ 36,699,472	$ 36,699,472
Residential Assessed Value	$ -	$ -	$ -	$ -	$ 6,315,570	$ 6,441,881	$ 6,441,881	$ 6,570,719	$ 6,570,719	$ 6,702,133	$ 6,702,133	$ 6,836,176	$ 6,836,176	$ 6,972,900	$ 6,972,900
Commercial Market Value [2]	$ 13,903,159	$ 14,066,850	$ 14,066,850	$ 14,233,813	$ 22,880,026	$ 23,337,626	$ 23,337,626	$ 23,804,379	$ 23,804,379	$ 24,280,466	$ 24,280,466	$ 24,766,076	$ 24,766,076	$ 25,261,397	$ 25,261,397
Commercial Assessed Value	$ 4,449,011	$ 4,501,392	$ 4,501,392	$ 4,554,820	$ 7,321,608	$ 7,468,040	$ 7,468,040	$ 7,617,401	$ 7,617,401	$ 7,769,749	$ 7,769,749	$ 7,925,144	$ 7,925,144	$ 8,083,647	$ 8,083,647
Total Res and Comm Assessed Value	$ 4,449,011	$ 4,501,392	$ 4,501,392	$ 4,554,820	$ 13,637,178	$ 13,909,922	$ 13,909,922	$ 14,188,120	$ 14,188,120	$ 14,471,883	$ 14,471,883	$ 14,761,320	$ 14,761,320	$ 15,056,547	$ 15,056,547
Total Residential Taxes (Fully Paid - No TH Abatement)	$ -	$ -	$ -	$ -	$ 438,692	$ 447,466	$ 447,466	$ 456,415	$ 456,415	$ 465,544	$ 465,544	$ 474,854	$ 474,854	$ 484,352	$ 484,352
Total Commercial Taxes	$ 411,093	$ 415,933	$ 415,933	$ 420,870	$ 676,524	$ 690,054	$ 690,054	$ 703,855	$ 703,855	$ 717,933	$ 717,933	$ 732,291	$ 732,291	$ 746,937	$ 746,937
Total Res and Comm Taxes	$ 411,093	$ 415,933	$ 415,933	$ 420,870	$ 1,115,216	$ 1,137,520	$ 1,137,520	$ 1,160,271	$ 1,160,271	$ 1,183,476	$ 1,183,476	$ 1,207,146	$ 1,207,146	$ 1,231,289	$ 1,231,289
Total Comm Taxes Paid to CCFD (Full TH Payment Above)	$ 50,986	$ 51,586	$ 51,586	$ 52,198	$ 83,906	$ 85,584	$ 85,584	$ 87,295	$ 87,295	$ 89,041	$ 89,041	$ 90,822	$ 90,822	$ 92,639	$ 92,639
Base Assessed Value (No TH) [3]	$ -	$ -	$ -	$ -	$ 1,457,286	$ 1,457,286	$ 1,457,286	$ 1,457,286	$ 1,457,286	$ 1,457,286	$ 1,457,286	$ 1,457,286	$ 1,457,286	$ 1,457,286	
Base Taxes Paid (Non-CCFD) (No TH)	$ -	$ -	$ -	$ -	$ 117,954	$ 117,954	$ 117,954	$ 117,954	$ 117,954	$ 117,954	$ 117,954	$ 117,954	$ 117,954	$ 117,954	
Incremental Assessed Value (No TH)	$ 4,449,011	$ 4,501,392	$ 4,501,392	$ 4,554,820	$ 5,864,322	$ 6,010,754	$ 6,010,754	$ 6,160,115	$ 6,160,115	$ 6,312,463	$ 6,312,463	$ 6,467,858	$ 6,467,858	$ 6,626,361	$ 8,083,647
Incremental Taxes	$ 360,107	$ 364,347	$ 364,347	$ 368,672	$ 474,664	$ 486,516	$ 486,516	$ 498,606	$ 498,606	$ 510,937	$ 510,937	$ 523,515	$ 523,515	$ 536,344	$ 654,298
Tax Abatement [1]	0%	0%	0%	0%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	50%
Incremental Taxes Paid	$ 360,107	$ 364,347	$ 364,347	$ 368,672	$ 118,666	$ 121,629	$ 121,629	$ 124,651	$ 124,651	$ 127,734	$ 127,734	$ 130,879	$ 130,879	$ 134,086	$ 327,149
Incremental (and Total) Taxes Abated	**$ -**	**$ -**	**$ -**	**$ -**	**$ 355,998**	**$ 364,887**	**$ 364,887**	**$ 373,954**	**$ 373,954**	**$ 383,203**	**$ 383,203**	**$ 392,636**	**$ 392,636**	**$ 402,258**	**$ 327,149**
Total Taxes Paid	**$ 411,093**	**$ 415,933**	**$ 415,933**	**$ 420,870**	**$ 759,218**	**$ 772,633**	**$ 772,633**	**$ 786,316**	**$ 786,316**	**$ 800,273**	**$ 800,273**	**$ 814,510**	**$ 814,510**	**$ 829,030**	**$ 904,139**

[1] Abatement period begins for each phase independently at 75% for the first 10 years and 50% for the following 15 years.
[2] Market values are projected to increase at an average rate of 2% each reassessment (odd) year.
[3] Base EAV is $10,860,160 and represents the most recent equalized assessed value of the existing Project site and existing improvements allocated per Lot, land independent of improvements, based on acreage as illustrated at the top of Table 3.
[4] No abatement on Lot 16 - Townhomes.

Table 9
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (All Phases)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

All Phases	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total Estimated Real Property Values and Taxes [4]															
Residential Market Value [2]	$ 60,865,323	$ 150,037,727	$ 150,037,727	$ 197,039,724	$ 230,279,566	$ 234,885,157	$ 234,885,157	$ 239,582,860	$ 239,582,860	$ 244,374,517	$ 244,374,517	$ 249,262,008	$ 249,262,008	$ 254,247,248	$ 254,247,248
Residential Assessed Value	$ 11,564,411	$ 28,507,168	$ 28,507,168	$ 37,437,547	$ 43,753,117	$ 44,628,180	$ 44,628,180	$ 45,520,743	$ 45,520,743	$ 46,431,158	$ 46,431,158	$ 47,359,781	$ 47,359,781	$ 48,306,977	$ 48,306,977
Commercial Market Value [2]	$ 63,195,754	$ 102,122,879	$ 102,122,879	$ 119,954,533	$ 128,600,746	$ 131,172,761	$ 131,172,761	$ 133,796,216	$ 133,796,216	$ 136,472,141	$ 136,472,141	$ 139,201,583	$ 139,201,583	$ 141,985,615	$ 141,985,615
Commercial Assessed Value	$ 20,222,641	$ 32,679,321	$ 32,679,321	$ 38,385,451	$ 41,152,239	$ 41,975,284	$ 41,975,284	$ 42,814,789	$ 42,814,789	$ 43,671,085	$ 43,671,085	$ 44,544,507	$ 44,544,507	$ 45,435,397	$ 45,435,397
Total Res and Comm Assessed Value	$ 31,787,053	$ 61,186,489	$ 61,186,489	$ 75,822,998	$ 84,905,356	$ 86,603,463	$ 86,603,463	$ 88,335,533	$ 88,335,533	$ 90,102,243	$ 90,102,243	$ 91,904,288	$ 91,904,288	$ 93,742,374	$ 93,742,374
Total Residential Taxes	$ 803,287	$ 1,980,165	$ 1,980,165	$ 2,600,487	$ 3,039,179	$ 3,099,963	$ 3,099,963	$ 3,161,962	$ 3,161,962	$ 3,225,201	$ 3,225,201	$ 3,289,705	$ 3,289,705	$ 3,355,499	$ 3,355,499
Total Commercial Taxes	$ 1,868,592	$ 3,019,602	$ 3,019,602	$ 3,546,854	$ 3,802,508	$ 3,878,558	$ 3,878,558	$ 3,956,129	$ 3,956,129	$ 4,035,252	$ 4,035,252	$ 4,115,957	$ 4,115,957	$ 4,198,276	$ 4,198,276
Total Res and Comm Taxes	$ 2,671,879	$ 4,999,767	$ 4,999,767	$ 6,147,341	$ 6,841,687	$ 6,978,521	$ 6,978,521	$ 7,118,091	$ 7,118,091	$ 7,260,453	$ 7,260,453	$ 7,405,662	$ 7,405,662	$ 7,553,775	$ 7,553,775
Total Res and Comm Taxes Paid to CCFD	$ 336,756	$ 633,350	$ 633,350	$ 779,830	$ 868,883	$ 886,261	$ 886,261	$ 903,986	$ 903,986	$ 922,066	$ 922,066	$ 940,507	$ 940,507	$ 959,317	$ 959,317
Base Assessed Value (No TH) [3]	$ 2,285,346	$ 7,636,587	$ 7,636,587	$ 8,292,466	$ 9,749,752	$ 9,749,752	$ 9,749,752	$ 9,749,752	$ 9,749,752	$ 9,749,752	$ 7,464,406	$ 2,113,165	$ 2,113,165	$ 1,457,286	
Base Taxes Paid (No TH) (Non-CCFD)	$ 184,978	$ 618,113	$ 618,113	$ 671,200	$ 789,155	$ 789,155	$ 789,155	$ 789,155	$ 789,155	$ 789,155	$ 604,176	$ 171,042	$ 171,042	$ 117,954	
Incremental Assessed Value (No TH)	$ 29,501,707	$ 53,549,902	$ 53,549,902	$ 67,530,532	$ 68,840,034	$ 70,411,830	$ 70,411,830	$ 72,015,062	$ 72,015,062	$ 73,650,358	$ 75,935,704	$ 82,954,947	$ 82,954,947	$ 85,312,188	$ 86,769,474
Incremental Taxes (Non-CCFD)	$ 2,150,145	$ 3,748,304	$ 3,748,304	$ 4,696,310	$ 4,802,303	$ 4,914,132	$ 4,914,132	$ 5,028,198	$ 5,028,198	$ 5,144,545	$ 5,329,523	$ 5,881,332	$ 5,881,332	$ 6,055,467	$ 6,173,421
Tax Abatement (Average) [1]	19%	38%	38%	56%	75%	75%	75%	75%	75%	75%	69%	63%	63%	56%	50%
Incremental Taxes Paid	$ 1,049,284	$ 1,280,136	$ 1,280,136	$ 1,450,581	$ 1,200,576	$ 1,228,533	$ 1,228,533	$ 1,257,049	$ 1,257,049	$ 1,286,136	$ 1,788,585	$ 2,549,297	$ 2,549,297	$ 2,893,647	$ 3,086,710
Incremental (and Total) Taxes Abated	**$ 1,100,861**	**$ 2,468,167**	**$ 2,468,167**	**$ 3,245,729**	**$ 3,601,727**	**$ 3,685,599**	**$ 3,685,599**	**$ 3,771,148**	**$ 3,771,148**	**$ 3,858,408**	**$ 3,540,938**	**$ 3,332,035**	**$ 3,332,035**	**$ 3,161,819**	**$ 3,086,710**
Total Taxes Paid	**$ 1,571,019**	**$ 2,531,600**	**$ 2,531,600**	**$ 2,901,612**	**$ 3,239,960**	**$ 3,292,922**	**$ 3,292,922**	**$ 3,346,943**	**$ 3,346,943**	**$ 3,402,045**	**$ 3,719,515**	**$ 4,073,627**	**$ 4,073,627**	**$ 4,391,956**	**$ 4,467,065**

Gross Total Abatement Value	**$ 85,676,913**
Net Present Value Abatement (8%)	**$ 33,730,878**
Net Present Value Abatement (6% w/ Coverage)	**$ 31,664,430**

[1] Abatement period begins for each phase independently at 75% for the first 10 years and 50% for the following 15 years.
[2] Market values are projected to increase at an average rate of 2% each reassessment (odd) year.
[3] Base EAV is $10,860,160 and represents the most recent equalized assessed value of the existing Project site and existing improvements allocated per Lot, land independent of improvements, based on acreage as illustrated at the top of Table 3.
[4] No abatement on Lot 16 - Townhomes.

Table 8 (Cont.)
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (Phase 4)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Phase 4	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Phase 4 Estimated Real Property Values and Taxes [4]														
Residential Market Value [2]	$ 37,433,461	$ 37,433,461	$ 38,182,130	$ 38,182,130	$ 38,945,773	$ 38,945,773	$ 39,724,688	$ 39,724,688	$ 40,519,182	$ 40,519,182	$ 41,329,566	$ 41,329,566	$ 42,156,157	$ 42,156,157
Residential Assessed Value	$ 7,112,358	$ 7,112,358	$ 7,254,605	$ 7,254,605	$ 7,399,697	$ 7,399,697	$ 7,547,691	$ 7,547,691	$ 7,698,645	$ 7,698,645	$ 7,852,617	$ 7,852,617	$ 8,009,670	$ 8,009,670
Commercial Market Value [2]	$ 25,766,625	$ 25,766,625	$ 26,281,957	$ 26,281,957	$ 26,807,597	$ 26,807,597	$ 27,343,749	$ 27,343,749	$ 27,890,624	$ 27,890,624	$ 28,448,436	$ 28,448,436	$ 29,017,405	$ 29,017,405
Commercial Assessed Value	$ 8,245,320	$ 8,245,320	$ 8,410,226	$ 8,410,226	$ 8,578,431	$ 8,578,431	$ 8,750,000	$ 8,750,000	$ 8,925,000	$ 8,925,000	$ 9,103,500	$ 9,103,500	$ 9,285,570	$ 9,285,570
Total Res and Comm Assessed Value	$ 15,357,678	$ 15,357,678	$ 15,664,831	$ 15,664,831	$ 15,978,128	$ 15,978,128	$ 16,297,690	$ 16,297,690	$ 16,623,644	$ 16,623,644	$ 16,956,117	$ 16,956,117	$ 17,295,239	$ 17,295,239
Total Residential Taxes (Fully Paid - No TH Abatement)	$ 494,039	$ 494,039	$ 503,919	$ 503,919	$ 513,998	$ 513,998	$ 524,278	$ 524,278	$ 534,763	$ 534,763	$ 545,459	$ 545,459	$ 556,368	$ 556,368
Total Commercial Taxes	$ 761,876	$ 761,876	$ 777,113	$ 777,113	$ 792,656	$ 792,656	$ 808,509	$ 808,509	$ 824,679	$ 824,679	$ 841,172	$ 841,172	$ 857,996	$ 857,996
Total Res and Comm Taxes	$ 1,255,914	$ 1,255,914	$ 1,281,033	$ 1,281,033	$ 1,306,653	$ 1,306,653	$ 1,332,786	$ 1,332,786	$ 1,359,442	$ 1,359,442	$ 1,386,631	$ 1,386,631	$ 1,414,364	$ 1,414,364
Total Comm Taxes Paid to CCFD (Full TH Payment Above)	$ 94,491	$ 94,491	$ 96,381	$ 96,381	$ 98,309	$ 98,309	$ 100,275	$ 100,275	$ 102,280	$ 102,280	$ 104,326	$ 104,326	$ 106,413	$ 106,413
Base Assessed Value (No TH) [3]														
Base Taxes Paid (Non-CCFD) (No TH)														
Incremental Assessed Value (No TH)	$ 8,245,320	$ 8,245,320	$ 8,410,226	$ 8,410,226	$ 8,578,431	$ 8,578,431	$ 8,750,000	$ 8,750,000	$ 8,925,000	$ 8,925,000	$ 9,103,500	$ 9,103,500	$ 9,285,570	$ 9,285,570
Incremental Taxes	$ 667,384	$ 667,384	$ 680,732	$ 680,732	$ 694,347	$ 694,347	$ 708,234	$ 708,234	$ 722,398	$ 722,398	$ 736,846	$ 736,846	$ 751,583	$ 751,583
Tax Abatement [1]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Incremental Taxes Paid	$ 333,692	$ 333,692	$ 340,366	$ 340,366	$ 347,173	$ 347,173	$ 354,117	$ 354,117	$ 361,199	$ 361,199	$ 368,423	$ 368,423	$ 375,792	$ 375,792
Incremental (and Total) Taxes Abated	**$ 333,692**	**$ 333,692**	**$ 340,366**	**$ 340,366**	**$ 347,173**	**$ 347,173**	**$ 354,117**	**$ 354,117**	**$ 361,199**	**$ 361,199**	**$ 368,423**	**$ 368,423**	**$ 375,792**	**$ 375,792**
Total Taxes Paid	**$ 922,222**	**$ 922,222**	**$ 940,667**	**$ 940,667**	**$ 959,480**	**$ 959,480**	**$ 978,670**	**$ 978,670**	**$ 998,243**	**$ 998,243**	**$ 1,018,208**	**$ 1,018,208**	**$ 1,038,572**	**$ 1,038,572**

Table 9 (Cont.)
Estimated Real Property Tax Abatement and Taxes Paid During Abatement Period (All Phases)
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

All Phases	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Total Estimated Real Property Values and Taxes [4]														
Residential Market Value [2]	$ 259,332,193	$ 259,332,193	$ 264,518,837	$ 264,518,837	$ 269,809,213	$ 269,809,213	$ 275,205,398	$ 275,205,398	$ 280,709,506	$ 280,709,506	$ 286,323,696	$ 286,323,696	$ 292,050,170	$ 292,050,170
Residential Assessed Value	$ 49,273,117	$ 49,273,117	$ 50,258,579	$ 50,258,579	$ 51,263,751	$ 51,263,751	$ 52,289,026	$ 52,289,026	$ 53,334,806	$ 53,334,806	$ 54,401,502	$ 54,401,502	$ 55,489,532	$ 55,489,532
Commercial Market Value [2]	$ 144,825,327	$ 144,825,327	$ 147,721,834	$ 147,721,834	$ 150,676,271	$ 150,676,271	$ 153,689,796	$ 153,689,796	$ 156,763,592	$ 156,763,592	$ 159,898,864	$ 159,898,864	$ 163,096,841	$ 163,096,841
Commercial Assessed Value	$ 46,344,105	$ 46,344,105	$ 47,270,987	$ 47,270,987	$ 48,216,407	$ 48,216,407	$ 49,180,735	$ 49,180,735	$ 50,164,349	$ 50,164,349	$ 51,167,636	$ 51,167,636	$ 52,190,989	$ 52,190,989
Total Res and Comm Assessed Value	$ 95,617,221	$ 95,617,221	$ 97,529,566	$ 97,529,566	$ 99,480,157	$ 99,480,157	$ 101,469,760	$ 101,469,760	$ 103,499,155	$ 103,499,155	$ 105,569,139	$ 105,569,139	$ 107,680,521	$ 107,680,521
Total Residential Taxes	$ 3,422,609	$ 3,422,609	$ 3,491,061	$ 3,491,061	$ 3,560,883	$ 3,560,883	$ 3,632,100	$ 3,632,100	$ 3,704,742	$ 3,704,742	$ 3,778,837	$ 3,778,837	$ 3,854,414	$ 3,854,414
Total Commercial Taxes	$ 4,282,242	$ 4,282,242	$ 4,367,886	$ 4,367,886	$ 4,455,244	$ 4,455,244	$ 4,544,349	$ 4,544,349	$ 4,635,236	$ 4,635,236	$ 4,727,941	$ 4,727,941	$ 4,822,500	$ 4,822,500
Total Res and Comm Taxes	$ 7,704,851	$ 7,704,851	$ 7,858,948	$ 7,858,948	$ 8,016,127	$ 8,016,127	$ 8,176,449	$ 8,176,449	$ 8,339,978	$ 8,339,978	$ 8,506,778	$ 8,506,778	$ 8,676,913	$ 8,676,913
Total Res and Comm Taxes Paid to CCFD	$ 978,503	$ 978,503	$ 998,073	$ 998,073	$ 1,018,035	$ 1,018,035	$ 1,038,396	$ 1,038,396	$ 1,059,163	$ 1,059,163	$ 1,080,347	$ 1,080,347	$ 1,101,954	$ 1,101,954
Base Assessed Value (No TH) [3]														
Base Taxes Paid (No TH) (Non-CCFD)														
Incremental Assessed Value (No TH)	$ 88,504,864	$ 88,504,864	$ 90,274,961	$ 90,274,961	$ 92,080,460	$ 92,080,460	$ 93,922,070	$ 93,922,070	$ 95,800,511	$ 95,800,511	$ 97,716,521	$ 97,716,521	$ 99,670,852	$ 99,670,852
Incremental Taxes (Non-CCFD)	$ 6,296,889	$ 6,296,889	$ 6,422,827	$ 6,422,827	$ 6,551,283	$ 6,551,283	$ 6,682,309	$ 6,682,309	$ 6,815,955	$ 6,815,955	$ 6,952,274	$ 6,952,274	$ 7,091,320	$ 7,091,320
Tax Abatement (Average) [1]	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	38%	25%	25%	13%
Incremental Taxes Paid	$ 3,148,445	$ 3,148,445	$ 3,211,413	$ 3,211,413	$ 3,275,642	$ 3,275,642	$ 3,341,155	$ 3,341,155	$ 3,407,978	$ 3,407,978	$ 4,545,169	$ 5,954,918	$ 6,074,016	$ 6,715,528
Incremental (and Total) Taxes Abated	**$ 3,148,445**	**$ 3,148,445**	**$ 3,211,413**	**$ 3,211,413**	**$ 3,275,642**	**$ 3,275,642**	**$ 3,341,155**	**$ 3,341,155**	**$ 3,407,978**	**$ 3,407,978**	**$ 2,407,106**	**$ 997,357**	**$ 1,017,304**	**$ 375,792**
Total Taxes Paid	**$ 4,556,406**	**$ 4,556,406**	**$ 4,647,534**	**$ 4,647,534**	**$ 4,740,485**	**$ 4,740,485**	**$ 4,835,295**	**$ 4,835,295**	**$ 4,932,001**	**$ 4,932,001**	**$ 6,099,672**	**$ 7,509,421**	**$ 7,659,610**	**$ 8,301,122**

Gross Total Abatement Value	**$ 85,676,913**
Net Present Value Abatement (8%)	**$ 33,730,878**
Net Present Value Abatement (6% w/ Coverage)	**$ 31,664,430**

Table 10
Estimated Real Property Taxes Paid - without Abatement in Place - Separated by Jurisdiction
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
State of Missouri	$ 9,536	$ 18,356	$ 18,356	$ 22,747	$ 25,472	$ 25,981	$ 25,981	$ 26,501	$ 26,501	$ 27,031	$ 27,031	$ 27,571	$ 27,571	$ 28,123	$ 28,123
County General	$ 52,621	$ 99,664	$ 99,664	$ 122,956	$ 137,209	$ 139,953	$ 139,953	$ 142,752	$ 142,752	$ 145,607	$ 145,607	$ 148,519	$ 148,519	$ 151,489	$ 151,489
County Health Fund	$ 35,427	$ 67,069	$ 67,069	$ 82,732	$ 92,313	$ 94,159	$ 94,159	$ 96,042	$ 96,042	$ 97,963	$ 97,963	$ 99,922	$ 99,922	$ 101,921	$ 101,921
County Park Maintenance	$ 12,657	$ 23,988	$ 23,988	$ 29,599	$ 33,035	$ 33,696	$ 33,696	$ 34,370	$ 34,370	$ 35,057	$ 35,057	$ 35,758	$ 35,758	$ 36,473	$ 36,473
County Bond Retire	$ 6,040	$ 11,625	$ 11,625	$ 14,406	$ 16,132	$ 16,455	$ 16,455	$ 16,784	$ 16,784	$ 17,119	$ 17,119	$ 17,462	$ 17,462	$ 17,811	$ 17,811
Roads and Bridges	$ 26,469	$ 50,138	$ 50,138	$ 61,857	$ 69,029	$ 70,409	$ 70,409	$ 71,818	$ 71,818	$ 73,254	$ 73,254	$ 74,719	$ 74,719	$ 76,213	$ 76,213
St. Louis Community College	$ 83,250	$ 160,247	$ 160,247	$ 198,580	$ 222,367	$ 226,814	$ 226,814	$ 231,351	$ 231,351	$ 235,978	$ 235,978	$ 240,697	$ 240,697	$ 245,511	$ 245,511
Special School District	$ 305,664	$ 588,369	$ 588,369	$ 729,114	$ 816,450	$ 832,779	$ 832,779	$ 849,434	$ 849,434	$ 866,423	$ 866,423	$ 883,752	$ 883,752	$ 901,427	$ 901,427
Metropolitan Zoo Museum District	$ 74,382	$ 143,176	$ 143,176	$ 177,426	$ 198,679	$ 202,652	$ 202,652	$ 206,705	$ 206,705	$ 210,839	$ 210,839	$ 215,056	$ 215,056	$ 219,357	$ 219,357
County Library	$ 68,542	$ 129,124	$ 129,124	$ 159,062	$ 177,292	$ 180,837	$ 180,837	$ 184,454	$ 184,454	$ 188,143	$ 188,143	$ 191,906	$ 191,906	$ 195,744	$ 195,744
Ladue School District	$ 1,188,544	$ 2,275,139	$ 2,275,139	$ 2,815,094	$ 3,148,581	$ 3,211,553	$ 3,211,553	$ 3,275,784	$ 3,275,784	$ 3,341,300	$ 3,341,300	$ 3,408,126	$ 3,408,126	$ 3,476,288	$ 3,476,288
Metropolitan Sewer District	$ 31,692	$ 61,003	$ 61,003	$ 75,596	$ 84,651	$ 86,344	$ 86,344	$ 88,071	$ 88,071	$ 89,832	$ 89,832	$ 91,629	$ 91,629	$ 93,461	$ 93,461
Sewer - Deer Creek	$ 22,741	$ 42,838	$ 42,838	$ 52,768	$ 58,814	$ 59,990	$ 59,990	$ 61,190	$ 61,190	$ 62,414	$ 62,414	$ 63,662	$ 63,662	$ 64,936	$ 64,936
Creve Coeur Fire District ("CCFD")	$ 336,756	$ 633,350	$ 633,350	$ 779,830	$ 868,883	$ 886,261	$ 886,261	$ 903,986	$ 903,986	$ 922,066	$ 922,066	$ 940,507	$ 940,507	$ 959,317	$ 959,317
City of Creve Coeur	$ 49,992	$ 95,416	$ 95,416	$ 117,966	$ 131,859	$ 134,496	$ 134,496	$ 137,186	$ 137,186	$ 139,930	$ 139,930	$ 142,728	$ 142,728	$ 145,583	$ 145,583
Dev. Disability - Productive Living Board	$ 23,782	$ 44,715	$ 44,715	$ 55,052	$ 61,335	$ 62,562	$ 62,562	$ 63,813	$ 63,813	$ 65,090	$ 65,090	$ 66,391	$ 66,391	$ 67,719	$ 67,719
Commercial Surcharge	$ 343,785	$ 555,548	$ 555,548	$ 652,553	$ 699,588	$ 713,580	$ 713,580	$ 727,851	$ 727,851	$ 742,408	$ 742,408	$ 757,257	$ 757,257	$ 772,402	$ 772,402
Estimated Taxes Paid Without Abatement	**$ 2,671,879**	**$ 4,999,767**	**$ 4,999,767**	**$ 6,147,341**	**$ 6,841,687**	**$ 6,978,521**	**$ 6,978,521**	**$ 7,118,091**	**$ 7,118,091**	**$ 7,260,453**	**$ 7,260,453**	**$ 7,405,662**	**$ 7,405,662**	**$ 7,553,775**	**$ 7,553,775**

Table 11
Estimated Real Property Taxes Paid - with Abatement in Place - Separated by Jurisdiction
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
State of Missouri	$ 4,795	$ 7,579	$ 7,579	$ 8,577	$ 9,983	$ 10,138	$ 10,138	$ 10,297	$ 10,297	$ 10,459	$ 11,879	$ 13,505	$ 13,505	$ 14,829	$ 15,107
County General	$ 27,219	$ 42,356	$ 42,356	$ 47,601	$ 54,156	$ 54,984	$ 54,984	$ 55,827	$ 55,827	$ 56,688	$ 64,141	$ 72,322	$ 72,322	$ 79,316	$ 80,939
County Health Fund	$ 18,340	$ 28,527	$ 28,527	$ 32,053	$ 36,443	$ 37,000	$ 37,000	$ 37,567	$ 37,567	$ 38,146	$ 43,156	$ 48,650	$ 48,650	$ 53,352	$ 54,447
County Park Maintenance	$ 6,540	$ 10,183	$ 10,183	$ 11,447	$ 13,035	$ 13,234	$ 13,234	$ 13,438	$ 13,438	$ 13,645	$ 15,441	$ 17,417	$ 17,417	$ 19,102	$ 19,492
County Bond Retire	$ 3,037	$ 4,800	$ 4,800	$ 5,432	$ 6,322	$ 6,421	$ 6,421	$ 6,522	$ 6,522	$ 6,624	$ 7,524	$ 8,553	$ 8,553	$ 9,392	$ 9,568
Roads and Bridges	$ 13,689	$ 21,304	$ 21,304	$ 23,944	$ 27,245	$ 27,661	$ 27,661	$ 28,085	$ 28,085	$ 28,518	$ 32,268	$ 36,386	$ 36,386	$ 39,905	$ 40,722
St. Louis Community College	$ 41,860	$ 66,162	$ 66,162	$ 74,880	$ 87,148	$ 88,508	$ 88,508	$ 89,895	$ 89,895	$ 91,310	$ 103,706	$ 117,899	$ 117,899	$ 129,456	$ 131,887
Special School District	$ 153,695	$ 242,924	$ 242,924	$ 274,933	$ 319,976	$ 324,969	$ 324,969	$ 330,062	$ 330,062	$ 335,257	$ 380,769	$ 432,883	$ 432,883	$ 475,316	$ 484,239
Metropolitan Zoo Museum District	$ 37,401	$ 59,114	$ 59,114	$ 66,903	$ 77,864	$ 79,079	$ 79,079	$ 80,319	$ 80,319	$ 81,583	$ 92,658	$ 105,340	$ 105,340	$ 115,665	$ 117,837
County Library	$ 35,780	$ 55,402	$ 55,402	$ 62,120	$ 70,145	$ 71,209	$ 71,209	$ 72,294	$ 72,294	$ 73,400	$ 82,944	$ 93,263	$ 93,263	$ 102,239	$ 104,392
Ladue School District	$ 603,559	$ 948,772	$ 948,772	$ 1,071,164	$ 1,236,951	$ 1,256,113	$ 1,256,113	$ 1,275,659	$ 1,275,659	$ 1,295,596	$ 1,469,585	$ 1,666,059	$ 1,666,059	$ 1,828,623	$ 1,864,005
Metropolitan Sewer District	$ 15,935	$ 25,187	$ 25,187	$ 28,505	$ 33,176	$ 33,693	$ 33,693	$ 34,221	$ 34,221	$ 34,760	$ 39,479	$ 44,882	$ 44,882	$ 49,281	$ 50,207
Sewer - Deer Creek	$ 11,873	$ 18,383	$ 18,383	$ 20,611	$ 23,271	$ 23,624	$ 23,624	$ 23,983	$ 23,983	$ 24,350	$ 27,516	$ 30,938	$ 30,938	$ 33,915	$ 34,629
Creve Coeur Fire District ("CCFD")	$ 336,756	$ 633,350	$ 633,350	$ 779,830	$ 868,883	$ 886,261	$ 886,261	$ 903,986	$ 903,986	$ 922,066	$ 922,066	$ 940,507	$ 940,507	$ 959,317	$ 959,317
City of Creve Coeur	$ 25,517	$ 39,999	$ 39,999	$ 45,101	$ 51,868	$ 52,669	$ 52,669	$ 53,485	$ 53,485	$ 54,318	$ 61,571	$ 69,699	$ 69,699	$ 76,483	$ 77,986
Dev. Disability - Productive Living Board	$ 12,455	$ 19,251	$ 19,251	$ 21,568	$ 24,288	$ 24,656	$ 24,656	$ 25,030	$ 25,030	$ 25,412	$ 28,703	$ 32,242	$ 32,242	$ 35,339	$ 36,091
Commercial Surcharge	$ 222,567	$ 308,306	$ 308,306	$ 326,941	$ 299,206	$ 302,704	$ 302,704	$ 306,272	$ 306,272	$ 309,911	$ 336,109	$ 343,082	$ 343,082	$ 370,426	$ 386,201
Estimated Taxes Paid With Abatement	**$ 1,571,019**	**$ 2,531,600**	**$ 2,531,600**	**$ 2,901,612**	**$ 3,239,960**	**$ 3,292,922**	**$ 3,292,922**	**$ 3,346,943**	**$ 3,346,943**	**$ 3,402,045**	**$ 3,719,515**	**$ 4,073,627**	**$ 4,073,627**	**$ 4,391,956**	**$ 4,467,065**

Table 12
Estimated Real Property Taxes Abated - with Abatement in Place - Separated by Jurisdiction
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
State of Missouri	$ 4,741	$ 10,777	$ 10,777	$ 14,170	$ 15,489	$ 15,843	$ 15,843	$ 16,203	$ 16,203	$ 16,571	$ 15,151	$ 14,066	$ 14,066	$ 13,294	$ 13,015
County General	$ 25,402	$ 57,308	$ 57,308	$ 75,355	$ 83,052	$ 84,969	$ 84,969	$ 86,925	$ 86,925	$ 88,919	$ 81,466	$ 76,197	$ 76,197	$ 72,174	$ 70,550
County Health Fund	$ 17,087	$ 38,542	$ 38,542	$ 50,679	$ 55,869	$ 57,159	$ 57,159	$ 58,475	$ 58,475	$ 59,817	$ 54,807	$ 51,273	$ 51,273	$ 48,569	$ 47,474
County Park Maintenance	$ 6,117	$ 13,805	$ 13,805	$ 18,153	$ 20,000	$ 20,461	$ 20,461	$ 20,932	$ 20,932	$ 21,412	$ 19,616	$ 18,341	$ 18,341	$ 17,371	$ 16,982
County Bond Retire	$ 3,003	$ 6,826	$ 6,826	$ 8,974	$ 9,810	$ 10,034	$ 10,034	$ 10,262	$ 10,262	$ 10,495	$ 9,596	$ 8,909	$ 8,909	$ 8,419	$ 8,243
Roads and Bridges	$ 12,780	$ 28,834	$ 28,834	$ 37,914	$ 41,784	$ 42,749	$ 42,749	$ 43,732	$ 43,732	$ 44,736	$ 40,986	$ 38,333	$ 38,333	$ 36,308	$ 35,492
St. Louis Community College	$ 41,390	$ 94,085	$ 94,085	$ 123,700	$ 135,219	$ 138,306	$ 138,306	$ 141,456	$ 141,456	$ 144,668	$ 132,272	$ 122,798	$ 122,798	$ 116,055	$ 113,625
Special School District	$ 151,969	$ 345,445	$ 345,445	$ 454,181	$ 496,474	$ 507,810	$ 507,810	$ 519,373	$ 519,373	$ 531,166	$ 485,654	$ 450,869	$ 450,869	$ 426,111	$ 417,188
Metropolitan Zoo Museum District	$ 36,981	$ 84,062	$ 84,062	$ 110,522	$ 120,814	$ 123,573	$ 123,573	$ 126,386	$ 126,386	$ 129,256	$ 118,181	$ 109,716	$ 109,716	$ 103,692	$ 101,520
County Library	$ 32,762	$ 73,723	$ 73,723	$ 96,943	$ 107,146	$ 109,629	$ 109,629	$ 112,161	$ 112,161	$ 114,743	$ 105,199	$ 98,643	$ 98,643	$ 93,505	$ 91,352
Ladue School District	$ 584,985	$ 1,326,366	$ 1,326,366	$ 1,743,930	$ 1,911,631	$ 1,955,440	$ 1,955,440	$ 2,000,125	$ 2,000,125	$ 2,045,703	$ 1,871,715	$ 1,742,066	$ 1,742,066	$ 1,647,665	$ 1,612,283
Metropolitan Sewer District	$ 15,756	$ 35,816	$ 35,816	$ 47,090	$ 51,475	$ 52,650	$ 52,650	$ 53,849	$ 53,849	$ 55,072	$ 50,353	$ 46,747	$ 46,747	$ 44,180	$ 43,255
Sewer - Deer Creek	$ 10,868	$ 24,454	$ 24,454	$ 32,157	$ 35,543	$ 36,367	$ 36,367	$ 37,207	$ 37,207	$ 38,064	$ 34,898	$ 32,725	$ 32,725	$ 31,021	$ 30,306
Creve Coeur Fire District ("CCFD")	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
City of Creve Coeur	$ 24,475	$ 55,417	$ 55,417	$ 72,865	$ 79,990	$ 81,827	$ 81,827	$ 83,701	$ 83,701	$ 85,612	$ 78,359	$ 73,029	$ 73,029	$ 69,100	$ 67,597
Dev. Disability - Productive Living Board	$ 11,327	$ 25,464	$ 25,464	$ 33,484	$ 37,047	$ 37,906	$ 37,906	$ 38,783	$ 38,783	$ 39,677	$ 36,386	$ 34,150	$ 34,150	$ 32,380	$ 31,628
Commercial Surcharge	$ 121,218	$ 247,242	$ 247,242	$ 325,612	$ 400,382	$ 410,876	$ 410,876	$ 421,579	$ 421,579	$ 432,497	$ 406,300	$ 414,174	$ 414,174	$ 401,976	$ 386,201
Estimated Taxes Abated With Abatement	**$ 1,100,861**	**$ 2,468,167**	**$ 2,468,167**	**$ 3,245,729**	**$ 3,601,727**	**$ 3,685,599**	**$ 3,685,599**	**$ 3,771,148**	**$ 3,771,148**	**$ 3,858,408**	**$ 3,540,938**	**$ 3,332,035**	**$ 3,332,035**	**$ 3,161,819**	**$ 3,086,710**

Table 10 (Cont.)
Estimated Real Property Taxes Paid - without Abatement in Place - Separated by Jurisdiction
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
State of Missouri	$ 28,685	$ 28,685	$ 29,259	$ 29,259	$ 29,844	$ 29,844	$ 30,441	$ 30,441	$ 31,050	$ 31,050	$ 31,671	$ 31,671	$ 32,304	$ 32,304
County General	$ 154,519	$ 154,519	$ 157,610	$ 157,610	$ 160,762	$ 160,762	$ 163,977	$ 163,977	$ 167,256	$ 167,256	$ 170,602	$ 170,602	$ 174,014	$ 174,014
County Health Fund	$ 103,959	$ 103,959	$ 106,038	$ 106,038	$ 108,159	$ 108,159	$ 110,322	$ 110,322	$ 112,529	$ 112,529	$ 114,779	$ 114,779	$ 117,075	$ 117,075
County Park Maintenance	$ 37,203	$ 37,203	$ 37,947	$ 37,947	$ 38,706	$ 38,706	$ 39,480	$ 39,480	$ 40,270	$ 40,270	$ 41,075	$ 41,075	$ 41,896	$ 41,896
County Bond Retire	$ 18,167	$ 18,167	$ 18,531	$ 18,531	$ 18,901	$ 18,901	$ 19,279	$ 19,279	$ 19,665	$ 19,665	$ 20,058	$ 20,058	$ 20,459	$ 20,459
Roads and Bridges	$ 77,738	$ 77,738	$ 79,292	$ 79,292	$ 80,878	$ 80,878	$ 82,496	$ 82,496	$ 84,146	$ 84,146	$ 85,829	$ 85,829	$ 87,545	$ 87,545
St. Louis Community College	$ 250,422	$ 250,422	$ 255,430	$ 255,430	$ 260,539	$ 260,539	$ 265,749	$ 265,749	$ 271,064	$ 271,064	$ 276,486	$ 276,486	$ 282,015	$ 282,015
Special School District	$ 919,455	$ 919,455	$ 937,844	$ 937,844	$ 956,601	$ 956,601	$ 975,733	$ 975,733	$ 995,248	$ 995,248	$ 1,015,153	$ 1,015,153	$ 1,035,456	$ 1,035,456
Metropolitan Zoo Museum District	$ 223,744	$ 223,744	$ 228,219	$ 228,219	$ 232,784	$ 232,784	$ 237,439	$ 237,439	$ 242,188	$ 242,188	$ 247,032	$ 247,032	$ 251,972	$ 251,972
County Library	$ 199,659	$ 199,659	$ 203,652	$ 203,652	$ 207,725	$ 207,725	$ 211,880	$ 211,880	$ 216,117	$ 216,117	$ 220,440	$ 220,440	$ 224,849	$ 224,849
Ladue School District	$ 3,545,814	$ 3,545,814	$ 3,616,730	$ 3,616,730	$ 3,689,065	$ 3,689,065	$ 3,762,846	$ 3,762,846	$ 3,838,103	$ 3,838,103	$ 3,914,865	$ 3,914,865	$ 3,993,162	$ 3,993,162
Metropolitan Sewer District	$ 95,330	$ 95,330	$ 97,237	$ 97,237	$ 99,182	$ 99,182	$ 101,165	$ 101,165	$ 103,189	$ 103,189	$ 105,252	$ 105,252	$ 107,357	$ 107,357
Sewer - Deer Creek	$ 66,234	$ 66,234	$ 67,559	$ 67,559	$ 68,910	$ 68,910	$ 70,288	$ 70,288	$ 71,694	$ 71,694	$ 73,128	$ 73,128	$ 74,591	$ 74,591
Creve Coeur Fire District ("CCFD")	$ 978,503	$ 978,503	$ 998,073	$ 998,073	$ 1,018,035	$ 1,018,035	$ 1,038,396	$ 1,038,396	$ 1,059,163	$ 1,059,163	$ 1,080,347	$ 1,080,347	$ 1,101,954	$ 1,101,954
City of Creve Coeur	$ 148,494	$ 148,494	$ 151,464	$ 151,464	$ 154,494	$ 154,494	$ 157,583	$ 157,583	$ 160,735	$ 160,735	$ 163,950	$ 163,950	$ 167,229	$ 167,229
Dev. Disability - Productive Living Board	$ 69,074	$ 69,074	$ 70,455	$ 70,455	$ 71,864	$ 71,864	$ 73,301	$ 73,301	$ 74,767	$ 74,767	$ 76,263	$ 76,263	$ 77,788	$ 77,788
Commercial Surcharge	$ 787,850	$ 787,850	$ 803,607	$ 803,607	$ 819,679	$ 819,679	$ 836,072	$ 836,072	$ 852,794	$ 852,794	$ 869,850	$ 869,850	$ 887,247	$ 887,247
Estimated Taxes Paid Without Abatement	**$ 7,704,851**	**$ 7,704,851**	**$ 7,858,948**	**$ 7,858,948**	**$ 8,016,127**	**$ 8,016,127**	**$ 8,176,449**	**$ 8,176,449**	**$ 8,339,978**	**$ 8,339,978**	**$ 8,506,778**	**$ 8,506,778**	**$ 8,676,913**	**$ 8,676,913**

Table 11 (Cont.)
Estimated Real Property Taxes Paid - with Abatement in Place - Separated by Jurisdiction
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
State of Missouri	$ 15,409	$ 15,409	$ 15,718	$ 15,718	$ 16,032	$ 16,032	$ 16,353	$ 16,353	$ 16,680	$ 16,680	$ 21,545	$ 27,578	$ 28,130	$ 30,911
County General	$ 82,558	$ 82,558	$ 84,209	$ 84,209	$ 85,894	$ 85,894	$ 87,611	$ 87,611	$ 89,364	$ 89,364	$ 115,644	$ 148,079	$ 151,041	$ 165,889
County Health Fund	$ 55,536	$ 55,536	$ 56,646	$ 56,646	$ 57,779	$ 57,779	$ 58,935	$ 58,935	$ 60,114	$ 60,114	$ 77,796	$ 99,617	$ 101,609	$ 111,596
County Park Maintenance	$ 19,882	$ 19,882	$ 20,279	$ 20,279	$ 20,685	$ 20,685	$ 21,099	$ 21,099	$ 21,521	$ 21,521	$ 27,847	$ 35,657	$ 36,370	$ 39,946
County Bond Retire	$ 9,759	$ 9,759	$ 9,954	$ 9,954	$ 10,154	$ 10,154	$ 10,357	$ 10,357	$ 10,564	$ 10,564	$ 13,645	$ 17,466	$ 17,815	$ 19,577
Roads and Bridges	$ 41,536	$ 41,536	$ 42,367	$ 42,367	$ 43,214	$ 43,214	$ 44,078	$ 44,078	$ 44,960	$ 44,960	$ 58,181	$ 74,499	$ 75,989	$ 83,460
St. Louis Community College	$ 134,524	$ 134,524	$ 137,215	$ 137,215	$ 139,959	$ 139,959	$ 142,758	$ 142,758	$ 145,614	$ 145,614	$ 188,092	$ 240,757	$ 245,572	$ 269,856
Special School District	$ 493,924	$ 493,924	$ 503,802	$ 503,802	$ 513,878	$ 513,878	$ 524,156	$ 524,156	$ 534,639	$ 534,639	$ 690,605	$ 883,970	$ 901,649	$ 990,811
Metropolitan Zoo Museum District	$ 120,194	$ 120,194	$ 122,597	$ 122,597	$ 125,049	$ 125,049	$ 127,550	$ 127,550	$ 130,101	$ 130,101	$ 168,055	$ 215,109	$ 219,411	$ 241,108
County Library	$ 106,480	$ 106,480	$ 108,609	$ 108,609	$ 110,781	$ 110,781	$ 112,997	$ 112,997	$ 115,257	$ 115,257	$ 149,245	$ 191,129	$ 194,951	$ 214,077
Ladue School District	$ 1,901,285	$ 1,901,285	$ 1,939,311	$ 1,939,311	$ 1,978,097	$ 1,978,097	$ 2,017,659	$ 2,017,659	$ 2,058,012	$ 2,058,012	$ 2,660,027	$ 3,405,248	$ 3,473,353	$ 3,816,138
Metropolitan Sewer District	$ 51,211	$ 51,211	$ 52,235	$ 52,235	$ 53,280	$ 53,280	$ 54,345	$ 54,345	$ 55,432	$ 55,432	$ 71,603	$ 91,651	$ 93,484	$ 102,729
Sewer - Deer Creek	$ 35,322	$ 35,322	$ 36,028	$ 36,028	$ 36,749	$ 36,749	$ 37,484	$ 37,484	$ 38,234	$ 38,234	$ 49,509	$ 63,403	$ 64,671	$ 71,016
Creve Coeur Fire District ("CCFD")	$ 978,503	$ 978,503	$ 998,073	$ 998,073	$ 1,018,035	$ 1,018,035	$ 1,038,396	$ 1,038,396	$ 1,059,163	$ 1,059,163	$ 1,080,347	$ 1,080,347	$ 1,101,954	$ 1,101,954
City of Creve Coeur	$ 79,546	$ 79,546	$ 81,137	$ 81,137	$ 82,760	$ 82,760	$ 84,415	$ 84,415	$ 86,103	$ 86,103	$ 111,327	$ 142,525	$ 145,376	$ 159,707
Dev. Disability - Productive Living Board	$ 36,813	$ 36,813	$ 37,549	$ 37,549	$ 38,300	$ 38,300	$ 39,066	$ 39,066	$ 39,847	$ 39,847	$ 51,610	$ 66,096	$ 67,418	$ 74,027
Commercial Surcharge	$ 393,925	$ 393,925	$ 401,803	$ 401,803	$ 409,839	$ 409,839	$ 418,036	$ 418,036	$ 426,397	$ 426,397	$ 564,593	$ 726,290	$ 740,815	$ 808,319
Estimated Taxes Paid With Abatement	**$ 4,556,406**	**$ 4,556,406**	**$ 4,647,534**	**$ 4,647,534**	**$ 4,740,485**	**$ 4,740,485**	**$ 4,835,295**	**$ 4,835,295**	**$ 4,932,001**	**$ 4,932,001**	**$ 6,099,672**	**$ 7,509,421**	**$ 7,659,610**	**$ 8,301,122**

Table 12 (Cont.)
Estimated Real Property Taxes Abated - with Abatement in Place - Separated by Jurisdiction
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
State of Missouri	$ 13,276	$ 13,276	$ 13,541	$ 13,541	$ 13,812	$ 13,812	$ 14,088	$ 14,088	$ 14,370	$ 14,370	$ 10,125	$ 4,093	$ 4,175	$ 1,393
County General	$ 71,961	$ 71,961	$ 73,400	$ 73,400	$ 74,868	$ 74,868	$ 76,365	$ 76,365	$ 77,893	$ 77,893	$ 54,957	$ 22,522	$ 22,973	$ 8,125
County Health Fund	$ 48,423	$ 48,423	$ 49,392	$ 49,392	$ 50,380	$ 50,380	$ 51,387	$ 51,387	$ 52,415	$ 52,415	$ 36,983	$ 15,162	$ 15,465	$ 5,478
County Park Maintenance	$ 17,321	$ 17,321	$ 17,668	$ 17,668	$ 18,021	$ 18,021	$ 18,381	$ 18,381	$ 18,749	$ 18,749	$ 13,228	$ 5,418	$ 5,526	$ 1,950
County Bond Retire	$ 8,408	$ 8,408	$ 8,576	$ 8,576	$ 8,748	$ 8,748	$ 8,923	$ 8,923	$ 9,101	$ 9,101	$ 6,413	$ 2,592	$ 2,644	$ 882
Roads and Bridges	$ 36,202	$ 36,202	$ 36,926	$ 36,926	$ 37,664	$ 37,664	$ 38,418	$ 38,418	$ 39,186	$ 39,186	$ 27,647	$ 11,329	$ 11,556	$ 4,086
St. Louis Community College	$ 115,897	$ 115,897	$ 118,215	$ 118,215	$ 120,579	$ 120,579	$ 122,991	$ 122,991	$ 125,451	$ 125,451	$ 88,393	$ 35,729	$ 36,443	$ 12,159
Special School District	$ 425,531	$ 425,531	$ 434,042	$ 434,042	$ 442,723	$ 442,723	$ 451,577	$ 451,577	$ 460,609	$ 460,609	$ 324,548	$ 131,183	$ 133,807	$ 44,645
Metropolitan Zoo Museum District	$ 103,551	$ 103,551	$ 105,622	$ 105,622	$ 107,734	$ 107,734	$ 109,889	$ 109,889	$ 112,087	$ 112,087	$ 78,977	$ 31,923	$ 32,561	$ 10,864
County Library	$ 93,179	$ 93,179	$ 95,043	$ 95,043	$ 96,944	$ 96,944	$ 98,883	$ 98,883	$ 100,860	$ 100,860	$ 71,194	$ 29,311	$ 29,897	$ 10,771
Ladue School District	$ 1,644,529	$ 1,644,529	$ 1,677,419	$ 1,677,419	$ 1,710,968	$ 1,710,968	$ 1,745,187	$ 1,745,187	$ 1,780,091	$ 1,780,091	$ 1,254,838	$ 509,617	$ 519,809	$ 177,025
Metropolitan Sewer District	$ 44,120	$ 44,120	$ 45,002	$ 45,002	$ 45,902	$ 45,902	$ 46,820	$ 46,820	$ 47,757	$ 47,757	$ 33,650	$ 13,601	$ 13,873	$ 4,629
Sewer - Deer Creek	$ 30,912	$ 30,912	$ 31,531	$ 31,531	$ 32,161	$ 32,161	$ 32,804	$ 32,804	$ 33,460	$ 33,460	$ 23,619	$ 9,725	$ 9,919	$ 3,575
Creve Coeur Fire District ("CCFD")	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
City of Creve Coeur	$ 68,948	$ 68,948	$ 70,327	$ 70,327	$ 71,734	$ 71,734	$ 73,169	$ 73,169	$ 74,632	$ 74,632	$ 52,623	$ 21,425	$ 21,853	$ 7,521
Dev. Disability - Productive Living Board	$ 32,261	$ 32,261	$ 32,906	$ 32,906	$ 33,564	$ 33,564	$ 34,235	$ 34,235	$ 34,920	$ 34,920	$ 24,653	$ 10,167	$ 10,370	$ 3,761
Commercial Surcharge	$ 393,925	$ 393,925	$ 401,803	$ 401,803	$ 409,839	$ 409,839	$ 418,036	$ 418,036	$ 426,397	$ 426,397	$ 305,257	$ 143,560	$ 146,431	$ 78,927
Estimated Taxes Abated With Abatement	**$ 3,148,445**	**$ 3,148,445**	**$ 3,211,413**	**$ 3,211,413**	**$ 3,275,642**	**$ 3,275,642**	**$ 3,341,155**	**$ 3,341,155**	**$ 3,407,978**	**$ 3,407,978**	**$ 2,407,106**	**$ 997,357**	**$ 1,017,304**	**$ 375,792**

Table 13
Estimated Real Property Taxes Paid - without Abatement in Place - Separated by Jurisdiction - Totaled for Various Time Periods
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2026	2027	2026 - 2030	2026 - 2035	2026 - 2040	2026 - 2045	2026 - 2050	2026 - 2054
	1	2	1 - 5	1 - 10	1 - 15	1 - 20	1 - 25	1 - 29
State of Missouri	$ 9,536	$ 18,356	$ 94,467	$ 226,461	$ 364,879	$ 510,611	$ 663,437	$ 791,387
County General	$ 52,621	$ 99,664	$ 512,115	$ 1,223,130	$ 1,968,754	$ 2,753,773	$ 3,577,001	$ 4,266,232
County Health Fund	$ 35,427	$ 67,069	$ 344,610	$ 822,975	$ 1,324,624	$ 1,852,779	$ 2,406,640	$ 2,870,348
County Park Maintenance	$ 12,657	$ 23,988	$ 123,267	$ 294,455	$ 473,975	$ 662,981	$ 861,185	$ 1,027,128
County Bond Retire	$ 6,040	$ 11,625	$ 59,829	$ 143,425	$ 231,090	$ 323,387	$ 420,177	$ 501,211
Roads and Bridges	$ 26,469	$ 50,138	$ 257,632	$ 615,340	$ 990,458	$ 1,385,397	$ 1,799,558	$ 2,146,306
St. Louis Community College	$ 83,250	$ 160,247	$ 824,693	$ 1,977,001	$ 3,185,396	$ 4,457,637	$ 5,791,803	$ 6,908,805
Special School District	$ 305,664	$ 588,369	$ 3,027,967	$ 7,258,817	$ 11,695,596	$ 16,366,797	$ 21,265,360	$ 25,366,577
Metropolitan Zoo Museum District	$ 74,382	$ 143,176	$ 736,839	$ 1,766,393	$ 2,846,058	$ 3,982,769	$ 5,174,807	$ 6,172,815
County Library	$ 68,542	$ 129,124	$ 663,145	$ 1,581,871	$ 2,545,315	$ 3,559,662	$ 4,623,382	$ 5,513,958
Ladue School District	$ 1,188,544	$ 2,275,139	$ 11,702,497	$ 28,018,470	$ 45,128,597	$ 63,142,750	$ 82,033,713	$ 97,849,768
Metropolitan Sewer District	$ 31,692	$ 61,003	$ 313,944	$ 752,604	$ 1,212,615	$ 1,696,932	$ 2,204,822	$ 2,630,041
Sewer - Deer Creek	$ 22,741	$ 42,838	$ 219,999	$ 524,774	$ 844,384	$ 1,180,881	$ 1,533,756	$ 1,829,193
Creve Coeur Fire District ("CCFD")	$ 336,756	$ 633,350	$ 3,252,170	$ 7,754,728	$ 12,476,441	$ 17,447,630	$ 22,660,783	$ 27,025,384
City of Creve Coeur	$ 49,992	$ 95,416	$ 490,649	$ 1,173,942	$ 1,890,494	$ 2,644,905	$ 3,436,035	$ 4,098,393
Dev. Disability - Productive Living Board	$ 23,782	$ 44,715	$ 229,599	$ 547,439	$ 880,749	$ 1,231,670	$ 1,599,672	$ 1,907,774
Commercial Surcharge	$ 343,785	$ 555,548	$ 2,807,023	$ 6,432,293	$ 10,234,019	$ 14,236,611	$ 18,434,022	$ 21,948,216
Estimated Taxes Paid Without Abatement	**$ 2,671,879**	**$ 4,999,767**	**$ 25,660,441**	**$ 61,114,118**	**$ 98,293,446**	**$ 137,437,170**	**$ 178,486,153**	**$ 212,853,535**

Table 14
Estimated Real Property Taxes Paid - with Abatement in Place - Separated by Jurisdiction - Totaled for Various Time Periods
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2026	2027	2026 - 2030	2026 - 2035	2026 - 2040	2026 - 2045	2026 - 2050	2026 - 2054
	1	2	1 - 5	1 - 10	1 - 15	1 - 20	1 - 25	1 - 29
State of Missouri	$ 4,795	$ 7,579	$ 38,512	$ 89,843	$ 158,669	$ 236,955	$ 319,051	$ 427,216
County General	$ 27,219	$ 42,356	$ 213,689	$ 491,999	$ 861,039	$ 1,280,468	$ 1,720,312	$ 2,300,965
County Health Fund	$ 18,340	$ 28,527	$ 143,890	$ 331,169	$ 579,424	$ 861,567	$ 1,157,444	$ 1,548,063
County Park Maintenance	$ 6,540	$ 10,183	$ 51,387	$ 118,376	$ 207,245	$ 308,252	$ 414,175	$ 553,996
County Bond Retire	$ 3,037	$ 4,800	$ 24,391	$ 56,901	$ 100,490	$ 150,071	$ 202,066	$ 270,570
Roads and Bridges	$ 13,689	$ 21,304	$ 107,486	$ 247,497	$ 433,164	$ 644,183	$ 865,474	$ 1,157,603
St. Louis Community College	$ 41,860	$ 66,162	$ 336,213	$ 784,330	$ 1,385,177	$ 2,068,615	$ 2,785,318	$ 3,729,595
Special School District	$ 153,695	$ 242,924	$ 1,234,451	$ 2,879,769	$ 5,085,860	$ 7,595,190	$ 10,226,658	$ 13,693,693
Metropolitan Zoo Museum District	$ 37,401	$ 59,114	$ 300,397	$ 700,776	$ 1,237,616	$ 1,848,247	$ 2,488,600	$ 3,332,284
County Library	$ 35,780	$ 55,402	$ 278,849	$ 639,253	$ 1,115,355	$ 1,656,314	$ 2,223,603	$ 2,973,005
Ladue School District	$ 603,559	$ 948,772	$ 4,809,219	$ 11,168,361	$ 19,662,692	$ 29,321,981	$ 39,451,419	$ 52,806,185
Metropolitan Sewer District	$ 15,935	$ 25,187	$ 127,990	$ 298,578	$ 527,309	$ 787,480	$ 1,060,314	$ 1,419,781
Sewer - Deer Creek	$ 11,873	$ 18,383	$ 92,522	$ 212,086	$ 370,022	$ 549,472	$ 737,656	$ 986,255
Creve Coeur Fire District ("CCFD")	$ 336,756	$ 633,350	$ 3,252,170	$ 7,754,728	$ 12,476,441	$ 17,447,630	$ 22,660,783	$ 27,025,384
City of Creve Coeur	$ 25,517	$ 39,999	$ 202,484	$ 469,110	$ 824,547	$ 1,228,672	$ 1,652,467	$ 2,211,402
Dev. Disability - Productive Living Board	$ 12,455	$ 19,251	$ 96,813	$ 221,597	$ 386,214	$ 573,237	$ 769,364	$ 1,028,515
Commercial Surcharge	$ 222,567	$ 308,306	$ 1,465,327	$ 2,993,191	$ 4,772,091	$ 6,773,387	$ 8,872,093	$ 11,712,110
Estimated Taxes Paid With Abatement	**$ 1,571,019**	**$ 2,531,600**	**$ 12,775,790**	**$ 29,457,564**	**$ 50,183,355**	**$ 73,331,721**	**$ 97,606,797**	**$ 127,176,622**

Table 15
Estimated Real Property Taxes Abated - with Abatement in Place - Separated by Jurisdiction - Totaled for Various Time Periods
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2026	2027	2026 - 2030	2026 - 2035	2026 - 2040	2026 - 2045	2026 - 2050	2026 - 2054
	1	2	1 - 5	1 - 10	1 - 15	1 - 20	1 - 25	1 - 29
State of Missouri	$ 4,741	$ 10,777	$ 55,954	$ 136,618	$ 206,211	$ 273,657	$ 344,385	$ 364,171
County General	$ 25,402	$ 57,308	$ 298,425	$ 731,132	$ 1,107,715	$ 1,473,305	$ 1,856,689	$ 1,965,267
County Health Fund	$ 17,087	$ 38,542	$ 200,720	$ 491,806	$ 745,201	$ 991,211	$ 1,249,195	$ 1,322,285
County Park Maintenance	$ 6,117	$ 13,805	$ 71,880	$ 176,079	$ 266,730	$ 354,729	$ 447,011	$ 473,132
County Bond Retire	$ 3,003	$ 6,826	$ 35,438	$ 86,524	$ 130,600	$ 173,316	$ 218,111	$ 230,641
Roads and Bridges	$ 12,780	$ 28,834	$ 150,145	$ 367,843	$ 557,294	$ 741,213	$ 934,084	$ 988,703
St. Louis Community College	$ 41,390	$ 94,085	$ 488,479	$ 1,192,671	$ 1,800,218	$ 2,389,022	$ 3,006,485	$ 3,179,210
Special School District	$ 151,969	$ 345,445	$ 1,793,515	$ 4,379,047	$ 6,609,737	$ 8,771,606	$ 11,038,702	$ 11,672,885
Metropolitan Zoo Museum District	$ 36,981	$ 84,062	$ 436,442	$ 1,065,617	$ 1,608,443	$ 2,134,522	$ 2,686,207	$ 2,840,531
County Library	$ 32,762	$ 73,723	$ 384,296	$ 942,618	$ 1,429,960	$ 1,903,349	$ 2,399,779	$ 2,540,953
Ladue School District	$ 584,985	$ 1,326,366	$ 6,893,278	$ 16,850,110	$ 25,465,905	$ 33,820,770	$ 42,582,294	$ 45,043,583
Metropolitan Sewer District	$ 15,756	$ 35,816	$ 185,954	$ 454,026	$ 685,307	$ 909,452	$ 1,144,508	$ 1,210,261
Sewer - Deer Creek	$ 10,868	$ 24,454	$ 127,477	$ 312,688	$ 474,362	$ 631,409	$ 796,100	$ 842,938
Creve Coeur Fire District ("CCFD")	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
City of Creve Coeur	$ 24,475	$ 55,417	$ 288,165	$ 704,833	$ 1,065,947	$ 1,416,233	$ 1,783,568	$ 1,886,991
Dev. Disability - Productive Living Board	$ 11,327	$ 25,464	$ 132,786	$ 325,842	$ 494,535	$ 658,433	$ 830,308	$ 879,259
Commercial Surcharge	$ 121,218	$ 247,242	$ 1,341,696	$ 3,439,102	$ 5,461,928	$ 7,463,224	$ 9,561,930	$ 10,236,106
Estimated Taxes Abated With Abatement	**$ 1,100,861**	**$ 2,468,167**	**$ 12,884,651**	**$ 31,656,554**	**$ 48,110,092**	**$ 64,105,449**	**$ 80,879,355**	**$ 85,676,913**

Tax Impact Statement Supplement

Abatement Scenario - (75% for 10 Yrs / 50% for 15 Yrs & 2023 Base Value Land + Improvements)

No-Build vs. Build - Projected Real Property Tax Revenues (School District, Fire District, and City)

Table 1
No-Build Scenario - Estimated Real Property Taxes Paid 2026 through 2054 (All Phases) - Separated by Jurisdiction - Totaled for Various Time Periods
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

Affected Taxing Jurisdiction	2026 1	2027 2	2026 - 2030 1 - 5	2026 - 2035 1 - 10	2026 - 2040 1 - 15	2026 - 2045 1 - 20	2026 - 2050 1 - 25	2026 - 2054 1 - 29
Ladue School District	$ 422,369	$ 430,816	$ 2,162,866	$ 4,440,009	$ 6,827,988	$ 9,342,137	$ 11,978,659	$ 14,186,030
Creve Coeur Fire District ("CCFD")	$ 126,947	$ 129,486	$ 650,068	$ 1,334,483	$ 2,052,211	$ 2,807,860	$ 3,600,289	$ 4,263,734
City of Creve Coeur	$ 17,945	$ 18,304	$ 91,894	$ 188,644	$ 290,103	$ 396,923	$ 508,941	$ 602,727
Estimated Taxes Paid - No-Build (All Juris.)	**$ 1,023,559**	**$ 1,044,031**	**$ 5,241,443**	**$ 10,759,822**	**$ 16,546,799**	**$ 22,639,534**	**$ 29,028,824**	**$ 34,378,121**

Table 2
Estimated Real Property Taxes Paid - Build with Abatement in Place - Separated by Jurisdiction - Totaled for Various Time Periods

Affected Taxing Jurisdiction	2026 1	2027 2	2026 - 2030 1 - 5	2026 - 2035 1 - 10	2026 - 2040 1 - 15	2026 - 2045 1 - 20	2026 - 2050 1 - 25	2026 - 2054 1 - 29
Ladue School District	$ 603,559	$ 948,772	$ 4,809,219	$ 11,168,361	$ 19,662,692	$ 29,321,981	$ 39,451,419	$ 52,806,185
Creve Coeur Fire District ("CCFD")	$ 336,756	$ 633,350	$ 3,252,170	$ 7,754,728	$ 12,476,441	$ 17,447,630	$ 22,660,783	$ 27,025,384
City of Creve Coeur	$ 25,517	$ 39,999	$ 202,484	$ 469,110	$ 824,547	$ 1,228,672	$ 1,652,467	$ 2,211,402
Estimated Taxes Paid - Build With Abatement (All Juris.)	**$ 1,571,019**	**$ 2,531,600**	**$ 12,775,790**	**$ 29,457,564**	**$ 50,183,355**	**$ 73,331,721**	**$ 97,606,797**	**$ 127,176,622**

Table 3
Estimated Increase in Real Property Taxes Paid - Build vs. No-Build - Separated by Jurisdiction - Totaled for Various Time Periods

Affected Taxing Jurisdiction	2026 1	2027 2	2026 - 2030 1 - 5	2026 - 2035 1 - 10	2026 - 2040 1 - 15	2026 - 2045 1 - 20	2026 - 2050 1 - 25	2026 - 2054 1 - 29
Ladue School District	$ 181,191	$ 517,956	$ 2,646,353	$ 6,728,352	$ 12,834,705	$ 19,979,844	$ 27,472,761	$ 38,620,155
Creve Coeur Fire District ("CCFD")	$ 209,810	$ 503,865	$ 2,602,102	$ 6,420,245	$ 10,424,231	$ 14,639,770	$ 19,060,494	$ 22,761,650
City of Creve Coeur	$ 7,572	$ 21,694	$ 110,589	$ 280,465	$ 534,444	$ 831,749	$ 1,143,526	$ 1,608,675
Estimated Increase - Build vs. No-Build (All Juris.)	**$ 547,459**	**$ 1,487,569**	**$ 7,534,347**	**$ 18,697,743**	**$ 33,636,556**	**$ 50,692,187**	**$ 68,577,973**	**$ 92,798,501**

Tax Impact Statement Supplement

Abatement Scenario - (75% for 10 Yrs / 50% for 15 Yrs & 2023 Base Value Land + Improvements)

No-Build vs. Build - Projected City of Creve Coeur Property Tax and Sales Tax Revenues

Table 4
Estimated Increase in City of Creve Coeur Revenues - Build vs. No-Build - Totaled for Various Time Periods
Olia Village - 10300 Olive Boulevard Redevelopment Project
Creve Coeur, Missouri

	2026	2027	2026 - 2030	2026 - 2035	2026 - 2040	2026 - 2045	2026 - 2050	2026 - 2054
	1	2	1 - 5	1 - 10	1 - 15	1 - 20	1 - 25	1 - 29
Estimated Real Property Tax Revenues	$ 7,572	$ 21,694	$ 110,589	$ 280,465	$ 534,444	$ 831,749	$ 1,143,526	$ 1,608,675
Estimated Personal Property Tax Revenues	$ 931	$ 2,087	$ 12,235	$ 28,292	$ 44,349	$ 60,405	$ 76,462	$ 89,308
Estimated Sales Tax Revenues	$ 846,418	$ 1,669,260	$ 9,064,787	$ 21,891,660	$ 36,053,564	$ 51,689,451	$ 68,952,733	$ 84,048,330
Estimated Gross Receipts (Utility Tax) Revenues	$ 65,140	$ 144,474	$ 797,270	$ 2,020,602	$ 3,306,337	$ 4,657,656	$ 6,077,907	$ 7,226,372
Estimated Increase - Build vs. No-Build (City)	**$ 920,061**	**$ 1,837,516**	**$ 9,984,882**	**$ 24,221,020**	**$ 39,938,693**	**$ 57,239,262**	**$ 76,250,628**	**$ 92,972,685**
Projected Costs (City) [1]						**$ 12,957,136**		
Difference [2]						**$ 44,282,126**		

[1] Estimate provided by the City of Creve Coeur. Estimated over 20 Years w/ 3% Inflation. Projected costs are 23% of projected increase in revenues.
[2] Estimated City of Creve Coeur revenues available after estimated City costs associated with the Project.

Projected Ladue School District Revenues Available after Estimated Additional Student Costs (Build Scenario)

Table 5
Estimated Ladue School District Real Property Tax Revenue Compared to Estimated Enrollment Costs

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
	1	2	3	4	5	6	7	8	9	10
Real Property Taxes Paid to School District[1]	$ 603,559	$ 948,772	$ 948,772	$ 1,071,164	$ 1,236,951	$ 1,256,113	$ 1,256,113	$ 1,275,659	$ 1,275,659	$ 1,295,596
Estimated School Enrollment[2]	6	14	14	53	53	53	53	53	53	53
Additional Costs @ $17,000 Per Student[3]	$ 102,000	$ 238,000	$ 238,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000	$ 901,000
Difference[4]	**$ 501,559**	**$ 710,772**	**$ 710,772**	**$ 170,164**	**$ 335,951**	**$ 355,113**	**$ 355,113**	**$ 374,659**	**$ 374,659**	**$ 394,596**

[1] Estimated real property taxes paid for all phases with abatement in place.
[2] High estimate of additional students residing at the Project and enrolled in Ladue Schools. Source: Developer, Steadfast City.
[3] Estimate provided by Ladue School District.
[4] Estimated Ladue School District revenues available after costs associated with estimated additional students.

BILL NO. _6113____ **ORDINANCE NO. _____**

AN ORDINANCE APPROVING AN AMENDED PETITION FOR THE CREATION OF A COMMUNITY IMPROVEMENT DISTRICT; ESTABLISHING THE OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT AS A POLITICAL SUBDIVISION OF THE STATE OF MISSOURI; AND AUTHORIZING THE CITY TO ENTER INTO CERTAIN AGREEMENTS AND TAKE CERTAIN OTHER ACTIONS IN CONNECTION THEREWITH.

WHEREAS, the Community Improvement District Act, Sections 67.1401 to 67.1571 of the Revised Statutes of Missouri (the "CID Act"), authorizes the governing body of any municipality, upon a proper petition requesting the formation and after holding a public hearing, to adopt an ordinance establishing a community improvement district; and

WHEREAS, on March 7, 2024, a "Petition for the Creation of a Community Improvement District" was submitted to the City Clerk of the City of Creve Coeur, Missouri (the "City"), and on March ___, 2024, an "Amended Petition for the Creation of a Community Improvement District," a copy of which is set forth as **Exhibit A**, attached hereto and incorporated herein by reference (the "CID Petition"), was submitted to the City Clerk of the City; and

WHEREAS, the CID Petition proposes the formation of the Olia Village Community Improvement District (the "District") to pay the costs associated with certain improvements to be made and services to be provided within the proposed District's boundaries (collectively, the "District Project"), which are described in **Exhibit A** to the CID Petition and consist of approximately 96 acres of real property located at 10300 Olive Boulevard in the City, at which Bayer Crop Science's North American headquarters was previously located; and

WHEREAS, the City Clerk verified that the CID Petition is proper in that it complies with Section 67.1421.2 of the CID Act; and

WHEREAS, in connection with consideration of Ordinance No. _____, an analysis prepared by Steadfast City Economic & Community Partners (the "Blight Analysis") has been submitted, which documents the current conditions of the District Project area and supports a finding that such area is a "blighted area" as defined in the CID Act; and

WHEREAS, the City Council held a duly noticed public hearing on March 25, 2024, at which all persons interested in the formation of the District were allowed an opportunity to speak and the City Council heard all protests and received all endorsements; and

WHEREAS, following closure of the public hearing and upon due consideration of the comments received at the hearing, the City Council has determined that it is in the interest of the public health, safety and general welfare of the people of the City to establish the District and authorize certain actions and documents in connection therewith;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOURI, AS FOLLOWS:

Section 1. Establishment of the District. The Olia Village Community Improvement District is hereby established within the City as a political subdivision of the State of Missouri, having the powers and purposes set forth in the CID Petition. The District shall include the contiguous tracts of real estate described in **Exhibit A** to the CID Petition.

Section 2. Term of the District. The term of the existence of the District shall be from the effective date of this Ordinance until the earlier to occur of the following: (a) all of the District's obligations used to finance or reimburse the District for eligible District Project costs have been fully paid or cancelled; or (b) 27 years from the date of adoption of this Ordinance. Notwithstanding the foregoing, the term of the existence of the District shall expire on December 31, 2024, if the District has not authorized the execution of the hereinafter-defined Cooperation Agreement by such date.

Section 3. Governance of the District. The District will be governed by a board of directors consisting of five members hereafter appointed by the Mayor with the consent of the City Council in accordance with the CID Act and the CID Petition.

Section 4. Imposition of Sales Tax and Special Assessments. The District may, upon approval by the qualified voters of the District, impose a sales and use tax on all retail sales made in the District at a rate not to exceed one percent (1.0%) of such retail sales, as specifically authorized by the CID Act, to provide funds to accomplish any power, duty or purpose of the District. The District may, upon receipt of and in accordance with a proper petition (the "Special Assessment Petition"), levy an annual special assessment on each tract, lot or parcel located within the District in an amount not to exceed the amounts set forth in the CID Petition and the Special Assessment Petition, as specifically authorized by the CID Act, to provide funds to accomplish any power, duty or purpose of the District.

Section 5. Blight Finding. Consistent with its findings in Ordinance No. _____, the City Council hereby finds and determines that the real property located in the District is a "blighted area" pursuant to Section 67.1401.2(3) of the CID Act.

Section 6. Authorization of the Cooperation Agreement. The City is hereby authorized to enter into a Cooperation Agreement (the "Cooperation Agreement") by and among the City, the District, the Olia Village Transportation Development District, 10300 Olive LLC and 10300 Olive Dev LLC, in substantially the form of **Exhibit B**, attached hereto and incorporated herein by reference, with such changes therein as shall be approved by the officials of the City executing the document and consistent with the intent hereof, such officials' signatures thereon being conclusive evidence of their approval thereof. The City Administrator is hereby authorized to execute the Cooperation Agreement, for and on behalf of and as the act and deed of the City. The City Clerk is hereby authorized to attest to and affix the seal of the City to the Cooperation Agreement.

Section 7. Notice of District's Creation. The City Clerk is hereby directed to notify the Missouri Department of Economic Development and the State Auditor in writing of the District's creation as required by Section 67.1421.6 of the CID Act.

Section 8. Further Authority. The officers of the City are hereby authorized and directed to execute all documents and take such actions as they may deem necessary or advisable to carry out and perform the purposes of this Ordinance and to make ministerial alterations, changes or additions to the documents herein approved, authorized and confirmed which they may approve, and the execution of such documents or the taking of such actions shall be conclusive evidence of such necessity or advisability. All actions taken to date by the officers of the City with respect to the CID Petition and the District, including, without limitation, the provision of notices for the public hearing regarding the creation of the District, are hereby ratified.

Section 9. Severability. The sections of this Ordinance shall be severable. If any section of this Ordinance is found by a court of competent jurisdiction to be invalid, the remaining sections shall remain valid, unless the court finds that: (a) the valid sections are so essential to and inseparably connected with and dependent upon the void section that it cannot be presumed that the City Council has or would have enacted the valid sections without the void one; and (b) the valid sections, standing alone, are incomplete and are incapable of being executed in accordance with the legislative intent.

Section 10. Effective Date. This Ordinance shall take effect in accordance with **Section 3.11(g)** of the City Charter.

ADOPTED THIS _____ DAY OF APRIL, 2024.

_____
NICOLE GREER, PRESIDENT OF CITY COUNCIL

APPROVED THIS _____ DAY OF APRIL, 2024.

_____
DR. ROBERT HOFFMAN, MAYOR

[SEAL]

ATTEST:

_____
KELLIE HENKE, CITY CLERK

BILL NO. _6113____ **ORDINANCE NO. _____**

EXHIBIT A

CID PETITION

(On file in the office of the City Clerk)

EXHIBIT B

COOPERATION AGREEMENT

(On file in the office of the City Clerk)

AMENDED PETITION FOR THE CREATION OF A COMMUNITY IMPROVEMENT DISTRICT

To the City of Creve Coeur, Missouri:

The undersigned petitioner (***"Petitioner"***) is the owner or representative of the owner of record of more than fifty percent (50%) (a) by assessed value of all real property within the hereinafter described community improvement district, and (b) per capita of all owners of real property within the hereinafter described community improvement district. Petitioner hereby petitions and requests that the City of Creve Coeur, Missouri (the ***"City"***), create a community improvement district as described herein, to be known as the **OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT** (the ***"District"***), pursuant to the authority of the Community Improvement District Act, Sections 67.1401 to 67.1571 of the Revised Statutes of Missouri, as amended (the ***"CID Act"***).

1. The proposed District is contiguous and located entirely within the City.

2. A legal description of the proposed District is set forth as **Exhibit A**, attached hereto and incorporated herein by reference. A map illustrating the boundaries of the proposed District is set forth as **Exhibit B**, attached hereto and incorporated herein by reference.

3. The name of the proposed District is the Olia Village Community Improvement District.

4. The proposed District consists of approximately 96 acres and all real property located within the proposed District has a total current assessed value of approximately $10,860,160.00.

5. Petitioner represents 100% per capita of all owners of record of the real property located within the boundaries of the proposed District, and 100% by assessed value of all real property within the boundaries of the proposed District, as more particularly described in the Petitioner's signature block to this Amended Petition for the Creation of a Community Improvement District (this ***"Petition"***) and as set forth in the table below.

Owner	Situs Address	PIN	Acres	Assessed Value
10300 Olive LLC	10300 Olive Boulevard, St. Louis, MO 63141	17M420026	95.75	$10,860,160.00
Totals:			**95.75 Acres**	**$10,860,160.00**

6. The proposed District shall be formed as a political subdivision governed by a board of directors composed of five directors appointed by the Mayor of the City, with the consent of the City Council. Each director shall, during his or her term, meet the qualifications of Section 67.1451.2 of the CID Act, provided that two of the directors shall meet the requirements of Section 67.1451.2(3) of the CID Act. In addition, so long as 10300 Olive LLC owns any real property within the District, three of the five directors shall be legally authorized representatives of 10300 Olive LLC. Successor directors shall be appointed in the same manner. Successor directors shall serve for a term of four years.

7. The initial directors and their respective terms of office shall be as set forth in the following table:

Name	Initial Term
Danielle Grub	4 years
An individual who meets the requirements of Section 67.1451.2(3) of the CID Act to be appointed by the Mayor with the consent of the City Council in conjunction with adoption of the Ordinance (as defined below) (e.g. a City resident without financial interest)	4 years
Doug Rasmussen	2 years
An individual who meets the requirements of Section 67.1451.2(3) of the CID Act to be appointed by the Mayor with the consent of the City Council in conjunction with adoption of the Ordinance (as defined below) (e.g. a City resident without financial interest)	2 years
Matt Baker	2 years

8. Petitioner is requesting that the City declare the real property of the proposed District as set forth in **Exhibit A** to be a "blighted area" pursuant to Section 67.1401.2(3) of the CID Act, which requires that such blighted area meet the requirements set forth in Section 99.805 of the Revised Statutes of Missouri, as amended.

9. Petitioner does not seek any limitations on the borrowing capacity of the proposed District. Notwithstanding anything in this Petition to the contrary, obligations issued by or on behalf of the proposed District to finance the costs of the CID Project (as defined herein) may be issued in one or more phases.

10. Petitioner does not seek limitations on the revenue generation of the proposed District, except as otherwise provided in this Petition.

11. The proposed District shall have all powers provided in the CID Act, except as otherwise provided in this Petition.

12. The proposed District shall be authorized, upon approval by the qualified voters of the proposed District, to impose a sales and use tax (the ***"CID Sales Tax"***) at a rate of up to one percent (1%) on all eligible retail sales made in the proposed District in accordance with Section 67.1545 of the CID Act, for the duration permitted by the CID Act.

13. The proposed District shall also be authorized to impose an annual special assessment on each track, lot or parcel located in the proposed District (the "***Special Assessments***") in accordance with Section 67.1521 of the CID Act, for a period of time not to exceed the length of time for the existence of the District.

14. The Special Assessments shall be levied against tracts, lots or parcels benefited within the proposed District in an annual amount not to exceed the greater of (a) the difference between (1) the property taxes that would have otherwise been payable on such real property and the improvements thereon but for the real property exemption granted by the City pursuant to

Section 353.110 of the Revised Statutes of Missouri, as amended, and (2) the sum of any taxes and payments in lieu of taxes paid with respect thereto, or (b) the annual special assessment schedule set forth as a schedule to the Petition for Special Assessments described in Paragraph 15 of this Petition.

15. A petition authorizing the Special Assessments (the "***Petition for Special Assessments***") is set forth as **Exhibit C**, attached hereto and incorporated herein by reference, which petition is substantially in the form provided for in Section 67.1521.2 of the CID Act. Upon the City's adoption of an ordinance approving this Petition (the "***Ordinance***"), the Petitioner hereby requests the City Clerk forward a certified copy of the Ordinance and this Petition (including the Petition for Special Assessments) to the board of directors of the proposed District. The receipt of such Ordinance and Petition (including the Petition for Special Assessments) shall enable the board of directors of the proposed District to levy the Special Assessments by resolution in accordance with Section 67.1521 of the CID Act. To the extent that the Special Assessments collected and received by the District exceed the amount necessary to finance costs of the hereinafter-defined CID Project of $34,087,549, as more particularly described in the Petition for Special Assessments, any excess funds shall be refunded to the owners of such tracts, lots or parcels that paid the final year of Special Assessments, pro rata relative to the amounts paid by such owners. Such refunds shall be made by December 31 of the year following the final year of the Special Assessments.

16. The Special Assessments shall not be levied on any property that is exempt from taxation pursuant to Section 137.100.5 of the Missouri Revised Statutes, unless the owner of such property agrees to voluntarily participate in the provisions of the CID Act and the payment of the proposed District's Special Assessments in accordance with Section 67.1461.8 of the CID Act.

17. Notwithstanding anything in the CID Act or this Petition to the contrary, the proposed District shall have no power to levy real property taxes or business license taxes and, therefore, the maximum rates of real property taxes and business license taxes proposed in this Petition are zero.

18. A five-year plan stating a description of the purposes of the proposed District, the services it will provide, the improvements it will make and an estimate of the costs of these services and improvements to be incurred (collectively, the ***"CID Project"***) is set forth in **Exhibit D**, attached hereto and incorporated herein by reference. It is anticipated that the proposed District will use the moneys received from the imposition of the CID Sales Tax and Special Assessments to finance and reimburse those eligible CID Project costs incurred on its behalf.

19. The estimated cost of the CID Project is $73,700,000 (excluding Costs of Issuance[1], if any, and the proposed District's administrative fees and expenses including, but not limited to, fees and costs related to the proposed District's formation, planning consultants, advisors, auditors and

[1] ***"Costs of Issuance"*** shall mean all costs reasonably incurred by the proposed District in furtherance of the issuance of any bonds or notes, singly or in series, issued by or on behalf of the proposed District pursuant to the CID Act, if any, including but not limited to the fees and expenses of financial advisors, municipal advisors and consultants, the proposed District's attorneys (including issuer's counsel and bond counsel), underwriters' discounts and fees, the costs of printing any obligations of the proposed District and any official statements relating thereto, the costs, if any, of credit enhancement, capitalized interest, debt service reserves and the fees of any rating agency rating any obligations of the proposed District.

legal counsel), as more particularly described in **Exhibit D**, attached hereto and incorporated herein by reference.

20. The proposed District's Board of Directors shall commence the procedures provided in the CID Act for the termination of the proposed District upon the earlier to occur of the following: (a) all of the proposed District's obligations used to finance and reimburse all of the eligible CID Project costs incurred within the boundaries of the proposed District having been fully paid or cancelled in accordance with the terms of the CID Act, or (b) 27 years from the date of adoption of the Ordinance unless the term of the proposed District is otherwise extended pursuant to Section 67.1481.6 of the CID Act. For the purposes of the CID Act, this paragraph constitutes the proposed length of time for the existence of the proposed District.

21. The signature of the signer of this Petition may not be withdrawn later than seven days after this Petition is filed with the City Clerk of the City.

22. Petitioner respectfully requests that the proposed District be established pursuant to the CID Act.

Dated this 20th day of March, 2024.

(The remainder of this page is intentionally left blank.)

PETITIONER:

NAME OF OWNER:	10300 Olive LLC
TELEPHONE NUMBER:	618-288-7152
MAILING ADDRESS:	90 Edwardsville Professional Park Edwardsville, IL 62025
NAME OF SIGNER AND BASIS OF LEGAL AUTHORITY TO SIGN:	Michael Bailey, Manager of the Sole Member
SIGNER'S TELEPHONE NUMBER:	618-288-7152
SIGNER'S MAILING ADDRESS:	90 Edwardsville Prof Park, Edwardsville, IL 62025
TYPE OF ENTITY:	A Missouri limited liability company
MAP:	See **Exhibit B**
PARCEL NUMBERS:	17M420026
ASSESSED VALUE:	$10,860,160.00

[SIGNATURE PAGE OF PETITIONER FOLLOWS]

By executing this Petition on this 21st day of March, 2024, the undersigned represents and warrants that she or he is authorized to execute this Petition on behalf of the property owner named immediately above. The undersigned also acknowledges that her or his signature may not be withdrawn later than seven (7) days after this Petition is filed with the City Clerk of the City.

10300 Olive LLC, a Missouri limited liability company

By: 10300 Olive Holdings LLC, a Delaware limited liability company, its sole member

By: Michael J. Bailey

Name: Michael J. Bailey

Title: AUTHORIZED Person

STATE OF Illinois)
) SS.
COUNTY OF Madison)

On this 21st day of March in the year 2024 before me, Jamie N Mehrtens, a Notary Public in and for said state, personally appeared Michael J Bailey, the authorized person, of 10300 Olive LLC, known to me to be the person who executed the within Petition in behalf of said limited liability company and acknowledged to me she or he executed the same for the purposes therein stated.

WITNESS my hand and official seal this 21st day of March, 2024.

Jamie N Mehrtens

Notary Public

Printed Name: Jamie N Mehrtens

My Commission Expires: 10/30/2026

OFFICIAL SEAL
JAMIE N. MEHRTENS
Notary Public - State of Illinois
My Commission Expires 10/30/2026

[SIGNATURE PAGE OF PETITIONER]

Exhibit A

Legal Description of Proposed District

A TRACT OF LAND BEING PART OF LOTS 9, 10, 11 AND 12 OF MAJOR THOMAS SUBDIVISION, SITUATED IN THE SOUTHWEST QUARTER AND NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 45 NORTH, RANGE 5 EAST, ST. LOUIS COUNTY, MISSOURI, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE WEST RIGHT OF WAY LINE OF STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH-PUBLIC RIGHT OF WAY) BOULEVARD WITH THE NORTH LINE OF LAND NOW OR FORMERLY OF VANTAGE CREDIT UNION, AS RECORDED BY DEED IN BOOK 23850, PAGE 141 OF THE ST. LOUIS COUNTY, MISSOURI RECORDER'S OFFICE;

THENCE ALONG SAID NORTH LINE AND THE NORTH LINE OF SUNSWEPT PLAT 3, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 4 AND SUNSWEPT PLAT 2, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 23, ALL OF SAID RECORDER'S OFFICE, NORTH 89 DEGREES 11 MINUTES 17 SECONDS WEST, A DISTANCE OF 1352.62 FEET TO THE EAST LINE OF LAND NOW OR FORMERLY OF DONALD J AND MARGRETTA CASSMEYER, ETAL, AS RECORDED BY DEED IN BOOK 11070, PAGE 767 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF LAND NOW OR FORMERLY OF JAVED MUHAMMAD ALI AND ALZUBEIDI DUHA, AS RECORDED BY DEED IN BOOK 23726, PAGE 3547; TIMOTHY C TOWNSEND, ETAL, AS RECORDED BY DEED IN BOOK 23562, PAGE 160, ALL OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 12 MINUTES 14 SECONDS EAST, A DISTANCE OF 500.19 FEET TO THE EAST LINE OF SPOEDE HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 54, PAGE 26 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF SPOEDE WOODS, A SUBDIVISION FORMERLY KNOWN AS GAS LIGHT SQUARE, AS RECORDED IN PLAT BOOK 104, PAGE 18 OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 08 MINUTES 11 SECONDS EAST, A DISTANCE OF 831.21 FEET TO THE NORTH LINE OF SAID SPOEDE WOODS; THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 51 MINUTES 14 SECONDS WEST, A DISTANCE OF 826.36 FEET TO THE EAST LINE OF MISSION HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 36 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF RAMBLEWOOD, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 58 AND THE EAST LINE OF LAND NOW OR FORMERLY OF MDC COAST 22 LLC, AS RECORDED BY DEED IN BOOK 25302, PAGE 4186, ALL OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE, THE FOLLOWING COURSES AND DISTANCES: NORTH 01 DEGREES 12 MINUTES 15 SECONDS EAST, A DISTANCE OF 466.53 FEET; NORTH 88 DEGREES 57 MINUTES 33 SECONDS WEST, A DISTANCE OF 51.85 FEET AND NORTH 04 DEGREES 53 MINUTES 33 SECONDS WEST, A DISTANCE OF 682.38 FEET TO THE SOUTH

RIGHT OF WAY LINE OF MISSOURI STATE HIGHWAY 340, A.K.A. OLIVE (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTH RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: ALONG A NON- TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 11,358.19 FEET, WITH A CENTRAL ANGLE OF 00 DEGREES 49 MINUTES 02 SECONDS, WHICH CHORD BEARS SOUTH 89 DEGREES 27 MINUTES 38 SECONDS EAST, A CHORD DISTANCE OF 162.03 FEET, THROUGH AN ARC LENGTH OF 162.03 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 427.12 FEET; NORTH 01 DEGREES 00 MINUTES 53 SECONDS EAST, A DISTANCE OF 20.00 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 723.00 FEET AND SOUTH 86 DEGREES 13 MINUTES 52 SECONDS EAST, A DISTANCE OF 200.26 FEET TO THE SOUTHWEST RIGHT OF WAY TRANSITION BETWEEN STATE HIGHWAY 340 AND STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTHWEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 65 DEGREES 03 MINUTES 50 SECONDS EAST, A DISTANCE OF 328.98 FEET; SOUTH 43 DEGREES 48 MINUTES 52 SECONDS EAST, A DISTANCE OF 413.64 FEET; SOUTH 32 DEGREES 46 MINUTES 12 SECONDS EAST, A DISTANCE OF 248.25 FEET AND SOUTH 11 DEGREES 42 MINUTES 30 SECONDS EAST, A DISTANCE OF 250.82 FEET TO THE WEST RIGHT OF WAY LINE OF THE AFOREMENTIONED LINDBERGH BOULEVARD;

THENCE ALONG SAID WEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 01 DEGREES 00 MINUTES 47 SECONDS EAST, A DISTANCE OF 256.89 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 105.09 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 10.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 30.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 40.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 300.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 10.00 FEET AND SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 847.31 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND CONTAINING 4,171,444 SQUARE FEET OR 95.763 ACRES IS BASED UPON AN ACTUAL URBAN CLASS BOUNDARY SURVEY DONE IN ACCORDANCE WITH THE CURRENT MISSOURI STANDARDS FOR PROPERTY BOUNDARY SURVEYS, SUBJECT TO ALL EASEMENTS, RESTRICTIONS, RESERVATIONS, CONDITIONS OF RECORD AND NOT OF RECORD, IF ANY.

Exhibit B

Boundary Map of the Proposed District

The boundaries of the proposed District are outlined as shown on the map below.



Exhibit C

Petition for Special Assessments

PETITION OF THE OWNERS OF RECORD OF ALL REAL PROPERTY LOCATED WITHIN THE OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT TO AUTHORIZE A SPECIAL ASSESSMENT AGAINST EACH TRACT, LOT OR PARCEL OF REAL PROPERTY WITHIN THE DISTRICT FOR A PERIOD OF UP TO 25 YEARS

The undersigned, as owners of record of all real property within the Olia Village Community Improvement District, hereby indicate their approval of the following measure by signing this special assessment petition (this ***"Petition"***):

> The Olia Village Community Improvement District (the ***"District"***) shall be authorized to levy special assessments (the ***"Special Assessments"***) for a period of up to 25 years against each Assessed Lot (as defined below) benefitted within the District for the purpose of providing revenue for the development of the CID Project (as defined below), said Special Assessments to be levied pursuant to the Assessment Procedure (as defined below) in an annual amount not to exceed the greater of (a) the difference between (1) the property taxes that would have otherwise been payable on such Assessed Lot but for the real property exemption granted by the City pursuant to Section 353.110 of the Revised Statutes of Missouri, as amended, and (2) the sum of any taxes and payments in lieu of taxes paid with respect thereto (the difference between (1) and (2) being the ***"Actual Abatement Amount"***), or (b) the Annual Special Assessment Schedule (as defined below).

"CID Project" shall have the meaning set forth in the five-year plan set forth as Exhibit D to the Amended Petition for the Creation of a Community Improvement District dated March 20, 2024.

"Lot" means each tract, lot or parcel of real property wholly within the District, as identified by a parcel identification number assigned by the St. Louis County Assessor's Office. Currently, there is a single parcel having parcel identification number 17M420026. It is anticipated that such parcel will be subdivided into 17 platted lots and common ground.

"Assessed Lot" means each Lot that (1) has been developed in accordance with that certain Master Redevelopment Agreement (the ***"Redevelopment Agreement"***) by and among the City of Creve Coeur, Missouri, 10300 Olive LLC, 10300 Olive Dev LLC and the Olia Village Redevelopment Corporation (the ***"Redevelopment Corporation"***) and the applicable Lot Development Agreement (as defined in the Redevelopment Agreement), and (2) is subject to tax abatement as permitted by the Redevelopment Agreement pursuant to Section 353.110 of the Revised Statutes of Missouri, as amended.

"Levy Year" means, with respect to each Assessed Lot, each calendar year in which the Assessed Lot is subject to tax abatement and an annual installment of the Special Assessment is levied against such Assessed Lot.

"Annual Special Assessment Schedule" means, with respect to each Assessed Lot, the basis for determining the maximum annual installments of the Special Assessments to be levied against such

"Annual Special Assessment Schedule" means, with respect to each Assessed Lot, the basis for determining the maximum annual installments of the Special Assessments to be levied against such Assessed Lot, as set forth on **Schedule 1**, attached hereto and incorporated herein by reference, to the extent that such annual installment set forth on **Schedule 1** exceeds the Actual Abatement Amount in any given Levy Year.

"Assessment Procedure" means, with respect to each Assessed Lot, the following procedure for levying and collecting each annual installment of the Special Assessments:

1. The first Levy Year shall be the Abatement Initiation Year.

2. Subject to the limitation set forth in paragraph 5 below, the Special Assessments on any individual Assessed Lot shall be payable in annual installments, without pre-payment, for a period of up to 25 years, so long as any notes, bonds or other obligations issued by or on behalf of the District to finance the CID Project (the ***"CID Obligations"***) are outstanding.

3. Each annual installment of the Special Assessments shall be levied against each Assessed Lot as follows:

> (a) If the Actual Abatement Amount exceeds the Annual Special Assessment Schedule for the Assessed Lot for the corresponding Levy Year, then the annual installment shall not exceed the Actual Abatement Amount.
>
> (b) If the Actual Abatement Amount is less than the Annual Special Assessment Schedule for the Assessed Lot for the corresponding Levy Year, then the annual installment may be any amount equal to or greater than the Actual Abatement Amount up to the maximum of the Annual Special Assessment Schedule for the Assessed Lot for the corresponding Levy Year.

4. On or before November 15 of each year (or on or before December 1 in an Abatement Initiation Year for the Assessed Lot if such Abatement Initiation Year is the calendar year in which the Redevelopment Corporation obtains fee title to such Assessed Lot), the District shall send or cause to be sent the Special Assessment bills to the owners of record of the Assessed Lots, which tax bills shall be determined as provided in paragraph 3 above. The Special Assessment bills are due and payable on or before December 31 of each year.

5. The authorization to levy the Special Assessments shall terminate upon the earlier of (a) 27 years from the date of adoption of the ordinance establishing the District, unless the term of the proposed District is otherwise extended pursuant to Section 67.1481.6 of the CID Act, or (b) payment in full of CID Obligations in the principal amount of $34,087,549 plus Issuance Costs (as defined in the Redevelopment Agreement).

Schedule 1

Annual Special Assessment Schedule for Lot 1

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	$ 299,136
2	306,031
3	306,031
4	313,064
5	313,064
6	320,238
7	320,238
8	327,555
9	327,555
10	335,018
11	253,762
12	258,837
13	258,837
14	264,014
15	264,014
16	269,294
17	269,294
18	274,680
19	274,680
20	280,174
21	280,174
22	285,777
23	285,777
24	291,493
25	291,493

Annual Special Assessment Schedule for Lot 2

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	88,820
2	88,820
3	90,791
4	90,791
5	92,802
6	92,802
7	94,853
8	94,853
9	96,944
10	96,944
11	72,547
12	72,547
13	73,998
14	73,998
15	75,478
16	75,478
17	76,987
18	76,987
19	78,527
20	78,527
21	80,098
22	80,098
23	81,700
24	81,700
25	83,334

Annual Special Assessment Schedule for Lot 3

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	67,334
2	68,826
3	68,826
4	70,348
5	70,348
6	71,900
7	71,900
8	73,483
9	73,483
10	75,098
11	54,906
12	56,004
13	56,004
14	57,124
15	57,124
16	58,267
17	58,267
18	59,432
19	59,432
20	60,621
21	60,621
22	61,833
23	61,833
24	63,070
25	63,070

Annual Special Assessment Schedule for Lot 4

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	712,429
2	727,285
3	727,285
4	742,438
5	742,438
6	757,894
7	757,894
8	773,660
9	773,660
10	789,741
11	546,744
12	557,679
13	557,679
14	568,833
15	568,833
16	580,210
17	580,210
18	591,814
19	591,814
20	603,650
21	603,650
22	615,723
23	615,723
24	628,037
25	628,037

Annual Special Assessment Schedule for Lot 5

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	179,643
2	179,643
3	183,389
4	183,389
5	187,211
6	187,211
7	191,109
8	191,109
9	195,084
10	195,084
11	137,883
12	137,883
13	140,641
14	140,641
15	143,453
16	143,453
17	146,323
18	146,323
19	149,249
20	149,249
21	152,234
22	152,234
23	155,279
24	155,279
25	158,384

Annual Special Assessment Schedule for Lot 6

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	427,893
2	427,893
3	436,765
4	436,765
5	445,815
6	445,815
7	455,046
8	455,046
9	464,462
10	464,462
11	326,532
12	326,532
13	333,063
14	333,063
15	339,724
16	339,724
17	346,518
18	346,518
19	353,449
20	353,449
21	360,518
22	360,518
23	367,728
24	367,728
25	375,083

Annual Special Assessment Schedule for Lot 7

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	468,927
2	468,927
3	478,682
4	478,682
5	488,632
6	488,632
7	498,781
8	498,781
9	509,133
10	509,133
11	359,007
12	359,007
13	366,187
14	366,187
15	373,511
16	373,511
17	380,981
18	380,981
19	388,601
20	388,601
21	396,373
22	396,373
23	404,300
24	404,300
25	412,386

Annual Special Assessment Schedule for Lot 8

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	20,883
2	20,883
3	23,243
4	23,243
5	25,651
6	25,651
7	28,107
8	28,107
9	30,612
10	30,612
11	86,873
12	86,873
13	88,610
14	88,610
15	90,382
16	90,382
17	92,190
18	92,190
19	94,034
20	94,034
21	95,915
22	95,915
23	97,833
24	97,833
25	99,790

Annual Special Assessment Schedule for Lot 9

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	21,962
2	23,511
3	23,511
4	25,091
5	25,091
6	26,702
7	26,702
8	28,345
9	28,345
10	30,022
11	56,996
12	58,136
13	58,136
14	59,298
15	59,298
16	60,484
17	60,484
18	61,694
19	61,694
20	62,928
21	62,928
22	64,186
23	64,186
24	65,470
25	65,470

Annual Special Assessment Schedule for Lot 10

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	268,192
2	274,365
3	274,365
4	280,662
5	280,662
6	287,085
7	287,085
8	293,637
9	293,637
10	300,319
11	227,200
12	231,744
13	231,744
14	236,379
15	236,379
16	241,107
17	241,107
18	245,929
19	245,929
20	250,847
21	250,847
22	255,864
23	255,864
24	260,981
25	260,981

Annual Special Assessment Schedule for Lot 11

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	149,520
2	149,520
3	152,808
4	152,808
5	156,162
6	156,162
7	159,583
8	159,583
9	163,072
10	163,072
11	121,011
12	121,011
13	123,432
14	123,432
15	125,900
16	125,900
17	128,418
18	128,418
19	130,987
20	130,987
21	133,606
22	133,606
23	136,278
24	136,278
25	139,004

Annual Special Assessment Schedule for Lot 12

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	100,480
2	100,480
3	102,611
4	102,611
5	104,786
6	104,786
7	107,004
8	107,004
9	109,266
10	109,266
11	78,457
12	78,457
13	80,026
14	80,026
15	81,626
16	81,626
17	83,259
18	83,259
19	84,924
20	84,924
21	86,623
22	86,623
23	88,355
24	88,355
25	90,122

Annual Special Assessment Schedule for Lot 13

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	62,693
2	64,652
3	64,652
4	66,649
5	66,649
6	68,686
7	68,686
8	70,764
9	70,764
10	72,884
11	72,067
12	73,509
13	73,509
14	74,979
15	74,979
16	76,478
17	76,478
18	78,008
19	78,008
20	79,568
21	79,568
22	81,159
23	81,159
24	82,783
25	82,783

Annual Special Assessment Schedule for Lot 14

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	380,231
2	380,231
3	389,879
4	389,879
5	399,721
6	399,721
7	409,759
8	409,759
9	419,998
10	419,998
11	355,084
12	355,084
13	362,186
14	362,186
15	369,430
16	369,430
17	376,818
18	376,818
19	384,355
20	384,355
21	392,042
22	392,042
23	399,882
24	399,882
25	407,880

Annual Special Assessment Schedule for Lot 15

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	245,046
2	245,046
3	251,794
4	251,794
5	258,677
6	258,677
7	265,698
8	265,698
9	272,859
10	272,859
11	248,352
12	248,352
13	253,319
14	253,319
15	258,386
16	258,386
17	263,553
18	263,553
19	268,825
20	268,825
21	274,201
22	274,201
23	279,685
24	279,685
25	285,279

Annual Special Assessment Schedule for Lot 16

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-
14	-
15	-
16	-
17	-
18	-
19	-
20	-
21	-
22	-
23	-
24	-
25	-

Annual Special Assessment Schedule for Lot 17

Levy Year (Annual Special Assessment Due by December 31)	Annual Special Assessment
1	25,113
2	25,870
3	25,870
4	26,643
5	26,643
6	27,431
7	27,431
8	28,235
9	28,235
10	29,055
11	27,882
12	28,440
13	28,440
14	29,008
15	29,008
16	29,589
17	29,589
18	30,180
19	30,180
20	30,784
21	30,784
22	31,400
23	31,400
24	32,028
25	32,028

By executing this Petition on this 20th day of March, 2024, the undersigned represents and warrants that she or he is authorized to execute this Petition on behalf of the property owner named immediately above. The undersigned also acknowledges that her or his signature may not be withdrawn later than seven (7) days after this Petition is filed with the City Clerk of the City.

10300 Olive LLC, a Missouri limited liability company

By: 10300 Olive Holdings LLC, a Delaware limited liability company, its sole member

By: _____

Name: Michael J. Bailey

Title: Authorized Person

STATE OF Illinois)
) SS.
COUNTY OF Madison)

On this 20th day of March in the year 2024 before me, Jamie N Mehrtens, a Notary Public in and for said state, personally appeared Michael J Bailey, the authorized person, of 10300 Olive LLC, known to me to be the person who executed the within Petition in behalf of said limited liability company and acknowledged to me she or he executed the same for the purposes therein stated.

WITNESS my hand and official seal this 20th day of March, 2024.

Jamie N Mehrtens
Notary Public

Printed Name: Jamie N Mehrtens

My Commission Expires: 10/30/2026

OFFICIAL SEAL
JAMIE N. MEHRTENS
Notary Public - State of Illinois
My Commission Expires 10/30/2026

[SIGNATURE PAGE OF PETITIONER]

Exhibit D

FIVE-YEAR PLAN

OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT

DATED: MARCH 7, 2024

Introduction

10300 Olive LLC (the ***"Petitioner"***) proposes to create the Olia Village Community Improvement District (the ***"District"***) pursuant to the Community Improvement District Act, Sections 67.1401 to 67.1571 of the Revised Statutes of Missouri, as amended, (the ***"CID Act"***). Section 67.1421 of the CID Act requires that the petition for the creation of the proposed District be accompanied by a five-year plan stating a description of the purposes of the proposed District, the services it will provide, the improvements it will make, an estimate of the costs of these services and improvements to be incurred, the anticipated sources of funds to pay such costs and the anticipated term of such sources of funds. This Five-Year Plan (the ***"Plan"***) is presented in order to comply with the statutory requirement referenced above.

Generally, a community improvement district is a statutory tool a municipality may implement in order to allow a specific area or section of the municipality to fund (either in part or in whole) certain improvements and services within certain defined boundaries by securing a portion of the area's own economic activity.

This Plan contains the following: (A) a description of the location and formation of the proposed District; (B) a description of the anticipated proposed District revenues over a five-year period; (C) a summary of the improvements and services to be provided by the proposed District over a five-year period; (D) an estimate of costs of the services and improvements to be incurred over a five-year period; and (E) an anticipated schedule for the proposed District's improvements, activities and services over a five-year period. This Plan is an integral and composite part of the Amended Petition for the Creation of a Community Improvement District (the ***"Petition"***) to which it is attached and incorporated therein by reference.

A. District Location and Formation

The proposed District totals approximately 96 acres and is generally located north of the single family residential properties located along Sunswept Drive and the commercial property located at 611 North Lindbergh Boulevard, south of Olive Boulevard, east of the single family residential properties located along Spoede Woods Drive, Spoede Hills Drive, Spoede Ridge Lane and Allegro Lane, and west of Lindbergh Boulevard, all within the City of Creve Coeur, Missouri (the ***"City"***). The proposed District is contiguous.

The District is proposed to be a political subdivision of the State of Missouri. The proposed District, pursuant to the CID Act, is empowered to provide a variety of public services and to finance a number of different public improvements within its boundaries, which services and improvements will be paid for from revenues from taxes and special assessments imposed within its boundaries.

B. District Revenues

The proposed District is being formed to raise revenues by imposing a community improvement district sales and use tax (the ***"CID Sales Tax"***) at the rate of up to one percent (1%) on all taxable retail sales within its boundaries which are subject to taxation pursuant to Sections 144.010 to 144.525 of the Revised Statutes of Missouri, as amended, except sales of motor vehicles, trailers, boats or outboard motors and sales to or by public utilities and providers of communications, cable or video services. The imposition of the CID Sales Tax is subject to approval by the qualified voters within the proposed District. To the extent that there are no registered voters within the proposed District, the CID Act provides that the qualified voters are the owners of one or more parcels of real property located within the proposed District per the tax records of St. Louis County, Missouri as of the thirtieth day before the date of the applicable election. Once the proposed District is established by ordinance of the City, the proposed District's Board of Directors will submit the question of whether it shall be authorized to impose the CID Sales Tax to the qualified voters for approval in accordance with this Plan.

The proposed District is also being formed to raise revenues by levying special assessments (the ***"Special Assessments"***) against real property benefitted within the District. The proposed District may levy the Special Assessments upon receipt of a petition (the ***"Special Assessment Petition"***) signed by the requisite percentage of owners of real property located within the District in accordance with Section 67.1521 of the CID Act. The Special Assessments will be levied against certain lots within the District which are benefitted by the CID Project pursuant to a procedure set forth in the Special Assessment Petition. The Special Assessments will be levied in an annual amount not to exceed the greater of (a) the difference between (1) the property taxes that would have otherwise been payable on such real property and the improvements thereon but for the real property exemption granted by the City pursuant to Section 353.110 of the Revised Statutes of Missouri, as amended, and (2) the sum of any taxes and payments in lieu of taxes paid with respect thereto, or (b) the Annual Special Assessment Schedule set forth in the Special Assessment Petition.

Notwithstanding anything in the CID Act or the Petition to the contrary, the proposed District shall have no power to levy real property taxes or business license taxes.

C. Summary of Improvements and Services to be Provided

The purpose of the proposed District is to provide assistance to or to construct, reconstruct, install, repair, maintain, and equip certain public improvements within its boundaries, and to support business activity and economic development in the proposed District and to provide services and activities as allowed under Section 67.1461 of the CID Act. The proposed District will impose the CID Sales Tax and Special Assessments to finance and administer these improvements and services as provided under the CID Act.

In general, the proposed District may undertake any of the public improvements or provide for any of the activities or services set forth in the CID Act. Further, pursuant to Section 67.1461.2 of the CID Act, the proposed District shall have the powers related to a district located in a blighted area. Pursuant to Section 67.1461 of the CID Act the proposed District may acquire by purchase, lease, gift, grant, bequest, devise or otherwise, any real property within its boundaries, personal property, or any interest in such property. The proposed District may also sell, lease, exchange, transfer, assign, mortgage, pledge, hypothecate, or otherwise encumber or dispose of any real or personal property or any interest in such property. The proposed District may dedicate to the City, with the City's consent, streets, sidewalks, parks, and other real property and improvements located within its boundaries for public use. In addition, the proposed District may enter into one or more agreements with the City or any private property owner within the District to demolish and remove, renovate, reconstruct or rehabilitate any building or structure owned by such private property owner, and the District may expend its revenues or loan its revenues pursuant to

such agreement, provided that the City Council has determined that the action to be taken pursuant to such agreement is reasonably anticipated to remediate the blighting conditions and will serve a public purpose.

To fund any or all of its activities in connection with the exercise of any of the above or any other powers of the proposed District under Section 67.1461 of the CID Act, the proposed District may borrow money from any public or private source and issue obligations or cause obligations to be issued on its behalf, in one or more phases, and provide security for repayment of the same as provided in the CID Act.

The District is proposed to provide funding for those powers of a district provided under Section 67.1461.1 of the CID Act and various public improvements (as further described below) within the proposed District's boundaries, which public improvements are anticipated to be made to remove any blighted condition and also anticipated to be made in connection with the development, operation and maintenance of a new commercial mixed-use planned development of various retail, office, multifamily, and hotel uses within the proposed District. Specifically, the District will provide funding for the following: (1) the construction of all utility infrastructure to service the District; (2) the construction and repair of the City of St. Louis water main line and related fixed improvements; (3) the demolition, abatement, renovation, rehabilitation and repurposing of existing improvements within the District, including but not limited to existing office buildings and surface parking lots; (4) the site clearing and mass grading to account for the existing topography and the proposed development; (5) the site clearing and mass grading to account for the existing wetlands and the proposed development; (6) the site clearing and mass grading to account for, accommodate and ameliorate the existing stormwater runoff and detention and the proposed development; (7) the construction of roadways within the District; (8) the construction of common area improvements within the District; and (9) the construction of sidewalks and public walking paths within the District (together with any public improvements, activities or services outlined in this Section C. and as allowed by the CID Act, the ***"CID Project"***).

In conjunction with funding the CID Project, the District may also fund costs related to undertaking and completing the CID Project, including without limitation: (a) costs of all estimates, studies, surveys, plans, drawings, reports, tests, specifications and other preliminary investigations of architects, appraisers, surveyors and engineers; (b) all professional service costs, including without limitation architectural, engineering, legal, financial, planning, design, development, project or construction management or special services incurred; (c) costs of acquisition, settlement and transfer of rights-of-way, easements, leases and other interests in real property; (d) costs of demolition of buildings and improvements; the clearing, excavation, earthwork, backfill and grading of land; site preparation; utility relocation; erosion, drainage and storm water control; storm sewers; and waterproofing; (e) costs of relocation necessitated by the City's relocation plan; (f) costs of insurance, performance bonds and guarantees; (g) costs of pavement, curbs, gutters, sidewalks, pavers, landscaping, planters, tree grates, irrigation and water features, bicycle racks, pedestrian benches, canopies, street lighting, retaining walls, shoring and piers, handrails, guardrails and other railing, including without limitation any architectural or decorative treatments related to such items; and (h) costs of construction of any bridge, street, road, highway, access road, interchange, intersection, signing, signalization, parking lot, bus stop, station, garage, terminal, hangar, shelter, rest area, dock, wharf, lake or river port, airport, light rail or other mass transit and any similar or related improvement or infrastructure.

The estimated cost of the CID Project is $73,700,000, as further described in the table below and the accompanying notes.

CID Project Costs	
Item	**Cost***
Utility infrastructure and streets to be dedicated to the City	$16,200,000
City of St. Louis water main fixed improvements	$9,700,000
Demolition, abatement and repurposing of existing improvements	$31,700,000
Topography, protected wetlands, stormwater	$16,100,000
Total**	**$73,700,000**

* The amount in each budget category is an estimate. Savings in one budget category may be applied to additional costs incurred in other budget categories.

** Although it is estimated that there are eligible CID Project costs of $73,700,000, the maximum amount of CID Project costs that the proposed District will fund is $61,765,775. The maximum amount excludes the District's payment of the following, which amounts may be funded above and beyond the maximum amount: Costs of Issuance as defined in the Petition, if any, the proposed District's administrative fees and expenses including, but not limited to, fees and costs related to the proposed District's formation, planning consultants, advisors, auditors and legal counsel, and reimbursement to the City for the City's third-party professional costs directly related to the City's consideration of the proposed District including, without limitation, legal and planning expenses incurred in relation to the City's establishment of the proposed District, and the City's participation and responsibilities with regard to the ongoing operation, functions and administration of the proposed District.

The proposed District may fund any portion of the costs of acquisition, design, construction, operation and maintenance of the CID Project. Revenues from the CID Sales Tax and, subject to the terms of the Special Assessment Petition, revenues from the Special Assessments may be used to fund in part either direct costs of the CID Project or financing costs of the CID Project, or both.

On an annual basis, the revenues from the CID Sales Tax and, subject to the terms of the Special Assessment Petition, revenues from the Special Assessments will be applied as follows: (a) first, to fund the on-going administrative costs of the proposed District, the amount of which will be determined by the proposed District's Board of Directors in connection with the adoption of the annual budget of the proposed District, and (b) second, to fund the costs of the CID Project or any obligations issued by or on behalf of the proposed District to finance the costs of the CID Project. This formula will be applied throughout the term of the proposed District.

The CID Act mandates that existing City services continue to be provided within the proposed District at the same level as before the proposed District is created (unless services are decreased throughout the City) and that any proposed District services shall be in addition to existing City services. The Petitioner anticipates that City services will continue to be provided within the proposed District at the same level as before the proposed District was created, and the proposed District will not cause the level of City services

within the proposed District to diminish. Without the additional funding provided by the proposed District, the Petitioner would not be able to adequately develop, operate and maintain the CID Project.

D. Estimate of Costs of Services and Improvements to be Incurred

The total estimated cost of the CID Project over the initial five-year period is approximately $73,700,000, subject to the limitations set forth in Section C. above. As stated above, revenues of the CID Sales Tax and, subject to the Special Assessment Petition, revenues from the Special Assessments may be used to fund in part either direct costs of the CID Project or financing costs of the CID Project, or both.

E. Anticipated Schedule

On the next page is a summary of the improvements, activities and services anticipated to be provided by the proposed District over the initial five-year period.

Year	Improvements, Activities and Services
2024	• Establish District
	• Special Assessment Petition received by District
	• District's Board of Directors authorizes imposition of CID Sales Tax and Special Assessments
	• District holds mail-in election to impose CID Sales Tax
	• CID Project commences with site clearing, mass grading, site utilities and roadway construction, as well as the construction of the common area improvements
	• Portions of the CID Project commences with demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase I of the private development
	• Issuance of District obligations, if any, related to the CID Project
	• Provide financing for a portion of the costs of the CID Project
	• Provide for collection of CID Sales Tax and Special Assessments, if applicable
	• District provides for its on-going administration

Year	Improvements, Activities and Services
2025	• CID Project continues with site clearing, mass grading, site utilities and roadway construction, as well as the construction of the common area improvements
	• Portions of the CID Project are substantially completed with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase I of the private development
	• Portions of the CID Project are commenced with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase II of the private development
	• Issuance of District obligations, if any, related to the CID Project
	• Provide financing for a portion of the costs of the CID Project
	• Provide for collection of CID Sales Tax and Special Assessments, if applicable
	• District provides for its on-going administration
2026	• CID Project substantially completed with respect to site clearing, mass grading, site utilities and roadway construction, as well as the construction of the common area improvements
	• Portions of the CID Project are substantially completed with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase II of the private development
	• Portions of the CID Project are commenced with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase III of the private development
	• Issuance of District obligations, if any, related to the CID Project
	• Provide financing for a portion of the costs of the CID Project
	• Provide for collection of CID Sales Tax and Special Assessments
	• District provides for its on-going administration

Year	Improvements, Activities and Services
2027	• Portions of the CID Project continue with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase III of the private development • Portions of the CID Project are commenced with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase IV of the private development • Provide financing for a portion of the costs of the CID Project • Provide for collection of CID Sales Tax and Special Assessments • District provides for its on-going administration
2028	• Portions of the CID Project are substantially completed with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase III of the private development • Portions of the CID Project continue with respect to demolition, abatement and repurposing of existing buildings, structures and improvements on certain lots that are included in Phase IV of the private development • Provide financing for a portion of the costs of the CID Project • Provide for collection of CID Sales Tax and Special Assessments • District provides for its on-going administration

COOPERATION AGREEMENT

THIS COOPERATION AGREEMENT (this "Agreement") is made and entered into as of _____, 2024, by and among the **CITY OF CREVE COEUR, MISSOURI**, a home rule city and political subdivision of the State of Missouri (the "City"), the **OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT**, a community improvement district and political subdivision of the State of Missouri (the "CID"), the **OLIA VILLAGE TRANSPORTATION DEVELOPMENT DISTRICT**, a transportation development district and political subdivision of the State of Missouri (the "TDD"), **10300 OLIVE LLC**, a Missouri limited liability company (the "Fee Owner"), and **10300 OLIVE DEV LLC**, a Missouri limited liability company (the "Developer" and, together with the City, the CID, the TDD, and the Fee Owner, the "Parties"). All capitalized terms not otherwise defined herein shall have the meanings ascribed to such terms in the hereinafter-defined Redevelopment Agreement.

RECITALS:

1. The City, the Developer, the Fee Owner, and Olia Village Redevelopment Corporation entered into a Master Redevelopment Agreement dated as of _____, 2024 (the "Redevelopment Agreement").

2. The Parties desire to enter into this Agreement, as contemplated by the Redevelopment Agreement, to set forth their respective rights and responsibilities regarding the construction and financing of projects to be funded by the CID and/or the TDD (the "CID Project" and the "TDD Project," respectively).

AGREEMENT:

NOW, THEREFORE, in consideration of the premises and the mutual covenants and agreements contained in this Agreement, the Parties agree as follows:

Section 1. Authority of the City. The City has full constitutional and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary City proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the City, enforceable in accordance with its terms.

Section 2. Authority of the CID. The CID has full constitutional and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary CID proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the CID, enforceable in accordance with its terms.

Section 3. Authority of the TDD. The TDD has full constitutional and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary TDD proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the TDD, enforceable in accordance with its terms.

Section 4. Authority of the Fee Owner. The Fee Owner has full corporate and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by

all necessary corporate proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the Fee Owner, enforceable in accordance with its terms.

Section 5. Authority of the Developer. The Developer has full corporate and lawful right, power, and authority, under current applicable law, to execute and deliver and perform the terms and obligations of this Agreement, and this Agreement has been duly and validly authorized and approved by all necessary corporate proceedings, findings, and actions. Accordingly, this Agreement constitutes the legal, valid, and binding obligation of the Developer, enforceable in accordance with its terms.

Section 6. CID Sales Tax; TDD Sales Tax.

(a) Promptly following the approval of this Agreement by the CID's Board of Directors (the "CID Board"), the CID shall adopt a resolution to impose a community improvement district sales and use tax (the "CID Sales Tax"). The Fee Owner and the City will promptly cause, through their respective representatives appointed to the CID Board and, with respect to the Fee Owner, in its capacity as a qualified voter, the CID Sales Tax to be levied by the CID and approved by the qualified voters at the rate of not to exceed one percent (1.0%). The CID Sales Tax shall be imposed as soon as possible pursuant to the terms of the CID Act and any other applicable laws and shall not be terminated so long as any Project Obligations issued by or on behalf of the CID remain outstanding and unless otherwise in conformance with Section 67.1545.9 of the CID Act.

(b) Promptly following the approval of this Agreement by the TDD's Board of Directors (the "TDD Board"), the TDD shall adopt a resolution to impose a transportation development district sales tax (the "TDD Sales Tax"). The Fee Owner and the City will promptly cause, through their respective representatives elected to the TDD Board and, with respect to the Fee Owner, in its capacity as a qualified voter, the TDD Sales Tax to be levied by the TDD and approved by the qualified voters at the rate of not to exceed one-half percent (0.5%). The TDD Sales Tax shall be imposed as soon as possible pursuant to the terms of the TDD Act and any other applicable laws and shall not be terminated so long as any Project Obligations issued by or on behalf of the TDD remain outstanding and unless otherwise in conformance with Section 238.235.6 of the TDD Act.

Section 7. CID Special Assessment. Promptly following the approval of this Agreement by the CID Board, the CID Board shall adopt a resolution to impose a community improvement district special assessment (the "CID Special Assessment"). The Fee Owner and the City will promptly cause, through their respective representatives appointed to the CID Board and, with respect to the Fee Owner, in its capacity as both an owner of more than 50% of the assessed value of the real property within the CID and an owner of more than 50% per capita of all of the real property within the CID, the CID Special Assessment to be levied by the CID Board and approved by petition of the owners. In each calendar year that a Lot is subject to the limited tax abatement provided by **Section 5.1** of the Redevelopment Agreement, the CID Special Assessment shall be levied on such Lot at a rate not to exceed the greater of (1) the Actual Abatement Amount or (2) the amount shown on the Annual Special Assessment Schedule. The CID Special Assessment shall be imposed as soon as possible pursuant to the terms of the CID Act and any other applicable laws and shall not be terminated so long as any Project Obligations issued by or on behalf of the CID and secured thereby remain outstanding and unless otherwise in conformance with the CID Act.

Section 8. Continuing Existence of the CID and the TDD.

(a) None of the CID, the City, or the Fee Owner will take any action to dissolve the CID or reduce the rate of the CID Sales Tax or the CID Special Assessment until the funding and construction of the CID Project are completed, including the payment in full or cancellation of all Project Obligations issued by or on behalf of the CID and secured by the CID Sales Tax Revenues or the CID Special Assessment Revenues, as applicable. Upon the payment in full or cancellation of (1) all Project Obligations

issued by or on behalf of the CID and secured by the CID Special Assessment Revenues, the CID will immediately take such steps as may be required to terminate the CID Special Assessment and (2) all Project Obligations issued by or on behalf of the CID and secured by the CID Sales Tax Revenues, the CID will immediately take such steps as may be required to terminate the CID Sales Tax. After all Project Obligations issued by or on behalf of the CID are paid in full or cancelled, the CID will immediately take such steps as may be required to dissolve the CID.

(b) None of the TDD, the City, or the Fee Owner will take any action to dissolve the TDD or reduce the rate of the TDD Sales Tax until the funding and construction of the TDD Project are completed, including the payment in full or cancellation of all Project Obligations issued by or on behalf of the TDD. Upon the payment in full or cancellation of all Project Obligations issued by or on behalf of the TDD, the TDD will immediately take such steps as may be required to terminate the TDD Sales Tax and dissolve the TDD.

Section 9. Governance of the CID.

(a) The Parties acknowledge that the CID will be governed by a board of directors made up of five individuals appointed by the Mayor with the consent of the City Council, three of whom shall be representatives of the owners of real property or businesses operating within the CID and two of whom shall be residents of the City who are qualified and registered to vote and who have no financial interest in any real property or business operating within the CID. Successor directors of the CID shall be appointed as set forth in the petition for the creation of the CID.

(b) The CID shall employ or engage an administrator or legal counsel with experience managing special taxing districts to ensure that the CID complies with this Agreement and all applicable laws and regulations. If the CID (1) fails to comply with any reporting requirement contained in the CID Act or other applicable law for two consecutive years, including, without limitation, timely submittal of annual reports, financial statements and budgets, (2) admits to or is found by a court to have committed two or more violations of Chapter 610 of the Revised Statutes of Missouri, as amended, or (3) is unresponsive to any inquiry or audit initiated by the Missouri State Auditor's office, then the City may designate an administrator or legal counsel for the CID to engage, at the CID's cost, to ensure that the CID complies with this Agreement and all applicable laws and regulations.

(c) Except as expressly provided in **Sections 11** and **12** of this Agreement, unless otherwise approved by the City in its sole and absolute discretion, the CID shall have no authorization to pay any costs, impose any tax, license, fee or assessment (other than the CID Sales Tax and the CID Special Assessment), or incur any obligations.

(d) The Fee Owner, the Developer and the CID shall allow the City and its employees, agents, and representatives to inspect, within three business days after request therefor, all contracts, documents and records pertaining to the CID Project and the CID, including but not limited to the CID Sales Tax, the CID Special Assessment, and the CID's financial statements. In addition, the CID agrees that, before the effective date of the CID Sales Tax, the CID will file Form 4379 with the Missouri Department of Revenue to designate the City's Director of Finance as an authorized person to access all information regarding the CID Sales Tax under Sections 32.057 and 144.121 of the Revised Statutes of Missouri, as amended, so long as permitted under the Revised Statutes of Missouri, as amended.

Section 10. Governance of the TDD.

(a) The Parties acknowledge that the TDD will be governed by a board of directors made up of five representatives of the owners of real property within the TDD, including two persons designated by

the City, who will be elected by the owners of real property within the TDD. The Fee Owner, as an owner of real property within the TDD, will cause the election to the board of directors of two persons designated by the City who meet all other qualifications to serve on the board of directors, by designating each such person as an authorized representative of the Fee Owner and voting for such persons.

(b) The TDD shall employ or engage an administrator or legal counsel with experience managing special taxing districts to ensure that the TDD complies with this Agreement and all applicable laws and regulations. If the TDD (1) fails to comply with any reporting requirement contained in the TDD Act or other applicable law for two consecutive years, including, without limitation, timely submittal of annual reports, (2) admits to or is found by a court to have committed two or more violations of Chapter 610 of the Revised Statutes of Missouri, as amended, or (3) is unresponsive to any inquiry or audit initiated by the Missouri State Auditor's office, then the City may designate an administrator or legal counsel for the TDD to engage, at the TDD's cost, to ensure that the TDD complies with this Agreement and all applicable laws and regulations.

(c) Except as expressly provided in **Sections 11** and **13** of this Agreement, unless otherwise approved by the City in its sole and absolute discretion, the TDD shall have no authorization to pay any costs, impose any tax, license, fee or assessment (other than the TDD Sales Tax), or incur any obligations.

(d) The Fee Owner, the Developer and the TDD shall allow the City and its employees, agents, and representatives to inspect, within three business days after request therefor, all contracts, documents and records pertaining to the TDD Project and the TDD, including but not limited to the TDD Sales Tax and the TDD's financial statements. In addition, the TDD agrees that, before the effective date of the TDD Sales Tax, the TDD will file Form 4379 with the Missouri Department of Revenue to designate the City's Director of Finance as an authorized person to access all information regarding the TDD Sales Tax under Sections 32.057 and 144.121 of the Revised Statutes of Missouri, as amended, so long as permitted under the Revised Statutes of Missouri, as amended.

Section 11. Construction of the CID Project and the TDD Project. The Developer shall construct, or cause the construction of, the CID Project and the TDD Project and shall cause all funds to be advanced therefor. The Developer may be reimbursed for the costs thereof from the proceeds of Project Obligations, as further described in **Sections 12** and **13** of this Agreement.

Section 12. Reimbursable CID Project Costs and Project Obligations.

(a) The CID shall establish the "CID Trust Fund," which shall include a "Sales Tax Account" and a "Special Assessment Account." The CID Sales Tax Revenues and the CID Special Assessment Revenues shall be deposited in the Sales Tax Account and the Special Assessment Account, respectively, and disbursed as follows:

(1) first, to pay the CID's operating costs (legal, administrative, insurance, audit, etc.), which amount shall be paid equally from the Sales Tax Account and the Special Assessment Account and shall not exceed $20,000 for calendar year 2024, plus a year-over-year increase of 3% for any subsequent year, or such greater amount as unanimously approved by the members of the CID Board present at the meeting at which a quorum, including the City's two representatives, is present and the increase in the CID's annual operating costs is considered; and

(2) second, to pay Project Obligations, as further described below.

(b) The Developer agrees, upon written request of the CID, to promptly pay any operating costs in excess of the moneys available under (a)(1) above if the CID's revenues are insufficient for that

purpose. Any such moneys paid by the Developer may be reimbursed by the CID when sufficient funding is available.

(c) If any Project Obligations have been issued by or on behalf of the CID in accordance with **Article IV** of the Redevelopment Agreement, the CID (1) may use the proceeds thereof to reimburse the Developer for the Reimbursable District Project Costs identified in all approved or deemed approved Certificates of Redevelopment Project Costs and (2) shall use the money available under (a)(2) to pay such Project Obligations; provided, however, that money in the Special Assessment Account shall only be used to pay those Project Obligations secured by the CID Special Assessment Revenues.

(d) If the CID Special Assessment Revenues collected and received by the CID exceed the amount necessary to pay in full Project Obligations payable from the CID Special Assessment Revenues, any excess funds shall be refunded to the owners of such tracts, lots or parcels that paid the final year of CID Special Assessments, pro rata relative to the amounts paid by such owners. Such refunds shall be made by December 31 of the year following the final year of the CID Special Assessments.

Section 13. Reimbursable TDD Project Costs and Project Obligations.

(a) The TDD shall establish the "TDD Trust Fund." All revenues received from the TDD Sales Tax shall be deposited in the TDD Trust Fund and disbursed as follows:

(1) first, to pay the TDD's operating costs (legal, administrative, insurance, audit, etc.), which amount shall not exceed $20,000 for calendar year 2024, plus a year-over-year increase of 3% for any subsequent year, or such greater amount as unanimously approved by the members of the TDD Board present at the meeting at which a quorum, including the City's two representatives, is present and the increase in the TDD's annual operating costs is considered; and

(2) second, to pay Project Obligations, as further described below.

(b) The Developer agrees, upon written request of the TDD, to promptly pay any operating costs in excess of the moneys available under (a)(1) above if the TDD's revenues are insufficient for that purpose. Any such moneys paid by the Developer may be reimbursed by the TDD when sufficient funding is available.

(c) If any Project Obligations have been issued by or on behalf of the TDD in accordance with **Article IV** of the Redevelopment Agreement, the TDD (1) may use the proceeds thereof to reimburse the Developer for the Reimbursable District Project Costs identified in all approved or deemed approved Certificates of Redevelopment Project Costs and (2) shall use the money available under (a)(2) to pay such Project Obligations.

Section 14. Federal Work Authorization Program. Simultaneously with the execution of this Agreement, the Developer shall provide the CID, the TDD, and the City with an affidavit, in substantially the form of **Exhibit D** to the Redevelopment Agreement, and documentation to evidence the Developer's compliance with Section 285.530 of the Revised Statutes of Missouri, as amended.

Section 15. Insurance.

(a) The CID and the TDD will each maintain reasonable levels of insurance throughout its respective existence. Without limiting the generality of the foregoing, the CID and the TDD shall, simultaneously with the execution of this Agreement and annually thereafter through the term of this Agreement, each provide evidence of a directors and officers liability or similar policy (in form and substance reasonably acceptable to the City Attorney) that includes coverage for all suits, claims, costs of defense, damages, injuries, liabilities, costs and/or expenses, including court costs and attorneys' fees and expenses, resulting from, arising out of, or in any way connected with the proceedings of the CID Board or the TDD Board, as applicable, pursuant to the CID Act or the TDD Act, as applicable, and Chapter 610 of the Revised Statutes of Missouri, as amended.

(b) The policies of insurance required pursuant to clause (a) above shall be placed with MOPERM or financially sound and reputable insurers licensed to transact business in the State of Missouri with a financial strength rating of not less than A- and a financial size category of not less than VIII as designated in the most currently available "A.M. Best's" insurance reports. The CID and the TDD, as applicable, shall deliver or cause to be delivered to the City copies of all insurance policies maintained hereunder.

Section 16. Hold Harmless. Notwithstanding anything herein to the contrary, the City shall not be liable to the Fee Owner, the Developer, the CID, or the TDD for damages or otherwise if all or any part of the CID, the TDD, the CID Project, or the TDD Project or any ordinance or resolution of the City adopted in connection therewith is declared invalid or unconstitutional in whole or in part by any court of competent jurisdiction.

Section 17. Successors and Assigns. This Agreement may be assigned by the Fee Owner and/or the Developer in the same manner as allowed for the assignment of the Redevelopment Agreement in **Section 6.4** of the Redevelopment Agreement.

Section 18. Severability. If any term or provision of this Agreement is held to be unenforceable by a court of competent jurisdiction, the remainder shall continue in full force and effect, to the extent the remainder can be given effect without the invalid term or provision.

Section 19. Waiver. The City's failure at any time hereafter to require strict performance by the CID, the TDD, the Fee Owner or the Developer of any provision of this Agreement shall not waive, affect, or diminish any right of the City thereafter to demand strict compliance and performance therewith.

Section 20. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, but all of which shall constitute one and the same agreement.

Section 21. Anti-Discrimination Against Israel Act. Pursuant to Section 34.600 of the Revised Statutes of Missouri, as amended, the Fee Owner, the Developer, the CID, and the TDD each certifies that it is not currently engaged in and shall not, for the duration of this Agreement, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed in their respective names and attested as of the date first above written.

CITY OF CREVE COEUR, MISSOURI

By: _____
Mark Perkins, City Administrator

[SEAL]

ATTEST:

_____
Kellie Henke, City Clerk

OLIA VILLAGE COMMUNITY IMPROVEMENT DISTRICT

By: _____
Name: _____
Title: Chair

[SEAL]

ATTEST:

By: _____
Name: _____
Title: Secretary

OLIA VILLAGE TRANSPORTATION DEVELOPMENT DISTRICT

By: _____
Name: _____
Title: Chair

[SEAL]

ATTEST:

By: _____
Name: _____
Title: Secretary

10300 OLIVE LLC

By: **10300 Olive Holdings LLC**,
its sole member

By: _____
Name: _____
Title: _____

10300 OLIVE DEV LLC

By: _____
Name: _____
Title: _____

AN ORDINANCE AUTHORIZING THE CITY OF CREVE COEUR, MISSOURI, TO ISSUE ITS TAXABLE INDUSTRIAL REVENUE BONDS (OLIA VILLAGE PROJECT), SERIES 2024, FOR THE PURPOSE OF PROVIDING FUNDS TO PAY THE COSTS OF ACQUIRING, CONSTRUCTING AND IMPROVING AN INDUSTRIAL DEVELOPMENT PROJECT IN THE CITY; APPROVING A PLAN FOR THE PROJECT; AND AUTHORIZING THE CITY TO ENTER INTO CERTAIN AGREEMENTS AND TAKE CERTAIN OTHER ACTIONS IN CONNECTION THEREWITH.

WHEREAS, the City of Creve Coeur, Missouri, a home rule charter city and political subdivision of the State of Missouri (the "City"), is authorized and empowered pursuant to the provisions of Article VI, Section 27(b) of the Missouri Constitution, Sections 100.010 through 100.200, inclusive, of the Revised Statutes of Missouri (collectively, the "Act") and the City Charter to purchase, construct, extend and improve certain projects (as defined in the Act), to issue industrial development revenue bonds for the purpose of providing funds to pay the costs of such projects and to lease or otherwise dispose of such projects to private persons or corporations for manufacturing, commercial, research and development, office industry, warehousing and industrial development purposes upon such terms and conditions as the City deems advisable; and

WHEREAS, the Act requires the City to prepare a plan in connection with any industrial development project undertaken pursuant to the Act; and

WHEREAS, a Plan for an Industrial Development Project and Cost-Benefit Analysis (the "Plan") has been prepared in the form of **Exhibit A**, attached hereto and incorporated herein by reference; and

WHEREAS, notice of the City's consideration of the Plan has been given in the manner required by the Act, and the City Council has fairly and duly considered all comments submitted to the City Council regarding the proposed Plan; and

WHEREAS, the City Council hereby finds and determines that it is desirable for the improvement of the economic welfare and development of the City and within the public purposes of the Act that the City: (1) approve the Plan pursuant to the Act; (2) issue its Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024, in the maximum principal amount of $135,000,000 (the "Bonds"), for the purpose of acquiring a leasehold interest in approximately 96 acres of real property located at 10300 Olive Boulevard (as legally described in the hereinafter-defined Lease Agreement, together with all improvements now or hereafter located thereon, the "Project Site") and completing site infrastructure improvements, including, without limitation, demolishing a portion of the existing improvements, site clearing and grading, constructing roadways, streets, basins and utilities, and completing associated offsite work (collectively, the "Project Improvements" and, together with the acquisition of a leasehold interest in the Project Site, the "Project"); and (3) lease the Project to 10300 Olive LLC (the "Fee Owner"); and

WHEREAS, the Lease Agreement contemplates the issuance of the Bonds for the purpose of facilitating a sales and use tax exemption on construction materials used to construct the Project Improvements; and

WHEREAS, the City Council further finds and determines that it is necessary and desirable in connection with the implementation of the Plan and the issuance of the Bonds that the City enter into certain documents and take certain other actions as herein provided;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOURI, AS FOLLOWS:

Section 1. Approval of the Plan. The City Council hereby approves the Plan.

Section 2. Authorization for the Project. The City is hereby authorized to provide for the purchase and construction of the Project, in the manner and as more particularly described in the Indenture and the Lease Agreement hereinafter authorized.

Section 3. Authorization of the Bonds. The City is hereby authorized to issue and sell the Bonds as described in the recitals hereto for the purpose of providing funds to pay the costs of the Project. The Bonds shall be issued and secured pursuant to the Indenture and shall have such terms, provisions, covenants and agreements as are set forth in the Indenture.

Section 4. Limitation on Liability. The Bonds and the interest thereon shall be limited obligations of the City, payable solely out of certain payments, revenues and receipts derived by the City from the Lease Agreement. Such payments, revenues and receipts shall be pledged and assigned to the bond trustee named in the Indenture (the "Trustee"), as security for the payment of the Bonds as provided in the Indenture. The Bonds and the interest thereon shall not constitute general obligations of the City, the State of Missouri (the "State") or any other political subdivision thereof, and neither the City nor the State shall be liable thereon. The Bonds shall not constitute an indebtedness within the meaning of any constitutional, statutory or charter debt limitation or restriction and are not payable in any manner by taxation.

Section 5. Authorization of Documents. The City is hereby authorized to enter into the following documents (collectively, the "City Documents"), in substantially the forms presented to and approved by the City Council and attached to this Ordinance, with such changes therein as shall be approved by the officials of the City executing the City Documents, such officials' signatures thereon being conclusive evidence of their approval thereof:

(a) Base Lease between the City and the Fee Owner, in substantially the form of **Exhibit B**, attached hereto and incorporated herein by reference, pursuant to which the City will acquire a leasehold interest in the Project Site, in consideration of the City's agreement to issue the Bonds.

(b) Lease Agreement (the "Lease Agreement") between the City and the Fee Owner, in substantially the form of **Exhibit C**, attached hereto and incorporated herein by reference, pursuant to which the City will lease the Project to the Fee Owner pursuant to the terms and conditions contained therein, in consideration of rental payments by the Fee Owner that will be sufficient to pay the principal of and interest on the Bonds.

(c) Trust Indenture (the "Indenture") between the City and the Trustee, in substantially the form of **Exhibit D**, attached hereto and incorporated herein by reference, pursuant to which the Bonds will be issued and the City will pledge the Project and assign certain of the payments, revenues and receipts received pursuant to the Lease Agreement to the Trustee for the benefit and security of the owners of the Bonds upon the terms and conditions set forth therein.

(d) Bond Purchase Agreement between the City and the Fee Owner, in substantially the form of **Exhibit E**, attached hereto and incorporated herein by reference, pursuant to which the Fee Owner will purchase the Bonds.

Section 6. Execution of Documents. The City Administrator is hereby authorized to execute the Bonds and to deliver the Bonds to the Trustee for authentication, for and on behalf of and as the act and deed of the City, in the manner provided in the Indenture. The City Administrator is hereby authorized to execute the City Documents and such other documents, certificates and instruments as may be necessary or desirable to carry out and comply with the intent of this Ordinance, for and on behalf of and as the act and deed of the City. The City Clerk is hereby authorized to attest to and affix the seal of the City to the Bonds, the City Documents and such other documents, certificates and instruments as may be necessary or desirable to carry out and comply with the intent of this Ordinance.

Section 7. Further Authority. The City shall, and the officials, agents and employees of the City are hereby authorized to, take such further action and execute such other documents, certificates and instruments as may be necessary or desirable to carry out and comply with the intent of this Ordinance and to carry out, comply with and perform the duties of the City with respect to the Bonds and the City Documents. The City Administrator is hereby authorized, through the term of the Lease Agreement, to execute all documents on behalf of the City (including documents pertaining to the financing or refinancing of the Project by the Fee Owner) as may be required to carry out and comply with the intent of this Ordinance, the Indenture and the Lease Agreement. The City Administrator is further authorized, on behalf of the City, to grant such consents, estoppels and waivers relating to the Bonds, the Indenture or the Lease Agreement as may be requested during the term thereof; provided, such consents, estoppels and/or waivers shall not increase the principal amount of the Bonds, increase the term of the Lease Agreement or the economic incentives provided therein, waive an event of default or materially change the nature of the transaction. The City Clerk is authorized to attest to and affix the seal of the City to any document authorized by this Section.

Section 8. Severability. The sections of this Ordinance shall be severable. If any section of this Ordinance is found by a court of competent jurisdiction to be invalid, the remaining sections shall remain valid, unless the court finds that: (a) the valid sections are so essential to and inseparably connected with and dependent upon the void section that it cannot be presumed that the City Council has or would have enacted the valid sections without the void one; and (b) the valid sections, standing alone, are incomplete and are incapable of being executed in accordance with the legislative intent.

Section 9. Effective Date. This Ordinance shall take effect in accordance with **Section 3.11(g)** of the City Charter.

[Remainder of Page Intentionally Left Blank]

ADOPTED THIS _____ DAY OF APRIL, 2024.

_____
NICOLE GREER, PRESIDENT OF CITY COUNCIL

APPROVED THIS _____ DAY OF APRIL, 2024.

_____
DR. ROBERT HOFFMAN, MAYOR

[SEAL]

ATTEST:

_____
KELLIE HENKE, CITY CLERK

BILL NO. 6114 **ORDINANCE NO. _____**

EXHIBIT A

PLAN FOR AN INDUSTRIAL DEVELOPMENT PROJECT AND COST-BENEFIT ANALYSIS

(On file in the office of the City Clerk)

BILL NO. 6114 **ORDINANCE NO. _____**

EXHIBIT B

BASE LEASE

(On file in the office of the City Clerk)

BILL NO. __6114_____ **ORDINANCE NO. _____**

EXHIBIT C

LEASE AGREEMENT

(On file in the office of the City Clerk)

BILL NO. 6114 **ORDINANCE NO. _____**

EXHIBIT D

TRUST INDENTURE

(On file in the office of the City Clerk)

EXHIBIT E

BOND PURCHASE AGREEMENT

(On file in the office of the City Clerk)

CITY OF CREVE COEUR, MISSOURI

PLAN FOR AN INDUSTRIAL DEVELOPMENT PROJECT
AND
COST-BENEFIT ANALYSIS

OLIA VILLAGE SITE WORK PROJECT

TABLE OF CONTENTS

Page

I. PURPOSE OF THIS PLAN 1

II. DESCRIPTION OF CHAPTER 100 FINANCINGS 1
General 1
Issuance and Sale of Bonds 1
Sales and Use Tax Exemption 1
Property Tax Abatement 2

III. DESCRIPTION OF THE PARTIES 2
10300 Olive LLC 2
10300 Olive Dev LLC 2
City of Creve Coeur, Missouri 2

IV. REQUIREMENTS OF THE ACT 2
Description of the Project 2
Estimate of the Costs of the Project 2
Sources of Funds to be Expended for the Project 2
Statement of the Terms Upon Which the Project is to be Leased or Otherwise Disposed of by the City 3
Affected School District, Community College District, Emergency Service Providers, County and City 3
Current Assessed Valuation 3
Payments in Lieu of Taxes 3
Sales and Use Tax Exemption 3
Cost-Benefit Analysis 3

V. ASSUMPTIONS AND BASIS OF PLAN 4

* * *

I. PURPOSE OF THIS PLAN

The City of Creve Coeur, Missouri (the "City"), intends to issue taxable industrial revenue bonds in an aggregate principal amount not to exceed $135,000,000 (the "Bonds") to finance the costs of a proposed project (the "Project") for the benefit of 10300 Olive LLC (the "Fee Owner") and 10300 Olive Dev LLC (the "Developer"). The Bonds will be issued pursuant to the provisions of the City Charter, Sections 100.010 to 100.200 of the Revised Statutes of Missouri ("Chapter 100") and Article VI, Section 27(b) of the Missouri Constitution (together with Chapter 100, the "Act"). The Bonds will initially be owned by the Fee Owner and cannot be transferred, other than to the Fee Owner's affiliates and lenders, without the City's prior approval.

This Plan for an Industrial Development Project and Cost-Benefit Analysis (this "Plan") is intended to satisfy requirements of the Act and to provide an analysis of the potential costs and benefits, including the related tax impact on all affected taxing jurisdictions, of using industrial revenue bonds to finance the Project and to facilitate a sales and use tax exemption on construction materials used to complete the Project.

II. DESCRIPTION OF CHAPTER 100 FINANCINGS

General. Chapter 100 authorizes cities, counties, towns and villages to issue industrial development revenue bonds to finance the purchase, construction, extension and improvement of warehouses, distribution facilities, research and development facilities, office industries, agricultural processing industries, service facilities that provide interstate commerce and industrial plants, including the real estate either within or without the limits of such municipalities, buildings, fixtures and machinery. In addition, Article VI, Section 27(b) of the Missouri Constitution authorizes cities, counties, towns and villages to issue revenue bonds for the purpose of paying all or part of the cost of purchasing, constructing, extending or improving any facility for manufacturing, commercial, warehousing and industrial development purposes, including the real estate, buildings, fixtures and machinery.

Issuance and Sale of Bonds. Revenue bonds issued pursuant to the Act do not require voter approval and are payable solely from revenues received from a lease or other disposition of the project. The municipality issues its bonds and in exchange, the benefited company promises to make payments that are sufficient to pay the principal of and interest on the bonds as they become due. Thus, the municipality merely acts as a conduit for the financing.

Concurrently with the closing of the bonds, the benefitted company will lease the site on which the project will be located to the municipality. The municipality will immediately lease the project site and the improvements thereon back to the benefited company pursuant to a lease agreement. The lease agreement will require the benefitted company, acting on behalf of the municipality, to use the bond proceeds to purchase and construct the project.

Under the lease agreement, the benefitted company typically: (1) unconditionally agrees to make payments sufficient to pay the principal of and interest on the bonds as they become due; (2) agrees, at its own expense, to maintain the project, to pay all taxes and assessments with respect to the project and to maintain adequate insurance; (3) may, at its own expense, make certain additions, modifications or improvements to the project; (4) may assign its interests under the lease agreement or sublease the project while remaining responsible for payments under the lease agreement; (5) covenants to maintain its corporate existence during the term of the bond issue; and (6) agrees to indemnify the municipality for certain liability the municipality might incur as a result of its participation in the transaction.

Sales and Use Tax Exemption. The purpose of this Plan is to provide a sales and use tax exemption on qualified building materials. Under the Act and other applicable state law, qualified

building materials can be exempt from sales and use tax if approved by the municipality. The sales and use tax exemption is evidenced by a project exemption certificate issued by the municipality.

Property Tax Abatement. While the Act is often used to facilitate real or personal property tax abatement, the Fee Owner is not seeking, and this Plan does not authorize, any real or personal property tax abatement or exemption. The Fee Owner, however, has prepared a separate Olia Village Development Plan requesting partial real property tax abatement pursuant to Chapter 353 of the Revised Statutes of Missouri ("Chapter 353") for the Project and other related improvements (as further defined and described below, the "Redevelopment Project"). As required by Chapter 353, a written tax impact statement regarding the proposed real property tax abatement will be provided to the affected taxing districts.

III. DESCRIPTION OF THE PARTIES

10300 Olive LLC. The Fee Owner is a special purpose entity created for the sole purpose of owning the Project Site while the Project Improvements are being undertaken.

10300 Olive Dev LLC. The Developer is a joint venture between Jack Matthews Development LLC, a limited liability company organized and existing under the laws of the State of Illinois, and a family trust whose trustee is a principal of Fireside Financial LLC, a limited liability company organized and existing under the laws of the State of Illinois. The Developer is a special purpose entity created for the sole purpose of undertaking the Redevelopment Project.

City of Creve Coeur, Missouri. The City is a home rule charter city and political subdivision of the State of Missouri (the "State"). The City is authorized and empowered pursuant to the provisions of the City Charter and the Act to purchase, construct, extend, equip and improve certain projects (as defined in the Act), to issue industrial development revenue bonds for the purpose of providing funds to pay the costs of such projects and to lease or otherwise dispose of such projects to private persons or corporations for manufacturing, commercial, warehousing and industrial development purposes upon such terms and conditions as the City deems advisable.

IV. REQUIREMENTS OF THE ACT

A. Description of the Project. The Project consists of acquiring a leasehold interest in approximately 96 acres of real property located at 10300 Olive Boulevard (the "Project Site") and completing site infrastructure improvements, including, without limitation, demolishing a portion of the existing improvements, site clearing and grading, constructing roadways, streets, basins and utilities, and completing associated offsite work (collectively, the "Project Improvements" and, together with the acquisition of a leasehold interest in the Project Site, the "Project"). The Developer expects to commence the Project Improvements in April 2024 and to complete the Project Improvements in March 2026. The Developer is undertaking the Project Improvements to prepare the Project Site for construction of a new mixed-use development consisting of multifamily, townhomes, hotels, retail and office space, and associated parking lots and structures (together with the Project Site and the Project Improvements, the "Redevelopment Project").

B. Estimate of the Costs of the Project. The acquisition and construction of the Project are estimated to cost $113,409,571. The Bonds will be authorized in the maximum principal amount of $135,000,000 to provide for contingencies.

C. Sources of Funds to be Expended for the Project. The sources of funds to be expended for the Project will be the proceeds of the Bonds in the maximum principal amount of $135,000,000 and other available funds of the Fee Owner and the Developer. The Bonds will be payable solely from the

revenues derived by the City from the lease or other disposition of the Project (as further described below). The Bonds will not be an indebtedness or general obligation, debt or liability of the City or the State. No tax revenues will be used to repay the Bonds.

D. Statement of the Terms Upon Which the Project is to be Leased or Otherwise Disposed of by the City. Until substantial completion of the Project Improvements, the City will lease the Project to the Fee Owner for lease payments equal to the principal of and interest on the Bonds. Under the terms of the lease agreement, the Fee Owner will have the option to purchase the Project at any time for nominal consideration. The lease will terminate following completion of the Project Improvements (currently estimated to be in March 2026), unless terminated sooner pursuant to the terms thereof.

E. Affected School District, Community College District, Emergency Service Providers, County and City. The School District of the City of Ladue, St. Louis County, Missouri, is the school district affected by the Project. The Community College District of St. Louis, St. Louis County, Missouri, is the community college district affected by the Project. The Creve Coeur Fire Protection District (the "Fire District") is the fire protection district affected by the Project. The Fire District also provides ambulance services to the Project Site. St. Louis County, Missouri (the "County"), is the county affected by the Project. The City of Creve Coeur, Missouri, is the city affected by the Project. Because this Plan is intended to provide only a sales and use tax exemption on qualified building materials, this Plan affects only those taxing districts that have a sales (and use) tax and only to the extent that qualified building materials are purchased within the boundaries of those taxing districts.

F. Current Assessed Valuation. The most recent equalized assessed valuation of the real property included in the Project is $10,860,160. The total equalized assessed valuation of the real property included in the Project after substantial completion of the Project Improvements is estimated to be $11,946,176.

G. Payments in Lieu of Taxes. This Plan does not provide for any property tax abatement or any payments in lieu of taxes. However, as noted above, it is expected that the Project, as a part of the Redevelopment Project, will be subject to partial real property tax abatement pursuant to Chapter 353. A written tax impact statement detailing the partial real property tax abatement under Chapter 353 and the associated payments in lieu of taxes to be made will be provided to the affected taxing districts.

H. Sales and Use Tax Exemption. Qualified building materials purchased for the construction of the Project Improvements are expected to be exempt from sales and use tax pursuant to the provisions of Section 144.062 of the Revised Statutes of Missouri and the Bond documents upon delivery of a project exemption certificate by the City to the Fee Owner. The project exemption certificate may be used by the Fee Owner, the Developer and their respective contractors and subcontractors to purchase and pay for, exempt from sales tax, certain construction materials to be incorporated into or used up in the Project Improvements.

I. Cost-Benefit Analysis. In compliance with Section 100.050.2(3) of the Revised Statutes of Missouri, this Plan has been prepared to show the costs and benefits to the City and to other taxing jurisdictions affected by the sales and use tax exemption for the Project. For purposes of determining the impact of the exemption granted by the City on the affected taxing jurisdictions, it was assumed that:

- $76,672,511 of the total costs of the Project Improvements will be allocated to construction material costs;

- the applicable sales tax rate is 8.988%, of which 4.225% is allocated to the State, 3.513% is allocated to the County and various countywide taxing districts (i.e., Metrolink, E-911, Children's Services, Zoo, and Regional Parks and Trails) and 1.250% is allocated to the City;

- the applicable use tax rate is 4.225%, all of which is allocated to the State;

- 80% of the qualified construction materials will be subject to the State's sales tax, and 20% of the qualified construction materials will be subject to the State's use tax;

- 50% of the qualified construction materials will be subject to the County's sales tax; and

- 0% of the qualified construction materials will be subject to the City's sales tax.

Please note that any variance in these assumptions will alter the net fiscal impact of the sales and use tax exemption on the affected taxing jurisdictions.

Based on the assumptions set forth above, the net fiscal impact to the affected taxing jurisdictions of the sales and use tax exemption on the qualified building materials granted by the City is expected to be $4,586,167, allocated as follows:

	Sales Tax	Use Tax	Total
State of Missouri	$2,591,531	$647,883	$3,239,414
St. Louis County[1]	1,346,753	0	1,346,753
City of Creve Coeur	0	0	0
Total	$3,938,284	$647,883	$4,586,167

The City believes that the Fee Owner's and the Developer's investment in the Redevelopment Project will create construction jobs, spur additional investment in the City and bring new retailers and regional shoppers to the City. Significant real property taxes will be generated by the Redevelopment Project during and following conclusion of the partial real property tax abatement period. Significant personal property taxes, which will not be subject to the Chapter 353 abatement, will be generated upon completion of the Redevelopment Project. None of these ancillary impacts were measured for purposes of this Plan. This Plan does not attempt to quantify the overall economic impact of the Project or the Redevelopment Project.

V. ASSUMPTIONS AND BASIS OF PLAN

As described herein, this Plan includes assumptions that impact the amount of the sales and use tax exemption proposed for the Project.

In addition to the foregoing, in order to complete this Plan, Gilmore & Bell, P.C. has generally reviewed and relied upon information furnished by, and has participated in conferences with, representatives of the City and its counsel, representatives of the Fee Owner and the Developer and their counsel and other persons as the firm has deemed appropriate. Gilmore & Bell, P.C. does not assume any responsibility for the accuracy, completeness or fairness of any of the information provided by others and has not independently verified the accuracy, completeness or fairness of such information.

* * *

[1] Includes revenues generated by countywide taxes (including the 1% general sales tax and 0.5% public safety sales tax) that may ultimately be distributed to the City (and other cities in the County).

(The above space is reserved for Recorder's Certification.)

TITLE OF DOCUMENT:	BASE LEASE
DATE OF DOCUMENT:	As of _____ 1, 2024
GRANTOR:	10300 OLIVE LLC
GRANTOR'S MAILING ADDRESS:	c/o Fireside Financial LLC 90 Edwardsville Professional Park Edwardsville, Illinois 62025
GRANTEE:	CITY OF CREVE COEUR, MISSOURI
GRANTEE'S MAILING ADDRESS:	300 North New Ballas Road Creve Coeur, Missouri 63141
RETURN DOCUMENTS TO:	Mark D. Grimm, Esq. Gilmore & Bell, P.C. 211 North Broadway, Suite 2000 St. Louis, Missouri 63102
LEGAL DESCRIPTION:	See **Exhibit A**

BASE LEASE

THIS BASE LEASE, dated as of _____ 1, 2024 (this "Base Lease"), between **10300 OLIVE LLC**, a Missouri limited liability company (the "Fee Owner"), and the **CITY OF CREVE COEUR, MISSOURI**, a home rule charter city organized and existing under the laws of the State of Missouri (the "City").

RECITALS:

1. The City is authorized and empowered pursuant to the provisions of Article VI, Section 27(b) of the Missouri Constitution, Sections 100.010 through 100.200, inclusive, of the Revised Statutes of Missouri (collectively, the "Act") and the City Charter to purchase, construct, extend and improve certain projects (as defined in the Act), to issue industrial development revenue bonds for the purpose of providing funds to pay the costs of such projects and to lease or otherwise dispose of such projects to private persons or corporations for manufacturing, commercial, research and development, office industry, warehousing and industrial development purposes upon such terms and conditions as the City deems advisable.

2. The Fee Owner has an ownership interest in approximately 96 acres of real property located at 10300 Olive Boulevard in the City (as legally described on **Exhibit A**, together with all improvements now or hereafter located thereon, the "Project Site"). The Project Site is the subject of an industrial development plan approved pursuant to the Act by Ordinance No. _____ (the "Ordinance") passed by the City Council on _____, 2024.

3. Pursuant to the Act and the Ordinance, the City is authorized to (1) issue its Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024, in the maximum principal amount of $135,000,000 (the "Bonds"), for the purpose of completing site infrastructure improvements, including, without limitation, demolishing a portion of the existing improvements, site clearing and grading, constructing roadways, streets, basins and utilities, and completing associated offsite work (collectively, the "Project Improvements"), (2) enter into this Base Lease with the Fee Owner for the purpose of acquiring a leasehold interest in the Project Site during the construction of the Project Improvements and (3) enter into a Lease Agreement of even date herewith with the Fee Owner (the "Lease") for the purpose of leasing the Project Site and the Project Improvements (together, the "Project") back to the Fee Owner for rent sufficient to pay the principal of and interest on the Bonds.

4. The Fee Owner desires to lease the Project Site to the City, and the City desires to lease the Project Site from the Fee Owner and to acquire and hold a leasehold interest for the term of this Base Lease as more fully described in this Base Lease.

NOW, THEREFORE, in consideration of the premises and the mutual representations, covenants and agreements herein contained, the City and the Fee Owner do hereby represent, covenant and agree as follows:

Section 1. Definitions. In addition to any words and terms defined elsewhere in this Base Lease, capitalized words and terms used in this Base Lease shall have the meanings given to such words and terms in the Lease.

Section 2. Representations by the City. The City makes the following representations as the basis for the undertakings on its part herein contained:

(a) The City is a home rule charter city duly organized and validly existing under the laws of the State of Missouri.

(b) Under the provisions of the Act, the City has lawful power and authority to enter into the transactions contemplated by this Base Lease and to carry out its obligations hereunder.

(c) By proper action of its governing body, the City has been duly authorized to execute and deliver this Base Lease, acting by and through its duly authorized officers.

Section 3. Representations by the Fee Owner. The Fee Owner makes the following representations as the basis for the undertakings on its part herein contained:

(a) The Fee Owner is a limited liability company validly existing and in good standing under the laws of the State of Missouri.

(b) The Fee Owner has lawful power and authority to enter into this Base Lease and to carry out its obligations hereunder, and the Fee Owner has been duly authorized to execute and deliver this Base Lease, acting by and through its duly authorized officers and representatives.

(c) The Fee Owner has an ownership interest in the Project Site and is permitted to lease the Project Site to the City pursuant to this Base Lease.

Section 4. Lease Term. This Base Lease shall become effective upon its execution and delivery and, subject to earlier termination pursuant to the provisions of this Base Lease, shall have a term commencing as of the date of this Base Lease and terminating simultaneously with the termination of the Lease.

Section 5. Granting of Leasehold Estate. The Fee Owner hereby rents, leases and lets the Project Site to the City, and the City hereby rents, leases and hires the Project Site from the Fee Owner, subject to Permitted Encumbrances existing as of the date of the execution and delivery hereof, for the rentals and upon and subject to the terms and conditions herein contained.

Section 6. Rent. In addition to the City's obligations under the Lease, the City hereby agrees to pay to the Fee Owner annual rent under this Base Lease (the "Rent") equal to One Dollar and no/100 ($1.00), which shall be due on the date of this Base Lease and on each January 1 thereafter during the term of this Base Lease. The Fee Owner hereby acknowledges that it has received the Rent due on the date of this Base Lease.

Section 7. Use and Possession of the Project Site. The City will have the rights of use and possession of the Project Site only to the extent permitted by the Lease.

Section 8. Assignability. The City will not assign, sublease, mortgage or otherwise transfer or encumber its interest in this Base Lease except as provided in the Indenture.

Section 9. Repairs and Maintenance. The Fee Owner shall, at its sole cost and expense, maintain and repair the Project, and all portions thereof and improvements thereto, to the extent required by the Lease. In no event shall the City be required to make any repairs, improvements, additions, replacements, reconstructions or other changes to the Project or perform any maintenance thereon.

Section 10. Taxes. Pursuant to **Section 6.2** of the Lease, the Fee Owner shall promptly pay all taxes or other governmental charges that if unpaid, would encumber the City's leasehold interest in the Project.

Section 11. Insurance. The Fee Owner shall maintain the insurance policies required by **Article VII** of the Lease.

Section 12. Condemnation. If at any time during the term of this Base Lease, there is a total or partial taking of the Project in condemnation proceedings or by any right of eminent domain or by sale in lieu thereof, the parties shall have the rights and obligations provided in the Lease, and this Base Lease shall terminate only to the extent and in the manner provided in the Lease.

Section 13. Surrender of the Project. Except as otherwise expressly provided in this Base Lease, the City shall surrender and deliver up the Project and all associated improvements thereto to the Fee Owner at the expiration or other termination of this Base Lease, to the limited extent that the City may have any right of possession thereof as expressly provided herein, without fraud or delay.

Section 14. Covenants Against Liens. The Fee Owner shall not create or permit to be created or to remain, and the Fee Owner shall promptly discharge, any mechanic's, laborer's or materialman's lien which might be or become a lien, encumbrance or charge upon the Project or any part thereof as a result of the Fee Owner's separate actions, except as expressly permitted pursuant to the Lease. Notwithstanding the foregoing, the Fee Owner hereby acknowledges that mechanic's, laborer's or materialman's liens may be filed against the Fee Owner's fee interest in the Project Site despite the City's leasehold interest in the Project Site. All such liens shall be discharged prior to the termination of this Base Lease.

Section 15. Notices. Any and all notices, demands, requests, submissions, approvals, consents, disapprovals, objections, offers or other communications or documents required to be given, delivered or served or which may be given, delivered or served under or by the terms and provisions of this Base Lease or pursuant to law or otherwise, shall be made in the form and manner provided in the Lease.

Section 16. Fee Owner's Right to Terminate. The Fee Owner may terminate this Base Lease at any time pursuant to **Article XI** of the Lease.

Section 17. Conflict with the Lease. In the event of any conflict between the terms hereof and the terms of the Lease, the terms of the Lease shall control.

Section 18. Limitation on Liability of City. No provision, covenant or agreement contained in this Base Lease or any obligation herein imposed upon the City, or the breach thereof, shall constitute or give rise to or impose upon the City a pecuniary liability or a charge upon the general credit or taxing powers of the City or the State of Missouri.

Section 19. Governing Law. This Base Lease shall be construed in accordance with and governed by the laws of the State of Missouri.

Section 20. Binding Effect. This Base Lease shall be binding upon and shall inure to the benefit of the City and the Fee Owner and their respective successors and assigns.

Section 21. Severability. If for any reason any provision of this Base Lease is determined to be invalid or unenforceable, the validity and enforceability of the other provisions hereof shall not be affected thereby.

Section 22. Execution in Counterparts. This Base Lease may be executed in several counterparts, each of which shall be deemed to be an original and all of which shall constitute but one and the same instrument.

Section 23. Electronic Transaction.

(a) The parties agree that the transaction described herein may be conducted and related documents may be sent, received or stored by electronic means. Copies, telecopies, facsimiles, electronic files and other reproductions of original executed documents shall be deemed to be authentic and valid counterparts of such original documents for all purposes, including the filing of any claim, action or suit in the appropriate court of law.

(b) The counterparts of this Base Lease may be executed and delivered by facsimile or electronic signature (including portable document format) by either of the parties hereto, and the receiving party may rely on the receipt of any counterpart so executed and delivered electronically or by facsimile as if the original had been received. Each party may sign and transmit an electronic signature on this Base Lease, which signature shall be binding on the party whose name is contained thereon. The intentional action in electronically signing this Base Lease shall be evidence of consent to be legally bound by this Base Lease. Each party agrees to not contest the admissibility or enforceability of the electronically signed copy of this Base Lease in any proceeding arising out of the terms and conditions of this Base Lease.

(c) Notwithstanding anything in this Section to the contrary and with respect to the recording of any electronic documents, the parties shall comply with the requirements of Section 59.569 of the Revised Statutes of Missouri.

Section 24. Date of Base Lease. The dating of this Base Lease as of _____ 1, 2024, is intended as and for the convenient identification of this Base Lease only and is not intended to indicate that this Base Lease was executed and delivered on said date, this Base Lease being executed and delivered and becoming effective simultaneously with the initial issuance of the Bonds (the "Effective Date").

Section 25. Anti-Discrimination Against Israel Act. Pursuant to Section 34.600 of the Revised Statutes of Missouri, the Fee Owner certifies it is not currently engaged in and will not, for the duration of this Base Lease, engage in a boycott of goods or services from (a) the State of Israel, (b) companies doing business in or with the State of Israel or authorized by, licensed by, or organized under the laws of the State of Israel, or (c) persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Base Lease as of the Effective Date.

10300 OLIVE LLC,
a Missouri limited liability company

By: _____
Name: _____
Title: _____

STATE OF _____)
) SS.
COUNTY OF _____)

On this _____ day of _____, 2024, before me appeared _____, to me personally known, who, being by me duly sworn, did say that s/he is the _____ of **10300 OLIVE LLC**, a Missouri limited liability company, and that s/he is authorized to sign the foregoing instrument on behalf of said company, and acknowledged that s/he executed said instrument as said company's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public in and for said State

My Commission Expires:

PLEASE AFFIX SEAL FIRMLY AND CLEARLY IN THIS BOX

CITY OF CREVE COEUR, MISSOURI

By: _____
Mark Perkins, City Administrator

[SEAL]

ATTEST:

By: _____
Kellie Henke, City Clerk

STATE OF MISSOURI)
) SS.
COUNTY OF ST. LOUIS)

On this _____ day of _____, 2024, before me appeared **MARK PERKINS**, to me personally known, who, being by me duly sworn, did say that he is the City Administrator of the **CITY OF CREVE COEUR, MISSOURI**, a home rule city, and that he is authorized to sign the foregoing instrument on behalf of said city, and acknowledged that he executed said instrument as said city's free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the County and State aforesaid on the day and year last above written.

_____
Name: _____
Notary Public in and for said State

My Commission Expires:

PLEASE AFFIX SEAL FIRMLY AND CLEARLY IN THIS BOX

EXHIBIT A

LEGAL DESCRIPTION OF PROJECT SITE

A TRACT OF LAND BEING PART OF LOTS 9, 10, 11 AND 12 OF MAJOR THOMAS SUBDIVISION, SITUATED IN THE SOUTHWEST QUARTER AND NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 45 NORTH, RANGE 5 EAST, ST. LOUIS COUNTY, MISSOURI, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE WEST RIGHT OF WAY LINE OF STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH-PUBLIC RIGHT OF WAY) BOULEVARD WITH THE NORTH LINE OF LAND NOW OR FORMERLY OF VANTAGE CREDIT UNION, AS RECORDED BY DEED IN BOOK 23850, PAGE 141 OF THE ST. LOUIS COUNTY, MISSOURI RECORDER'S OFFICE;

THENCE ALONG SAID NORTH LINE AND THE NORTH LINE OF SUNSWEPT PLAT 3, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 4 AND SUNSWEPT PLAT 2, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 23, ALL OF SAID RECORDER'S OFFICE, NORTH 89 DEGREES 11 MINUTES 17 SECONDS WEST, A DISTANCE OF 1352.62 FEET TO THE EAST LINE OF LAND NOW OR FORMERLY OF DONALD J AND MARGRETTA CASSMEYER, ETAL, AS RECORDED BY DEED IN BOOK 11070, PAGE 767 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF LAND NOW OR FORMERLY OF JAVED MUHAMMAD ALI AND ALZUBEIDI DUHA, AS RECORDED BY DEED IN BOOK 23726, PAGE 3547; TIMOTHY C TOWNSEND, ETAL, AS RECORDED BY DEED IN BOOK 23562, PAGE 160, ALL OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 12 MINUTES 14 SECONDS EAST, A DISTANCE OF 500.19 FEET TO THE EAST LINE OF SPOEDE HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 54, PAGE 26 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF SPOEDE WOODS, A SUBDIVISION FORMERLY KNOWN AS GAS LIGHT SQUARE, AS RECORDED IN PLAT BOOK 104, PAGE 18 OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 08 MINUTES 11 SECONDS EAST, A DISTANCE OF 831.21 FEET TO THE NORTH LINE OF SAID SPOEDE WOODS; THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 51 MINUTES 14 SECONDS WEST, A DISTANCE OF 826.36 FEET TO THE EAST LINE OF MISSION HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 36 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF RAMBLEWOOD, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 58 AND THE EAST LINE OF LAND NOW OR FORMERLY OF MDC COAST 22 LLC, AS RECORDED BY DEED IN BOOK 25302, PAGE 4186, ALL OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE, THE FOLLOWING COURSES AND DISTANCES: NORTH 01 DEGREES 12 MINUTES 15 SECONDS EAST, A DISTANCE OF 466.53 FEET; NORTH 88 DEGREES 57 MINUTES 33 SECONDS WEST, A DISTANCE OF 51.85 FEET AND NORTH 04 DEGREES 53 MINUTES 33 SECONDS WEST, A DISTANCE OF 682.38 FEET TO

THE SOUTH RIGHT OF WAY LINE OF MISSOURI STATE HIGHWAY 340, A.K.A. OLIVE (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTH RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: ALONG A NON- TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 11,358.19 FEET, WITH A CENTRAL ANGLE OF 00 DEGREES 49 MINUTES 02 SECONDS, WHICH CHORD BEARS SOUTH 89 DEGREES 27 MINUTES 38 SECONDS EAST, A CHORD DISTANCE OF 162.03 FEET, THROUGH AN ARC LENGTH OF 162.03 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 427.12 FEET; NORTH 01 DEGREES 00 MINUTES 53 SECONDS EAST, A DISTANCE OF 20.00 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 723.00 FEET AND SOUTH 86 DEGREES 13 MINUTES 52 SECONDS EAST, A DISTANCE OF 200.26 FEET TO THE SOUTHWEST RIGHT OF WAY TRANSITION BETWEEN STATE HIGHWAY 340 AND STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTHWEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 65 DEGREES 03 MINUTES 50 SECONDS EAST, A DISTANCE OF 328.98 FEET; SOUTH 43 DEGREES 48 MINUTES 52 SECONDS EAST, A DISTANCE OF 413.64 FEET; SOUTH 32 DEGREES 46 MINUTES 12 SECONDS EAST, A DISTANCE OF 248.25 FEET AND SOUTH 11 DEGREES 42 MINUTES 30 SECONDS EAST, A DISTANCE OF 250.82 FEET TO THE WEST RIGHT OF WAY LINE OF THE AFOREMENTIONED LINDBERGH BOULEVARD;

THENCE ALONG SAID WEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 01 DEGREES 00 MINUTES 47 SECONDS EAST, A DISTANCE OF 256.89 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 105.09 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 10.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 30.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 40.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 300.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 10.00 FEET AND SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 847.31 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND CONTAINING 4,171,444 SQUARE FEET OR 95.763 ACRES IS BASED UPON AN ACTUAL URBAN CLASS BOUNDARY SURVEY DONE IN ACCORDANCE WITH THE CURRENT MISSOURI STANDARDS FOR PROPERTY BOUNDARY SURVEYS, SUBJECT TO ALL EASEMENTS, RESTRICTIONS, RESERVATIONS, CONDITIONS OF RECORD AND NOT OF RECORD, IF ANY.

CITY OF CREVE COEUR, MISSOURI,
As Lessor,

AND

10300 OLIVE LLC,
As Lessee

_____

LEASE AGREEMENT

Dated as of _____ 1, 2024

_____

Relating to:

$135,000,000
(Aggregate Maximum Principal Amount)
City of Creve Coeur, Missouri
Taxable Industrial Revenue Bonds
(Olia Village Project)
Series 2024

Certain rights of the City of Creve Coeur, Missouri (the "City"), in this Lease Agreement have been pledged and assigned to UMB Bank, N.A., St. Louis, Missouri, as Trustee under the Trust Indenture dated as of _____ 1, 2024, between the City and the Trustee.

TABLE OF CONTENTS

Page

ARTICLE I

DEFINITIONS

Section 1.1. Definitions of Words and Terms 2
Section 1.2. Rules of Interpretation 2
Section 1.3. Date of Lease 2

ARTICLE II

REPRESENTATIONS

Section 2.1. Representations by the City 2
Section 2.2. Representations by the Fee Owner 3

ARTICLE III

GRANTING PROVISIONS

Section 3.1. Granting of Leasehold Estate 4
Section 3.2. Lease Term 4
Section 3.3. Possession and Use of the Project 4

ARTICLE IV

PURCHASE AND CONSTRUCTION OF THE PROJECT

Section 4.1. Issuance of the Bonds 5
Section 4.2. Purchase and Construction of the Project 5
Section 4.3. Project Costs 5
Section 4.4. Payment for Project Costs 6
Section 4.5. Establishment of Completion Date 6
Section 4.6. Surplus in Project Fund 6
Section 4.7. Non-Project Improvements, Machinery and Equipment Property of the Fee Owner 6

ARTICLE V

RENT PROVISIONS

Section 5.1. Basic Rent 7
Section 5.2. Additional Rent 7
Section 5.3. Obligations of Fee Owner Absolute and Unconditional 8
Section 5.4. Prepayment of Basic Rent 8
Section 5.5. PILOT Payments 9

ARTICLE VI

MAINTENANCE, TAXES AND UTILITIES

Section 6.1. Maintenance and Repairs....9
Section 6.2. Taxes, Assessments and Other Governmental Charges....9
Section 6.3. Utilities....10
Section 6.4. Sales Tax Exemption....10

ARTICLE VII

INSURANCE

Section 7.1. Title Commitment or Report....10
Section 7.2. Casualty Insurance....11
Section 7.3. Liability Insurance....11
Section 7.4. Blanket Insurance Policies....12
Section 7.5. Worker's Compensation....12
Section 7.6. Sovereign Immunity....12

ARTICLE VIII

ALTERATION OF THE PROJECT

Section 8.1. Additions, Modifications and Improvements to the Project....12
Section 8.2. Additional Improvements on the Project Site....12
Section 8.3. Permits and Authorizations....13
Section 8.4. Mechanics' Liens....13
Section 8.5. Notice of Improvements Subject to Bonding Requirements....13

ARTICLE IX

DAMAGE, DESTRUCTION AND CONDEMNATION

Section 9.1. Damage or Destruction....14
Section 9.2. Condemnation....15
Section 9.3. Bondowner Approval....16

ARTICLE X

SPECIAL COVENANTS

Section 10.1. No Warranty of Condition or Suitability by the City; Exculpation and Indemnification .17
Section 10.2. Surrender of Possession....17
Section 10.3. Right of Access to the Project....17
Section 10.4. Granting of Easements; Leasehold Mortgages and Financing Arrangements....17
Section 10.5. Indemnification of City and Trustee....20
Section 10.6. Depreciation and Other Tax Benefits....21
Section 10.7. Fee Owner to Maintain its Existence....21
Section 10.8. Security Interests....21

Section 10.9. Environmental Matters, Warranties, Covenants and Indemnities Regarding Environmental Matters 22

ARTICLE XI

OPTION AND OBLIGATION TO PURCHASE THE PROJECT

Section 11.1. Option to Purchase the Project 23
Section 11.2. Conveyance of the Project 24
Section 11.3. Relative Position of Option and Indenture 24
Section 11.4. Obligation to Purchase the Project 25
Section 11.5. Right to Set-Off 25

ARTICLE XII

DEFAULTS AND REMEDIES

Section 12.1. Events of Default 25
Section 12.2. Remedies on Default 26
Section 12.3. Survival of Obligations 26
Section 12.4. Performance of the Fee Owner's Obligations by the City 26
Section 12.5. Rights and Remedies Cumulative 27
Section 12.6. Waiver of Breach 27
Section 12.7. Trustee's Exercise of the City's Remedies 27

ARTICLE XIII

ASSIGNMENT AND SUBLEASE

Section 13.1. Assignment; Sublease 27
Section 13.2. Assignment of Revenues by City 28
Section 13.3. Prohibition Against Leasehold Mortgage of Project 28
Section 13.4. Restrictions on Sale or Encumbrance of Project by City 28

ARTICLE XIV

AMENDMENTS, CHANGES AND MODIFICATIONS

Section 14.1. Amendments, Changes and Modifications 28

ARTICLE XV

MISCELLANEOUS PROVISIONS

Section 15.1. Notices 29
Section 15.2. City Shall Not Unreasonably Withhold Consents and Approvals 30
Section 15.3. Net Lease 30
Section 15.4. Limitation on Liability of City 31
Section 15.5. Governing Law 31
Section 15.6. Binding Effect; Third-Party Beneficiary 31
Section 15.7. Severability 31

Section 15.8. Execution in Counterparts 31
Section 15.9. Electronic Transaction 31
Section 15.10. City Consents and Approvals 31
Section 15.11. Anti-Discrimination Against Israel Act 32

Signatures and Seal 33

Exhibit A - Project Site
Exhibit B - Form of Requisition Certificate

LEASE AGREEMENT

THIS LEASE AGREEMENT, dated as of _____ 1, 2024 (this "Lease"), between the **CITY OF CREVE COEUR, MISSOURI**, a home rule charter city organized and existing under the laws of the State of Missouri (the "City"), as lessor, and **10300 OLIVE LLC**, a limited liability company organized and existing under the laws of the State of Missouri (the "Fee Owner"), as lessee;

RECITALS:

1. The City is authorized and empowered pursuant to the provisions of Article VI, Section 27(b) of the Missouri Constitution, Sections 100.010 through 100.200, inclusive, of the Revised Statutes of Missouri (collectively, the "Act") and the City Charter to purchase, construct, extend and improve certain projects (as defined in the Act), to issue industrial development revenue bonds for the purpose of providing funds to pay the costs of such projects and to lease or otherwise dispose of such projects to private persons or corporations for manufacturing, commercial, research and development, office industry, warehousing and industrial development purposes upon such terms and conditions as the City deems advisable.

2. Pursuant to the Act, the City Council passed Ordinance No. _____ (the "Ordinance") on _____, 2024, authorizing the City to (a) acquire a leasehold interest in approximately 96 acres of real property located at 10300 Olive Boulevard in the City (as legally described on **Exhibit A**, together with all improvements now or hereafter located thereon, the "Project Site"), and (b) issue its Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024, in the maximum principal amount of $135,000,000 (the "Bonds"), for the purpose of completing site infrastructure improvements, including, without limitation, demolishing a portion of the existing improvements, site clearing and grading, constructing roadways, streets, basins and utilities, and completing associated offsite work (collectively, the "Project Improvements").

3. Pursuant to the Ordinance, the City is authorized to enter into (1) a Trust Indenture of even date herewith (the "Indenture") with UMB Bank, N.A., St. Louis, Missouri, as Trustee (the "Trustee"), for the purpose of issuing and securing the Bonds, as therein provided, (2) a Base Lease of even date herewith (the "Base Lease") with the Fee Owner for the purpose of acquiring a leasehold interest in the Project Site and (3) this Lease with the Fee Owner under which the City will lease the City's interest in the Project Site and the Project Improvements (collectively, the "Project") to the Fee Owner in consideration of rental payments by the Fee Owner that will be sufficient to pay the principal of and interest on the Bonds.

4. In connection with the issuance of the Bonds, the City has agreed to cooperate with the Fee Owner and the contractors for the Project Improvements in acquiring the benefits of sales tax exemption for purchases of materials used to construct the Project Improvements.

5. Pursuant to the foregoing, the City desires to lease the Project to the Fee Owner and the Fee Owner desires to lease the Project from the City, for the rentals and upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the premises and the mutual representations, covenants and agreements herein contained, the receipt and sufficiency of which are hereby acknowledged, the City and the Fee Owner do hereby represent, covenant and agree as follows:

ARTICLE I

DEFINITIONS

Section 1.1. Definitions of Words and Terms. In addition to any words and terms defined elsewhere in this Lease, capitalized words and terms used in this Lease shall have the meanings given to such words and terms in **Section 101** of the Indenture (which definitions are hereby incorporated by reference).

Section 1.2. Rules of Interpretation.

(a) Words of the masculine gender shall be deemed and construed to include correlative words of the feminine and neuter genders.

(b) Unless the context otherwise indicates, words importing the singular number shall include the plural and vice versa, and words importing Persons shall include firms, associations and corporations, including governmental entities, as well as natural Persons.

(c) Wherever in this Lease it is provided that either party shall or will make any payment or perform or refrain from performing any act or obligation, each such provision shall, even though not so expressed, be construed as an express covenant to make such payment or to perform, or not to perform, as the case may be, such act or obligation.

(d) All references in this instrument to designated "Articles," "Sections" and other subdivisions are, unless otherwise specified, to the designated Articles, Sections and other subdivisions of this instrument as originally executed. The words "herein," "hereof," "hereunder" and other words of similar import refer to this Lease as a whole and not to any particular Article, Section or other subdivision.

(e) The Table of Contents and the Article and Section headings of this Lease shall not be treated as a part of this Lease or as affecting the true meaning of the provisions hereof.

(f) Whenever an item or items are listed after the word "including," such listing is not intended to be a listing that excludes items not listed.

Section 1.3. Date of Lease. The dating of this Lease as of _____ 1, 2024, is intended as and for the convenient identification of this Lease only and is not intended to indicate that this Lease was executed and delivered on said date, this Lease being executed and delivered and becoming effective simultaneously with the initial issuance of the Bonds.

ARTICLE II

REPRESENTATIONS

Section 2.1. Representations by the City. The City makes the following representations as the basis for the undertakings on its part herein contained:

(a) The City is a home rule charter city duly organized and validly existing under the laws of the State of Missouri. Under the provisions of the Act, the City has lawful power and authority to enter into the transactions contemplated by this Lease and to carry out its obligations

hereunder. By proper action of the City Council, the City has been duly authorized to execute and deliver this Lease, acting by and through its duly authorized officers.

(b) As of the date of delivery hereof, the City has acquired a leasehold interest in the Project Site from the Fee Owner pursuant to the Base Lease, subject to Permitted Encumbrances. Upon the Completion Date, the Base Lease and this Lease will terminate, and the City will sell its interest in the Project to the Fee Owner, all in furtherance of the public purposes of the Act.

(c) The purchase, construction and improvement of the Project and the leasing of the Project by the City to the Fee Owner will further the public purposes of the Act.

(d) To the City's knowledge, no member of the City Council or any other officer of the City has any significant or conflicting interest, financial, employment or otherwise, in the Fee Owner or in the transactions contemplated hereby.

(e) To finance the costs of the Project, the City proposes to issue the Bonds which will be scheduled to mature as set forth in **Article II** of the Indenture and will be subject to redemption prior to maturity in accordance with the provisions of **Article III** of the Indenture.

(f) The Bonds are to be issued under and secured by the Indenture, pursuant to which the Project and the net earnings therefrom, consisting of all rents, revenues and receipts to be derived by the City from the leasing or sale of the Project, will be pledged and assigned to the Trustee as security for payment of the principal of and interest on the Bonds and amounts owing pursuant to this Lease.

(g) The City will not knowingly take any affirmative action that would permit a lien to be placed on the Project or pledge the revenues derived therefrom for any bonds or other obligations, other than the Bonds, except with the written consent of an Authorized Fee Owner Representative; provided, however, the City's execution of this Lease, the Base Lease, the Indenture and the Redevelopment Agreement shall not be deemed to violate this **Section 2.1(g)**.

(h) The City will not operate the Project as a business or in any other manner except as the lessor thereof; provided, subsequent to an Event of Default hereunder, the City may, but is not obligated to, operate the Project in such manner as the City determines.

Section 2.2. Representations by the Fee Owner. The Fee Owner makes the following representations as the basis for the undertakings on its part herein contained:

(a) The Fee Owner is a limited liability company duly organized, validly existing and in good standing under the laws of the State of Missouri.

(b) The Fee Owner has lawful power and authority to enter into this Lease and to carry out its obligations hereunder, and the Fee Owner has been duly authorized to execute and deliver this Lease, acting by and through its duly authorized officers and representatives.

(c) The execution and delivery of this Lease, the consummation of the transactions contemplated hereby and the performance of or compliance with the terms and conditions of this Lease by the Fee Owner will not, to the best of the Fee Owner's knowledge, (i) conflict with or result in a breach of any of the terms, conditions or provisions of any mortgage, deed of trust, lease or any other restriction, agreement or instrument to which the Fee Owner is a party or by which it

or any of its property is bound, or the Fee Owner's organizational documents, or any order, rule or regulation applicable to the Fee Owner or any of its property of any court or governmental body, or (ii) constitute a default under any of the foregoing, or (iii) result in the creation or imposition of any prohibited lien, charge or encumbrance of any nature whatsoever upon any of the property or assets of the Fee Owner under the terms of any instrument or agreement to which the Fee Owner is a party.

(d) The estimated costs of the purchase, construction and improvement of the Project are in accordance with sound engineering and accounting principles.

(e) The Project will comply in all material respects with all applicable building and zoning, health, environmental and safety orders and laws and all other applicable laws, rules and regulations.

ARTICLE III

GRANTING PROVISIONS

Section 3.1. Granting of Leasehold Estate. The City hereby exclusively rents, leases and lets the Project to the Fee Owner, and the Fee Owner hereby rents, leases and hires the Project from the City, subject to Permitted Encumbrances existing as of the date of the execution and delivery hereof, for the rentals and upon and subject to the terms and conditions herein contained.

Section 3.2. Lease Term. This Lease shall become effective upon its execution and delivery and simultaneously with the initial issuance of the Bonds. Subject to earlier termination pursuant to the provisions of this Lease, the lease of the Project shall terminate on the Completion Date.

Section 3.3. Possession and Use of the Project.

(a) The City covenants and agrees that as long as neither the City nor the Trustee has exercised any of the remedies set forth in **Section 12.2** following the occurrence and continuance of an Event of Default, as defined in **Section 12.1**, the Fee Owner shall have sole and exclusive possession of the Project (subject to Permitted Encumbrances and the City's and the Trustee's right of access pursuant to **Section 10.3**) and shall and may peaceably and quietly have, hold and enjoy the Project during the Lease Term. The City covenants and agrees that it will not take any action, other than expressly pursuant to **Article XII**, to prevent the Fee Owner from having quiet and peaceable possession and enjoyment of the Project during the Lease Term and will, at the request and expense of the Fee Owner, cooperate with the Fee Owner to defend the Fee Owner's quiet and peaceable possession and enjoyment of the Project.

(b) Subject to the provisions of this Section, the Fee Owner shall have the exclusive right to use the Project for any lawful purpose contemplated by the Act and consistent with the terms of the Redevelopment Agreement. The Fee Owner shall comply in all material respects with all statutes, laws, ordinances, orders, judgments, decrees, regulations, directions and requirements of all federal, state, local and other governments or governmental authorities, now or hereafter applicable to the Project, as to the manner of use or the condition of the Project. The Fee Owner shall also comply with the mandatory requirements, rules and regulations of all insurers under the policies carried under the provisions of **Article VII**. The Fee Owner shall pay all costs, expenses, claims, fines, penalties and damages that may in any manner arise out of, or be imposed as a result of, the failure of the Fee Owner to comply with the provisions of this Section. Notwithstanding any provision contained in this Section, however, the Fee Owner may, at

its own cost and expense, contest or review by legal or other appropriate procedures the validity or legality of any such governmental statute, law, ordinance, order, judgment, decree, regulation, direction or requirement, or any such requirement, rule or regulation of an insurer, and during such contest or review the Fee Owner may refrain from complying therewith.

ARTICLE IV

PURCHASE AND CONSTRUCTION OF THE PROJECT

Section 4.1. Issuance of the Bonds. To provide funds for the payment of Project Costs, the City agrees that, upon request of the Fee Owner, it will issue, sell and cause to be delivered the Bonds to the purchaser thereof in accordance with the provisions of the Indenture and the Bond Purchase Agreement.

Section 4.2. Purchase and Construction of the Project. The City and the Fee Owner agree that the Project will be implemented as follows:

(a) The City will acquire a leasehold interest in the Project Site at the execution hereof. Concurrently with the execution of this Lease, (i) the Base Lease will be executed by the City and the Fee Owner and placed of record, and (ii) the commitment for title insurance or ownership and encumbrance report required by **Article VII** will be delivered to the City.

(b) On behalf of the City, the Fee Owner will purchase, construct and improve, or will cause the purchase, construction and improvement of, the Project Improvements on the Project Site and otherwise improve the Project Site in accordance with the Plans and Specifications. The Fee Owner may revise the Plans and Specifications from time to time as it deems necessary to carry out the Project, but revisions that would alter the intended purpose of the Project may be made only with the prior written approval of the City. The Fee Owner agrees that the aforesaid construction and improvement will, with such changes and additions as may be made hereunder, result in facilities suitable for the Fee Owner, and that all real and personal property described in the Plans and Specifications, with such changes and additions as may be made hereunder, is desirable and appropriate in connection with the Project. The provisions of this paragraph are in addition to and do not supersede the provisions of **Section 8.2**.

(c) The Fee Owner will comply and cause others to comply with the provisions of Section 107.170 of the Revised Statutes of Missouri ("Section 107.170") to the extent applicable to the construction of the Project.

(d) The Fee Owner may enter into one or more construction contracts to complete the Project. All construction contracts entered into by or on behalf of the Fee Owner shall (i) not allow for recourse against the City by a contractor in connection with the contractor's construction of the applicable portion of the Project and (ii) include an acknowledgment that the contractor may not perfect a mechanic's lien against the City (although such acknowledgment does not preclude the contractor from perfecting a mechanic's lien against the Fee Owner's leasehold interest in the Project).

Section 4.3. Project Costs. The City hereby agrees to pay for, but solely from the Project Fund, and hereby authorizes and directs the Trustee to pay for, but solely from the Project Fund, all Project Costs upon receipt by the Trustee of requisition certificates pursuant to **Section 4.4**. The Fee Owner may

not submit any requisition certificates for Project Costs incurred after the Completion Date. The maximum amount of Project Costs for which requisition certificates may be submitted is $135,000,000.

Section 4.4. Payment for Project Costs.

(a) The City hereby authorizes and directs the Trustee to make disbursements from the Project Fund and to endorse the Bonds, if the Trustee is holding the Bonds, upon receipt by the Trustee of requisition certificates in substantially the form of **Exhibit B**, signed by an Authorized Fee Owner Representative and approved by an Authorized City Representative. The Fee Owner agrees that the information in each requisition certificate will be accurate in all respects when given and that the Fee Owner will notify the City and the Trustee if the Fee Owner becomes aware of any material inaccuracies in a requisition certificate after it is given.

(b) The Trustee may rely conclusively on each such requisition certificate and shall not be required to make any independent inspection or investigation in connection therewith. The approval of any requisition certificate by an Authorized Fee Owner Representative and an Authorized City Representative shall constitute, unto the Trustee, an irrevocable determination that all conditions precedent to the payments requested have been completed.

Section 4.5. Establishment of Completion Date. The Completion Date shall be evidenced to the City and the Trustee by a certificate signed by an Authorized Fee Owner Representative stating (a) that the purchase and construction of the Project have been completed in accordance with the Plans and Specifications, (b) the date of completion thereof and (c) that all costs and expenses of the purchase and construction of the Project have been incurred. Notwithstanding the foregoing, such certificate shall be deemed executed and filed on March 31, 2026 if not actually filed with the City by such date, subject to any delay permitted by **Section 3.7** of the Redevelopment Agreement (an "Excusable Delay"). No Excusable Delay shall be deemed to exist unless the Fee Owner provides a written notice to the City, within 30 days after the Fee Owner has actual notice of the claimed event, specifying the Excusable Delay. In no event shall an Excusable Delay extend the Completion Date beyond December 31, 2026. The Fee Owner and the City agree to cooperate in causing such certificate to be furnished to the Trustee.

Section 4.6. Surplus in Project Fund. On or promptly after the Completion Date, the Trustee shall, as provided in **Section 504** of the Indenture, transfer any remaining moneys then in the Project Fund to the Bond Fund to be applied as directed by the Fee Owner solely (a) to the payment of principal and premium, if any, of the Bonds through the payment (including regularly scheduled principal payments, if any) or redemption thereof at the earliest date permissible under the terms of the Indenture, or (b) at the option of the Fee Owner, to the purchase of Bonds at such earlier date or dates as the Fee Owner may elect. Any amount so deposited in the Bond Fund may be invested as permitted by **Section 702** of the Indenture.

Section 4.7. Non-Project Improvements, Machinery and Equipment Property of the Fee Owner. Any improvements or items of machinery or equipment that do not constitute a part of the Project Improvements and the entire purchase price of which is paid for by the Fee Owner with its own funds, and no part of the purchase price of which is paid for from funds deposited pursuant to the terms of this Lease in the Project Fund, shall be the property of the Fee Owner and shall not constitute a part of the Project.

ARTICLE V

RENT PROVISIONS

Section 5.1. Basic Rent. The Fee Owner covenants and agrees to pay to the Trustee in same day funds for the account of the City during the Lease Term, on or before 11:00 a.m., Trustee's local time, on each Payment Date, as Basic Rent for the Project, an amount which, when added to any collected funds then on deposit in the Bond Fund and available for the payment of principal of the Bonds and the interest thereon on such Payment Date, shall be equal to the amount payable on such Payment Date as principal of the Bonds and the interest thereon as provided in the Indenture. Except as offset pursuant to the right of the Fee Owner set forth below, all payments of Basic Rent provided for in this Section shall be paid directly to the Trustee and shall be deposited in accordance with the provisions of the Indenture into the Bond Fund and shall be used and applied by the Trustee in the manner and for the purposes set forth in this Lease and the Indenture. In furtherance of the foregoing, and notwithstanding any other provision in this Lease, the Base Lease, the Indenture or the Bond Purchase Agreement to the contrary, and provided that the Fee Owner (or any Financing Party) is the sole holder of the Bonds, the Fee Owner, as lessee, may set-off its obligation to the City to pay Basic Rent under this Lease against the City's obligation to the Fee Owner (or such Financing Party), as bondholder, to pay principal of and interest on the Bonds under the Indenture in lieu of delivery of the Basic Rent on any Payment Date, without providing notice of such set-off to the Trustee. The Trustee may conclusively rely on the absence of any written notice from the Fee Owner to the contrary as evidence that such set-off has occurred and that pursuant to the set-off, the Fee Owner, as lessee, is deemed to have paid its obligation to the City to pay Basic Rent under this Lease and the City is deemed to have paid its obligation to the Fee Owner (or such Financing Party), as bondholder, to pay principal of and interest on the Bonds under the Indenture. On the final Payment Date, the Fee Owner will (a) if the Trustee holds the Bonds, notify the Trustee of the Bonds not previously paid that are to be canceled or (b) if an entity other than the Trustee holds the Bonds, deliver or cause to be delivered to the Trustee for cancellation Bonds not previously paid. The Fee Owner shall receive a credit against the Basic Rent payable by the Fee Owner in an amount equal to the principal amount of the Bonds so tendered for cancellation plus accrued interest thereon.

Section 5.2. Additional Rent. The Fee Owner shall pay or cause to be paid as Additional Rent, within 30 days after receiving an itemized invoice therefor, the following amounts:

(a) all reasonable fees, charges and expenses, including agent and counsel fees and expenses, of the City, the Trustee and the Paying Agent incurred under or arising from the Indenture, the Base Lease or this Lease, including but not limited to (i) claims by contractors or subcontractors, as and when the same becomes due, (ii) any disposition of this Lease pursuant to **Article XIII** and (iii) the review and execution of any Financing Documents;

(b) all costs incident to the issuance of the Bonds (which are to be paid on the Closing Date), including all fees, charges and expenses of the City, the City Attorney and bond counsel, and the payment of the principal of and interest on the Bonds as the same becomes due and payable, including all costs and expenses in connection with the call, redemption and payment of all Outstanding Bonds;

(c) all reasonable fees, charges and expenses incurred in connection with the enforcement of any rights under this Lease, the Base Lease or the Indenture by the City, the Trustee or the Owners, including counsel fees and expenses;

(d) to the extent the St. Louis County Assessor determines that the Project is not subject to ad valorem taxes in any calendar year the Project Site is leased to the City pursuant to the Base Lease, including, if applicable, the calendar year in which the Base Lease and this Lease are terminated, payments in lieu of taxes ("PILOT Payments"), in an amount equal to 100% of the actual real property taxes that would otherwise be payable on the Project, but for the City's interest therein, to be paid as provided in **Section 5.5**; and

(e) all other payments of whatever nature that the Fee Owner has agreed in writing to pay or assume under the provisions of this Lease or the Indenture.

Section 5.3. Obligations of Fee Owner Absolute and Unconditional.

(a) The obligations of the Fee Owner under this Lease to make payments of Basic Rent and Additional Rent on or before the date the same becomes due and to perform all of its other obligations, covenants and agreements hereunder shall be absolute and unconditional, without notice or demand, and without abatement, deduction, set-off (except as provided in **Section 5.1** and **Section 11.5**), counterclaim, recoupment or defense or any right of termination or cancellation arising from any circumstance whatsoever, whether now existing or hereafter arising, and irrespective of whether the Project has been started or completed, or whether the City's interest therein or in any part thereof is defective or nonexistent, and notwithstanding any damage to, or loss, theft or destruction of, the Project or any part thereof, any failure of consideration or frustration of commercial purpose, the taking by eminent domain of title to or the right of temporary use of all or any part of the Project, legal curtailment of the Fee Owner's use thereof, the eviction or constructive eviction of the Fee Owner, any change in the tax or other laws of the United States of America, the State of Missouri or any political subdivision thereof, any change in the City's legal organization or status, or any default of the City hereunder, and regardless of the invalidity of any action of the City; provided, however, that nothing in this Section is intended or shall be deemed to affect or impair in any way the rights of the Fee Owner to tender Bonds for redemption in satisfaction of Basic Rent as provided in **Section 5.1** and **Section 5.4**, or the right of the Fee Owner to terminate this Lease and purchase the Project as provided in **Article XI**.

(b) Nothing in this Lease shall be construed to release the City from the performance of any agreement on its part herein contained or as a waiver by the Fee Owner of any rights or claims the Fee Owner may have against the City under this Lease or otherwise, but any recovery upon such rights and claims shall be had from the City separately, it being the intent of this Lease that the Fee Owner shall be unconditionally and absolutely obligated to perform fully all of its obligations, agreements and covenants under this Lease (including the obligation to pay Basic Rent and Additional Rent) for the benefit of the Owners and the City. The Fee Owner may, however, at its own cost and expense and in its own name or in the name of the City, prosecute or defend any action or proceeding or take any other action involving third Persons which the Fee Owner deems reasonably necessary in order to secure or protect its rights of possession, occupancy and use hereunder, and in such event the City hereby agrees, at the Fee Owner's expense, to cooperate fully with the Fee Owner and to take all action necessary to effect the substitution of the Fee Owner for the City in any such action or proceeding if the Fee Owner shall so request.

Section 5.4. Prepayment of Basic Rent.

(a) The Fee Owner may at any time and from time to time prepay all or any part of the Basic Rent provided for hereunder (subject to the limitations of **Section 301(a)** of the Indenture relating to the partial redemption of the Bonds). During such times as the amount held by the Trustee in the Bond Fund shall be sufficient to pay, at the time required, the principal of and interest on all the Bonds then-remaining

unpaid, the Fee Owner shall not be obligated to make payments of Basic Rent under the provisions of this Lease.

(b) At its option, the Fee Owner may deliver to the Trustee for cancellation Bonds owned by the Fee Owner and not previously paid, and the Fee Owner shall receive a credit against amounts payable by the Fee Owner for the redemption of Bonds in an amount equal to the principal amount of the Bonds so tendered for cancellation, plus accrued interest thereon.

Section 5.5. PILOT Payments. The parties intend for there to be no property tax abatement on the Project by virtue of the issuance of the Bonds and the execution of the Base Lease and this Lease. If, nevertheless, the St. Louis County Assessor determines that the Project or any portion thereof is not subject to ad valorem taxes, the City will notify the Fee Owner of any PILOT Payments due hereunder. The Fee Owner covenants and agrees to make such PILOT Payments on or before December 31 of each year during the term of this Lease. Each PILOT Payment shall be payable the Collector of Revenue of St. Louis County. The Collector of Revenue shall, after deducting its customary fee for collection thereof, divide each PILOT Payment among the taxing jurisdictions in proportion to their respective then-current ad valorem tax levies. The amount of any PILOT Payments due in any year, together with any other taxes due with respect to the Project, shall not collectively exceed the amount of ad valorem property taxes that would have been due with respect to the Project had the City not acquired a leasehold interest therein.

ARTICLE VI

MAINTENANCE, TAXES AND UTILITIES

Section 6.1. Maintenance and Repairs. Throughout the Lease Term the Fee Owner shall, at its own expense, keep the Project in reasonably safe operating condition and keep the Project in good repair, reasonable wear, tear, depreciation and obsolescence excepted, making from time to time all repairs thereto and renewals and replacements thereof it determines to be necessary. Without limiting the generality of the foregoing, the Fee Owner shall at all times remain in compliance with all provisions of the City's code relating to maintenance and appearance. The Fee Owner shall also comply with **Section 8.5**.

Section 6.2. Taxes, Assessments and Other Governmental Charges.

(a) Subject to subsection (b) of this Section, the Fee Owner shall promptly pay and discharge, as the same becomes due, all taxes and assessments, general and special, and other governmental charges of any kind whatsoever that may be lawfully taxed, charged, levied, assessed or imposed upon or against or be payable for or in respect of the Project, or any part thereof or interest therein (including the leasehold estate of the Fee Owner therein), or any buildings, improvements, machinery and equipment at any time installed on the Project Site by the Fee Owner, or the income therefrom, including any new taxes and assessments not of the kind enumerated above to the extent that the same are lawfully made, levied or assessed in lieu of or in addition to taxes or assessments now customarily levied against real or personal property, and further including all utility charges, assessments and other general governmental charges and impositions whatsoever, foreseen or unforeseen, which if not paid when due would impair the security of the Bonds or encumber the City's interest in the Project; provided that with respect to any special assessments or other governmental charges that are lawfully levied and assessed which may be paid in installments, the Fee Owner shall be obligated to pay only such installments thereof as become due and payable during the Lease Term.

(b) The Fee Owner may, in its own name or in the City's name, contest the validity or amount of any tax, assessment or other governmental charge which the Fee Owner is required to bear, pay and discharge pursuant to the terms of this Article by appropriate legal proceedings instituted at least 10 days before the tax, assessment or other governmental charge complained of becomes delinquent if and provided the Fee Owner (i) before instituting any such contest, gives the City written notice of its intention to do so, (ii) diligently prosecutes such contest, (iii) at all times effectively stays or prevents any official or judicial sale of the Project, or any part thereof or interest therein, under execution or otherwise, (iv) promptly pays any final judgment enforcing the tax, assessment or other governmental charge so contested and (v) thereafter promptly procures record release or satisfaction thereof. The City agrees to cooperate fully with the Fee Owner in connection with any and all administrative or judicial proceedings related to any tax, assessment or other governmental charge. The Fee Owner shall save and hold harmless the City from any costs and expenses the City may incur related to any of the above.

(c) Nothing in this Lease shall be construed to require the Fee Owner to make duplicate tax payments or PILOT Payments. The Fee Owner shall receive a credit against the PILOT Payments to be made by the Fee Owner hereunder to the extent that any ad valorem taxes imposed with respect to the Project are paid pursuant to this Section.

Section 6.3. Utilities. All utilities and utility services used by the Fee Owner in, on or about the Project shall be paid by the Fee Owner and shall be contracted by the Fee Owner in the Fee Owner's own name, and the Fee Owner shall, at its sole cost and expense, procure any and all permits, licenses or authorizations necessary in connection therewith.

Section 6.4. Sales Tax Exemption. The City will provide a project exemption certificate (i.e., a Missouri Department of Revenue Project Exemption Certificate, Form 5060) to the Fee Owner, which may be used by related entities and their respective contractors and subcontractors to purchase and pay for, exempt from sales tax, certain construction materials to be incorporated into or used up in the Project. The Fee Owner agrees to make, and to cause related entities and their respective contractors and subcontractors to make, such purchases in compliance with the provisions of Section 144.062 of the Revised Statutes of Missouri. Such construction materials may only include tangible personal property and materials that can only be used for the Project and that are actually used up or consumed in constructing the Project. Except as provided in the prior sentences, the acquisition and construction of the Project shall not be exempt from any sales taxes imposed by any governmental authority by virtue of the City's leasehold interest therein, and neither the City nor the Fee Owner will request any such exemption. Nothing herein shall limit the Fee Owner's right to any exemption of sales taxes not resulting from the City's leasehold interest in the Project. The Fee Owner has no right to use the project exemption certificate after the Completion Date.

ARTICLE VII

INSURANCE

Section 7.1. Title Commitment or Report. Before the effective date hereof, the Fee Owner will purchase, from a title insurance company reasonably acceptable to the City, a commitment for title insurance or provide such other report in a form reasonably acceptable to the City Attorney showing the ownership of and encumbrances on the Project Site. A copy of such report shall be provided to the City.

Section 7.2. Casualty Insurance.

(a) Prior to commencement of construction of the Project Improvements, the Fee Owner shall at its sole cost and expense obtain and shall maintain throughout the Lease Term a policy or policies of insurance (including, if appropriate, builder's risk insurance) to keep the Project constantly insured against loss or damage by fire, lightning and all other risks covered by the extended coverage insurance endorsement then in use in the State of Missouri in an amount equal to the Full Insurable Value thereof (subject to reasonable loss deductible provisions). The insurance required pursuant to this Section shall be maintained with a generally recognized responsible insurance company or companies authorized to do business in the State of Missouri or generally recognized international insurers or reinsurers with an A.M. Best rating of not less than "A-" or the equivalent thereof as may be selected by the Fee Owner. Copies of such policies shall be furnished to the City and the Trustee prior to commencement of construction of the Project Improvements and promptly after renewal of each insurance policy. All such policies of insurance pursuant to this Section, and all renewals thereof, shall name the Fee Owner, the City and the Trustee as insureds, as their respective interests may appear, shall name the Trustee as loss payee and, to the extent such agreement is available from the insurer, shall contain an agreement by the insurer that, notwithstanding any right of cancellation reserved to such insurer, such policy or contract shall continue in force for at least 30 days after written notice of cancellation is given to the City, the Fee Owner, the Trustee and each other insured or loss payee named therein. The Trustee's sole duty with respect to the Fee Owner's compliance with the insurance requirements hereunder shall be to receive copies of the insurance policies required by this Section and to hold the same solely as repository for the benefit of the Owners. The Trustee makes no representation as to, and shall have no responsibility for the sufficiency or adequacy of, the insurance.

(b) In the event of loss of or damage to the Project, the Net Proceeds of casualty insurance carried pursuant to this Section shall be, subject to the rights of each Financing Party under the Financing Documents (if any), and unless otherwise provided by law, (i) paid over to the Trustee and applied as provided in **Article IX**, or (ii) applied as directed in writing by, or on behalf of, the Owners of 100% in principal amount of the Bonds Outstanding.

Section 7.3. Liability Insurance.

(a) The Fee Owner shall at its sole cost and expense maintain or cause to be maintained at all times during the Lease Term commercial general liability insurance (including but not limited to coverage for operations, contingent liability, operations of subcontractors, completed operations and contractual liability), under which the City, the Fee Owner and the Trustee shall be named as additional insureds, properly protecting and indemnifying the City and the Trustee, in an amount not less than the limits of liability set by Section 537.610 of the Revised Statutes of Missouri (subject to reasonable loss deductible clauses not to exceed the amounts normally or generally carried by the Fee Owner). All such policies of insurance pursuant to this Section, and all renewals thereof, shall, to the extent such agreement is available from the insurer, contain an agreement by the insurer that, notwithstanding any right of cancellation reserved to such insurer, such policy or contract shall continue in force for at least 30 days after written notice of cancellation is given to the Fee Owner, the City, the Trustee and each other insured named therein. Copies of such policies shall be furnished to the City and the Trustee on the date of execution of this Lease and promptly after renewal of each insurance policy. The Trustee's sole duty with respect to the Fee Owner's compliance with the insurance requirements hereunder shall be to receive copies of the insurance policies required by this Section and to hold the same solely as repository for the benefit of the Owners. The Trustee makes no representation as to, and shall have no responsibility for the sufficiency or adequacy of, the insurance.

(b) In the event of a general liability occurrence, the Net Proceeds of liability insurance carried pursuant to this Section shall be applied toward the extinguishment or satisfaction of the liability with respect to which such proceeds have been paid.

Section 7.4. Blanket Insurance Policies. The Fee Owner may satisfy any of the insurance requirements set forth in this Article by using blanket policies of insurance, provided each and all of the requirements and specifications of this Article respecting insurance are complied with.

Section 7.5. Worker's Compensation. The Fee Owner agrees throughout the Lease Term to maintain or cause to be maintained the worker's compensation coverage required by the laws of the State of Missouri.

Section 7.6. Sovereign Immunity. Notwithstanding anything to the contrary contained herein, nothing in this Lease shall be construed to broaden the liability of the City beyond the provisions of Sections 537.600 to 537.610 of the Revised Statutes of Missouri or abolish or waive any defense at law that might otherwise be available to the City or its officers, agents and employees.

ARTICLE VIII

ALTERATION OF THE PROJECT

Section 8.1. Additions, Modifications and Improvements to the Project. The Fee Owner may make such additions, modifications and improvements in and to any part of the Project as the Fee Owner from time to time may deem necessary or desirable for its business purposes. All additions, modifications and improvements made by the Fee Owner pursuant to this Section shall (a) be made in a good and workmanlike manner and shall comply in all respects with all laws, orders and ordinances applicable thereto and (b) when commenced, be prosecuted to completion with due diligence. Any such additions, modifications and improvements shall be subject to ad valorem taxes, or if for any reason the St. Louis County Assessor determines that such additions, modifications and improvements are not subject to ad valorem taxes, the Fee Owner shall, in accordance with **Section 5.5**, make PILOT Payments in an amount equal to the taxes that would otherwise be due, but for the City's interest therein, unless otherwise agreed to by the City.

Section 8.2. Additional Improvements on the Project Site. Subject to **Section 8.5**, the Fee Owner may, at its sole cost and expense, construct on the Project Site such additional buildings and improvements as the Fee Owner from time to time may deem necessary or desirable for its business purposes. All additional buildings and improvements constructed on the Project Site by the Fee Owner, and not paid for with Bond proceeds, pursuant to the authority of this Section shall not be included as Project Improvements and, during the life of this Lease, shall remain the property of the Fee Owner and may be added to, altered or razed and removed by the Fee Owner at any time. All additional buildings and improvements shall be made in a good and workmanlike manner and shall comply in all respects with all laws, orders and ordinances applicable thereto and when commenced shall be prosecuted to completion with due diligence. The Fee Owner covenants and agrees (a) to make any repairs and restorations required to be made to the Project because of the construction of, addition to, alteration or removal of said additional buildings or improvements, and (b) to promptly and with due diligence either raze and remove or repair, replace or restore any of said additional buildings and improvements as may from time to time be damaged by fire or other casualty. The Fee Owner shall pay all ad valorem taxes and assessments payable with respect to such additional buildings and improvements which remain the property of the Fee Owner. If for any reason the St. Louis County Assessor determines that such additional buildings and improvements are

not subject to ad valorem taxes, the Fee Owner shall, in accordance with **Section 5.5**, make PILOT Payments in an amount equal to the taxes that would otherwise be due on such additional buildings and improvements, unless otherwise agreed to by the City.

Section 8.3. Permits and Authorizations. The Fee Owner shall not do or permit others under its control to do any work on the Project or any repair, rebuilding, restoration, replacement, modification or addition to the Project, or any part thereof, unless all requisite municipal and other governmental permits and authorizations shall have been first procured. The City agrees to act promptly on all requests for such municipal permits and authorizations. All such work shall be done in a good and workmanlike manner and shall comply in all respects with all applicable building and zoning laws and governmental regulations and requirements, and in accordance with the requirements, rules and regulations of all insurers under the policies required to be carried under the provisions of **Article VII**.

Section 8.4. Mechanics' Liens.

(a) The Fee Owner will not directly or indirectly create, incur, assume or suffer to exist any lien on or with respect to the Project, or any part thereof, except Permitted Encumbrances, and the Fee Owner shall promptly notify the City of the imposition of any such lien of which the Fee Owner is aware and shall promptly, at its own expense, take such action as may be necessary to fully discharge or release any such lien. Whenever and as often as any mechanics' or other similar lien is filed against the Project, or any part thereof, purporting to be for or on account of any labor done or services or materials furnished in connection with any work in or about the Project, the Fee Owner shall discharge the same of record. Notice is hereby given that the City shall not be liable for any labor, services or materials furnished to the Fee Owner or anyone claiming by, through or under the Fee Owner upon credit, and that no mechanics' or other similar lien for any such labor, services or materials shall attach to or affect the reversionary or other estate of the City in and to the Project, or any part thereof.

(b) Notwithstanding paragraph (a) above, and subject to the terms of any Financing Documents executed by the Fee Owner in favor and for the benefit of any Financing Party, the Fee Owner may contest any such mechanics' or other similar lien if the Fee Owner (i) within 60 days after the Fee Owner becomes aware of any such lien notifies the City and the Trustee in writing of its intention to do so, (ii) diligently prosecutes such contest, (iii) at all times effectively stays or prevents any official or judicial sale of the Project, or any part thereof or interest therein, under execution or otherwise, (iv) promptly pays or otherwise satisfies any final judgment adjudging or enforcing the contested lien claim and (v) thereafter promptly procures record release or satisfaction thereof. The Fee Owner may permit the lien so contested to remain unpaid during the period of such contest and any appeal therefrom unless the Fee Owner is notified by the City that, in the opinion of counsel, by nonpayment of any such items, the interest of the City in the Project will be subject to loss or forfeiture. In that event, the Fee Owner shall promptly, at its own expense, take such action as may be reasonably necessary to duly discharge or remove any such lien, charge, encumbrance or claim if the same shall arise at any time. The Fee Owner shall defend and save and hold harmless the City from any loss, cost or expense the City may incur related to any such contest. The Fee Owner shall reimburse the City for any expense incurred by it in connection with the imposition of any such lien or the discharge or removal of any such lien, charge, encumbrance or claim. The City shall cooperate fully with the Fee Owner in any such contest.

Section 8.5. Notice of Improvements Subject to Bonding Requirements. The Fee Owner shall notify the City in writing of any portion of the Project or any repair, renovation, modification or improvement thereto that is subject to Section 107.170 or any other law requiring payment or performance bonds for such work prior to beginning construction of the applicable portion of the Project or making such repair, renovation, modification or improvement. The failure to provide the written notification required

by this Section will not be deemed to be a material breach of this Lease. However, the Fee Owner agrees and acknowledges that (a) the City and its governing body members, officers, agents and employees shall be fully indemnified by the Fee Owner, as provided in **Section 10.5**, against any claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, arising from the Fee Owner's failure to provide the written notice as required by this Section or to secure any payment or performance bonds required by Section 107.170 or other applicable law and (b) the Fee Owner's leasehold interest under this Lease may be subject to mechanics' or other similar liens, which the Fee Owner shall promptly resolve in accordance with **Section 8.4**.

ARTICLE IX

DAMAGE, DESTRUCTION AND CONDEMNATION

Section 9.1. Damage or Destruction.

(a) If the Project is damaged or destroyed by fire or any other casualty, whether or not covered by insurance, the Fee Owner, as promptly as practicable, shall either (i) make the determination described in subsection (f) below, or (ii) repair, restore, replace or rebuild the same so that upon completion of such repairs, restoration, replacement or rebuilding the Project is of a value not less than the value thereof immediately before the occurrence of such damage or destruction or, at the Fee Owner's option, construct upon the Project Site new buildings and improvements, together with all new machinery, equipment and fixtures that are either to be attached to or are to be used in connection with the operation or maintenance thereof, provided that (A) the value thereof shall not be less than the value of such destroyed or damaged Project immediately before the occurrence of such damage or destruction and (B) the nature of such new buildings, improvements, machinery, equipment and fixtures will not impair the character of the Project as an enterprise permitted by the Act.

If the Fee Owner elects to construct any such new buildings and improvements, then for all purposes of this Lease, any reference to the words "Project Improvements" shall be deemed to also include any such new buildings and improvements and all additions thereto and all replacements and alterations thereof.

Unless the Fee Owner makes the determination described in subsection (f) below, the Net Proceeds of casualty insurance required by **Article VII** received with respect to such damage to or loss of the Project shall be used, unless otherwise provided by law, to pay the cost of repairing, restoring, replacing or rebuilding the Project or any part thereof. Insurance monies in an amount less than $5,000,000 may be paid to or retained by the Fee Owner to be held in trust and used as provided herein. Insurance monies in an amount of $5,000,000 or more shall be (i) paid to the Trustee, deposited in the Project Fund and disbursed as provided in **Section 4.4** to pay the cost of repairing, restoring, replacing or rebuilding the Project or any part thereof, or (ii) applied as directed in writing by, or on behalf of, the Owners of 100% in principal amount of the Bonds Outstanding. If the Fee Owner makes the determination described in subsection (f) below, the Net Proceeds shall be deposited with the Trustee and used to redeem Bonds as provided in subsection (f).

(b) If any of the insurance monies paid by the insurance company as hereinabove provided remain after the completion of such repairs, restoration, replacement or rebuilding, and this Lease has not been terminated, the excess shall be deposited in the Bond Fund, except as otherwise provided by law. If the Net Proceeds are insufficient to pay the entire cost of such repairs, restoration, replacement or rebuilding, the Fee Owner shall pay the deficiency.

(c) Except as otherwise provided in this Lease, in the event of any such damage by fire or any other casualty, the provisions of this Lease shall be unaffected and the Fee Owner shall remain and continue to be liable for the payment of all Basic Rent and Additional Rent and all other charges required hereunder to be paid by the Fee Owner, as though no damage by fire or any other casualty has occurred.

(d) The City and the Fee Owner agree that they will cooperate with each other, to such extent as such other party may reasonably require, in connection with the prosecution or defense of any action or proceeding arising out of, or for the collection of any insurance monies that may be due in the event of, any loss or damage, and that they will execute and deliver to such other party such instruments as may be required to facilitate the recovery of any insurance monies.

(e) The Fee Owner agrees to give prompt written notice to the City, each Financing Party and the Trustee of all fires and other casualties occurring in, on, at or about the Project Site causing (in the Fee Owner's opinion) damage of more than $5,000,000.

(f) If the Fee Owner determines that repairing, restoring, replacing or rebuilding the Project or any part thereof is not practicable or desirable, or if the Fee Owner does not have the right under any Financing Document to use any Net Proceeds for repair or restoration of the Project or any part thereof, any Net Proceeds of casualty insurance required by **Article VII** received with respect to such damage or loss shall, after payment of all Additional Rent then due and payable, be paid into the Bond Fund and used to redeem Bonds on the earliest practicable redemption date or to pay the principal of any Bonds as the same becomes due. The Fee Owner agrees to be reasonable in exercising its judgment pursuant to this subsection (f). Alternatively, if the Fee Owner is the sole Owner of the Bonds and it has determined that repairing, restoring, replacing or rebuilding the Project or any part thereof is not practicable or desirable, it may tender Bonds to the Trustee for cancellation in a principal amount equal to the Net Proceeds of the casualty insurance and retain such proceeds for its own account.

(g) The Fee Owner shall not, by reason of its inability to use all or any part of the Project during any period in which the Project is damaged or destroyed or is being repaired, restored, replaced or rebuilt, nor by reason of the payment of the costs of such repairing, restoring, replacing or rebuilding, be entitled to any reimbursement from the City, the Trustee or the Owners or to any abatement or diminution of the rentals payable by the Fee Owner under this Lease or of any other obligations of the Fee Owner under this Lease except as expressly provided in this Section.

(h) The rights of the City and the Trustee in and to any Net Proceeds are and will at all times be subject to the rights of each Financing Party under the Financing Documents (if any) with respect to such Net Proceeds.

Section 9.2. Condemnation.

(a) If during the Lease Term, title to, or the temporary use of, all or any part of the Project is condemned by or sold under threat of condemnation to any authority possessing the power of eminent domain, to such extent that the claim or loss resulting from such condemnation is greater than $5,000,000, the Fee Owner shall, within 90 days after the date of entry of a final order in any eminent domain proceedings granting condemnation or the date of sale under threat of condemnation, notify the City, the Trustee and each Financing Party under the Financing Documents (if any) in writing as to the nature and extent of such condemnation or loss of title and whether it is practicable and desirable to acquire or construct substitute improvements.

(b) If the Fee Owner determines that such substitution is practicable and desirable, the Fee Owner shall proceed promptly with and complete with reasonable dispatch the acquisition or construction of such substitute improvements, so as to place the Project in substantially the same condition as existed before the exercise of the power of eminent domain, including the acquisition or construction of other improvements suitable for the Fee Owner's operations at the Project (which improvements will be deemed a part of the Project and available for use and occupancy by the Fee Owner without the payment of any rent other than herein provided, to the same extent as if such other improvements were specifically described herein and demised hereby); provided, that such improvements will be acquired by the City subject to no liens, security interests or encumbrances before the lien and/or security interest afforded by the Indenture and this Lease other than Permitted Encumbrances. In such case, any Net Proceeds received from any award or awards with respect to the Project or any part thereof made in such condemnation or eminent domain proceedings, or of the sale proceeds, shall be applied in the same manner as provided in **Section 9.1** (with respect to the receipt of casualty insurance proceeds).

(c) If the Fee Owner determines that it is not practicable or desirable to acquire or construct substitute improvements, or if the Fee Owner does not have the right under any Financing Document to use any Net Proceeds of condemnation awards received by the Fee Owner, then any Net Proceeds of condemnation awards received by the Fee Owner shall, after payment of all Additional Rent then due and payable, be paid into the Bond Fund and used to redeem Bonds on the earliest practicable redemption date or to pay the principal of any Bonds as the same becomes due and payable, all subject to the rights of each Financing Party under the Financing Documents (if any). Alternatively, if the Fee Owner is the sole Owner of the Bonds and it has determined that acquiring and constructing substitute improvements is not practicable or desirable, it may tender Bonds to the Trustee for cancellation in a principal amount equal to the Net Proceeds of any condemnation award and retain such proceeds for its own account.

(d) The Fee Owner shall not, by reason of its inability to use all or any part of the Project during any such period of acquisition or restoration nor by reason of the payment of the costs of such acquisition or restoration, be entitled to any reimbursement from the City, the Trustee or the Owners or to any abatement or diminution of the rentals payable by the Fee Owner under this Lease or of any other obligations of the Fee Owner under this Lease except as expressly provided in this Section.

(e) The City shall cooperate fully with the Fee Owner in the handling and conduct of any prospective or pending condemnation proceedings with respect to the Project or any part thereof, and shall, to the extent it may lawfully do so, permit the Fee Owner to litigate in any such proceedings in the name and on behalf of the City. In no event will the City voluntarily settle or consent to the settlement of any prospective or pending condemnation proceedings with respect to the Project or any part thereof without the prior written consent of the Fee Owner and each Financing Party (if any).

Section 9.3. Bondowner Approval. Notwithstanding anything to the contrary contained in this **Article IX**, the proceeds of any insurance received subsequent to a casualty or of any condemnation proceedings (or threats thereof) may before the application thereof by the City or the Trustee be applied as directed in writing by the Owners of 100% of the principal amount of Bonds Outstanding, subject and subordinate to (a) the rights of the City and the Trustee to be paid all their expenses (including attorneys' fees, trustee's fees and any extraordinary expenses of the City and the Trustee) incurred in the collection of such gross proceeds and (b) the rights of the City to any amounts then due and payable under **Section 5.2(d)**.

ARTICLE X

SPECIAL COVENANTS

Section 10.1. No Warranty of Condition or Suitability by the City; Exculpation and Indemnification. The City makes no warranty, either express or implied, as to the condition of the Project or that it will be suitable for the Fee Owner's purposes or needs. The Fee Owner releases the City and the Trustee from, agrees that the City and the Trustee shall not be liable for and agrees to hold the City and the Trustee harmless against, any loss of or damage to property or any injury to or death of any Person that may be occasioned by any cause whatsoever pertaining to the Project or the Fee Owner's use thereof, unless such loss is the result of the City's or the Trustee's (or their respective employees, consultants or agents') respective negligence or willful misconduct. This provision shall survive termination of this Lease.

Section 10.2. Surrender of Possession. Upon accrual of the City's right of re-entry to the extent provided in **Section 12.2(b)**, the Fee Owner shall peacefully surrender possession of the Project to the City in good condition and repair; provided, however, the Fee Owner may within 90 days (or such later date as the City may agree to) after the termination of this Lease remove from the Project Site any buildings, improvements, furniture, trade fixtures, machinery and equipment owned by the Fee Owner and not constituting part of the Project. All repairs to and restorations of the Project required to be made because of such removal shall be made by and at the sole cost and expense of the Fee Owner, and during said 90-day (or extended) period the Fee Owner shall bear the sole responsibility for and bear the sole risk of loss of said buildings, improvements, furniture, trade fixtures, machinery and equipment owned by the Fee Owner and not constituting part of the Project. All buildings, improvements, furniture, trade fixtures, machinery and equipment owned by the Fee Owner that are not so removed from the Project Site before the expiration of said period shall be the separate and absolute property of the City. Notwithstanding the foregoing, if the Fee Owner has paid all obligations due and owing under the Indenture (or such obligations have been canceled by the Owners) and this Lease, the City shall convey the Project in accordance with **Section 11.2**.

Section 10.3. Right of Access to the Project. The City may conduct such periodic inspections of the Project as may be generally provided in the City's building code. In addition, the Fee Owner agrees that the City and the Trustee and their duly authorized agents may, at reasonable times during normal business hours and, except in the event of emergencies, upon not less than two Business Days' prior notice, subject to the Fee Owner's usual business, proprietary, safety, confidentiality and security requirements, enter upon the Project Site (a) to examine and inspect the Project without interference or prejudice to the Fee Owner's operations, (b) to monitor the acquisition, construction and installation of the Project pursuant to **Section 4.2** as may be reasonably necessary, (c) to examine all files, records, books and other materials in the Fee Owner's possession pertaining to the acquisition, installation or maintenance of the Project or (d) upon either (i) the occurrence and continuance of an Event of Default or (ii) the Fee Owner's failure to purchase the Project at the end of the Lease Term, to exhibit the Project to prospective purchasers, lessees or trustees.

Section 10.4. Granting of Easements; Leasehold Mortgages and Financing Arrangements.

(a) Subject to **Sections 10.4(c)** and **(d)**, if no Event of Default under this Lease has happened and is continuing, the City agrees that, at the written request of the Fee Owner, it will execute and deliver and will cause and direct the Trustee, in writing, to execute and deliver any instrument necessary or appropriate to approve, confirm and grant or release or terminate any sublease, easement, license, right-of-way or other right or privilege or any similar agreement or other arrangement that constitutes a Permitted Encumbrance, conditioned upon receipt by the City and the Trustee of: (i) a copy of the

instrument of grant, release or termination or of the agreement or other arrangement, (ii) a written application signed by an Authorized Fee Owner Representative requesting such instrument, and (iii) a certificate executed by an Authorized Fee Owner Representative stating that (A) such grant or release is not detrimental to the proper conduct of the business of the Fee Owner, will not impair the effective use or interfere with the efficient and economical operation of the Project, will not materially adversely affect the security intended to be given by or under the Indenture and will be a Permitted Encumbrance and (B) the Fee Owner will defend, indemnify and save and hold harmless the City and the Trustee from and against all claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, arising from the execution and delivery of such instrument, agreement or other arrangement pursuant to this Section. If no Event of Default has happened and is continuing beyond any applicable grace period, any payments or other consideration received by the Fee Owner for any such grant or with respect to or under any similar agreement or other arrangement shall be and remain the property of the Fee Owner; but, subject to **Sections 10.4(c)** and **(d)**, upon (1) termination of this Lease for any reason other than the redemption of the Bonds and/or the purchase of the Project by the Fee Owner or (2) the occurrence and continuance of an Event of Default by the Fee Owner, all rights then existing of the Fee Owner with respect to or under such grant, agreement or other arrangement shall inure to the benefit of and be exercisable by the City and the Trustee.

(b) The Fee Owner may mortgage or grant a deed of trust against the leasehold estate created by this Lease, with prior notice to but without the consent of the City, provided and upon condition that a duplicate original or certified copy or photostatic copy of each such mortgage, and the loan agreement, note or other obligation secured thereby, is delivered to the City within 30 days after the execution thereof. The sale of the Fee Owner's leasehold estate at a foreclosure sale or trustee's sale under any Financing Document or any assignment in lieu thereof shall not require the consent of the City, if (i) written notice of the proposed sale or assignment is provided to the City at least 15 days prior thereto, and (ii) before such sale or assignment, all payments then owing to the City under this Lease are paid and the Bonds are paid or redeemed in full.

(c) The City acknowledges and agrees that the Fee Owner may finance and refinance its rights and interests in the Project, this Lease and the leasehold estate created hereby and, in connection therewith, the Fee Owner may execute Financing Documents with one or more Financing Parties. Notwithstanding anything contained to the contrary in this Lease, the Fee Owner may, at any time and from time to time, with prior notice to but without the consent of the City, (i) execute one or more Financing Documents upon the terms contained in this **Section 10.4** and (ii) sublease or assign this Lease, the leasehold estate, any sublease and rights in connection therewith, and/or grant liens or security interests therein, to any Financing Party. Any further sublease or assignment by any Financing Party shall be subject to the provisions of **Section 13.1**.

(d) Upon notice by the Fee Owner to the City in writing that the Fee Owner has executed one or more Financing Documents under which it has granted rights in this Lease to a Financing Party, which includes the name and address of such Financing Party, then the following provisions shall apply with respect to each such Financing Party and any Financing Party existing as of the date of the execution and delivery hereof:

(i) there shall be no merger of this Lease or of the leasehold estate created hereby with fee title to the Project, notwithstanding that this Lease or said leasehold estate and said fee title shall be owned by the same Person or Persons, without the prior written consent of each such Financing Party;

(ii) the City shall serve upon each such Financing Party (at the address, if any, provided to the City) a copy of each notice of the occurrence of an Event of Default and each notice of termination given to the Fee Owner under this Lease, at the same time as such notice is served upon the Fee Owner. No such notice to the Fee Owner shall be effective unless a copy thereof is thus served upon each such Financing Party;

(iii) each such Financing Party shall have the same period of time which the Fee Owner has, after the service of any required notice upon it, within which to remedy or cause to be remedied any payment default under this Lease which is the basis of the notice plus 30 days, and the City shall accept performance by any such Financing Party as timely performance by the Fee Owner;

(iv) the City may exercise any of its rights or remedies with respect to any other Event of Default by the Fee Owner, subject to the rights of each such Financing Party under this **Section 10.4(d)** as to such other Event of Default. Without limiting the generality of the foregoing, any such Financing Party may cause the sale of the leasehold interest of the Fee Owner to be sold at foreclosure sale conducted in accordance with applicable law and the terms of its Financing Documents, accept assignment of this Lease in lieu of foreclosure and appoint a receiver for the Project, all without obtaining the prior written consent of the City but subject to the provisions of **Section 10.4(b)**;

(v) upon the occurrence and continuance of an Event of Default by the Fee Owner under this Lease, other than a default in the payment of money, the City shall take no action to effect a termination of this Lease by service of a notice or otherwise, without first giving notice thereof to each such Financing Party and permitting each such Financing Party (or its designee, nominee, assignee or transferee) a reasonable time within which to remedy such default in the case of an Event of Default which is susceptible of being cured; provided that the period to remedy such Event of Default shall continue beyond any period set forth in this Lease to effect said cure so long as any such Financing Party (or its designee, nominee, assignee or transferee) is diligently prosecuting such cure; and further provided that any such Financing Party (or its designee, nominee, assignee or transferee) shall pay or cause to be paid to the City and the Trustee all expenses, including reasonable counsel fees, court costs and disbursements, incurred by the City or the Trustee in connection with any such default;

(vi) each such Financing Party (and its designees, nominees, assignees and transferees) may enter, possess and use the Project at such reasonable times and manner as are necessary or desirable to effectuate the remedies and enforce its rights under its respective Financing Documents;

(vii) except for terminations of this Lease expressly authorized herein, this Lease may not be modified, amended, canceled or surrendered by agreement between the City and the Fee Owner, without prior notice to and the written consent of each such Financing Party; and

(viii) each such Financing Party may, on behalf of the Fee Owner and without the consent of the Fee Owner, exercise the right to purchase the Project pursuant to **Section 11.1**, upon compliance with the provisions of that Section. The Fee Owner agrees that the City and the Trustee will have no liability for taking direction from any such Financing Party in connection with a conveyance of the Project back to the Fee Owner pursuant to **Article XI**.

(e) In connection with the execution of one or more Financing Documents, and upon the request of the Fee Owner, the City agrees to execute such documents as shall be reasonably requested by a

Financing Party and which are usual and customary in connection with the closing of the financing or refinancing pursuant to the Financing Documents, including, without limitation, subordination of the City's interest in the Project to any fee deed of trust. The Fee Owner agrees to reimburse the City for any and all costs and expenses incurred by the City pursuant to this Section, including reasonable attorneys' fees and expenses, in complying with such request.

(f) The Fee Owner's obligations under any mortgage or Financing Document relating to the Project entered into after the date of execution of this Lease shall be subordinate to the Fee Owner's obligations under this Lease.

(g) All deeds of trust and other security agreements secured by the Project shall recognize that PILOT Payments due and owing hereunder, if any, are to be given the same priority as real property taxes in the event of a foreclosure. To evidence such preference, all such deeds of trust or other security agreements must contain the following language (or similar language approved by the City Attorney):

> Subordination of [Mortgage] to PILOT Payments. Lender agrees that for so long as the [Property] is subject to the Lease Agreement dated as of _____ 1, 2024 between the City of Creve Coeur, Missouri (the "City"), and 10300 Olive LLC, the lien of the [Mortgage] shall be subject and inferior to the lien of the City thereto to the extent of any unpaid PILOT Payments (as defined in the aforementioned Lease Agreement), if any. Lender agrees that any proceeds received by Lender as a result of a foreclosure or deed in lieu of foreclosure related to the [Property] shall first be applied to pay any due and owing PILOT Payments.

Before executing any deed of trust or other security agreement secured by the Project, the Fee Owner shall provide the City with a draft of such deed of trust or other security agreement for the sole purpose of ensuring that the language required by this **Section 10.4(g)** is included therein. Any deed of trust or other security agreement secured by the Project that does not contain the required language shall be invalid and unenforceable.

(h) Notwithstanding the foregoing, the City may agree to other provisions and documents requested by the Fee Owner or any Financing Party not contemplated by this **Section 10.4**, subject to approval by ordinance of the City Council.

Section 10.5. Indemnification of City and Trustee. The Fee Owner shall defend, indemnify and save and hold harmless the City and the Trustee and their governing body members, officers, agents and employees from and against all claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, by or on behalf of any Person arising from the issuance of the Bonds and the execution of this Lease (or any instrument requested by the Fee Owner pursuant to **Section 10.4**), the Indenture, the Redevelopment Agreement or any other document entered into in connection with the Bonds and from the conduct or management of, or from any work or thing done in or on the Project during the Lease Term, and against and from all claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, arising during the Lease Term from (a) any condition of the Project, (b) any breach or default on the part of the Fee Owner in the performance of any of its obligations under the Base Lease, this Lease, the Redevelopment Agreement or any related document, (c) any contract entered into in connection with the acquisition, purchase, construction, extension, installation or improvement of the Project, (d) any act of negligence of the Fee Owner or of any of its agents, contractors, servants, employees or licensees, (e) unless the Fee Owner has been released from liability pursuant to **Section 13.1**, any act of negligence of any assignee or sublessee of the Fee Owner, or of any agents, contractors, servants, employees or licensees of any assignee or sublessee of the Fee Owner, (f) obtaining any applicable state and local sales and use tax exemptions for materials or goods that become part of the Project, and (g) any violation of Section 107.170;

provided, however, the indemnification contained in **Sections 10.5(a)-(e)** shall not extend (i) to the City to the extent that such claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, are (A) the result of work being performed at the Project by employees of the City, or (B) the result of the negligence or willful misconduct of the City or its employees, agents or representatives, or (ii) to the Trustee to the extent that such claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, are the result of the negligence or willful misconduct of the Trustee. Upon written notice from the City or the Trustee of any such claim or demand, the Fee Owner shall defend them or either of them in any such action or proceeding; provided, that the City shall cooperate with the Fee Owner and provide reasonable assistance in such defense. All costs related to the defense of the City or the Trustee shall be paid by the Fee Owner. This **Section 10.5** shall survive any termination of this Lease and the Redevelopment Agreement or the satisfaction and discharge of the Indenture.

Section 10.6. Depreciation and Other Tax Benefits. The City and the Fee Owner hereby acknowledge and agree that:

(a) this Lease is intended to be and shall be treated as a "financing lease" for federal income tax purposes;

(b) the Fee Owner shall be treated, solely for federal income tax purposes, as the owner of the Project and, as such, shall be entitled to claim all depreciation, amortization deductions and other tax benefits attributable to the ownership of the Project;

(c) each party shall report and file all federal income tax returns consistent with the intended tax treatment; and

(d) the City will fully cooperate with the Fee Owner in any effort by the Fee Owner to avail itself of any such depreciation, amortization deductions and other tax benefits.

Section 10.7. Fee Owner to Maintain its Existence. The Fee Owner agrees that until the Bonds are paid or payment is provided for in accordance with the terms of the Indenture, it will maintain its existence and will not dissolve or otherwise dispose of all or substantially all of its assets; provided, however, that the Fee Owner may, without violating the agreement contained in this Section, consolidate with or merge into another Person or permit one or more other Persons to consolidate with or merge into it, or may sell or otherwise transfer to another Person all or substantially all of its assets as an entirety and thereafter dissolve, provided, the surviving, resulting or transferee Person expressly assumes in writing all of the obligations of the Fee Owner contained in this Lease and either (a) has a long-term debt rating or is controlled by or under common control with an entity with a long-term debt rating in any of the top three long-term debt rating categories established by a nationally-recognized rating service, (b) is controlled by, under common control with or controls the Fee Owner or (c) is otherwise approved by the City Council.

Section 10.8. Security Interests. The City shall file all initial financing statements as may be required under the Uniform Commercial Code. The City and the Fee Owner hereby authorize the Trustee to file all appropriate continuation statements as may be required under the Uniform Commercial Code in order to fully preserve and protect the security of the Owners and the rights of the Trustee under the Indenture. Upon the written instructions of the Owners of 100% of the Bonds then-Outstanding, the Trustee shall, in accordance with the Indenture, file all continuation instruments the Owners deem necessary to be filed for so long as the Bonds are Outstanding. The City and the Fee Owner shall cooperate with the Trustee in this regard by providing such information as the Trustee may require to renew such continuation statements.

Section 10.9. Environmental Matters, Warranties, Covenants and Indemnities Regarding Environmental Matters.

(a) As used in this Section, the following terms have the following meanings:

"Environmental Laws" means any now-existing or hereafter enacted or promulgated federal, state, local or other law, statute, ordinance, order, rule, regulation or court order pertaining to (i) environmental protection, regulation, contamination or clean-up, (ii) toxic waste, (iii) underground storage tanks, (iv) asbestos or asbestos-containing materials, or (v) the handling, treatment, storage, use or disposal of Hazardous Substances, including without limitation the Comprehensive Environmental Response, Compensation and Liability Act and the Resource Conservation and Recovery Act, all as amended from time to time.

"Hazardous Substances" means all (i) "hazardous substances" (as defined in 42 U.S.C. §9601(14)), (ii) "chemicals" subject to regulation under Title III of the Superfund Amendments and Reauthorization Act of 1986, as amended from time to time, (iii) natural gas liquids, liquefied natural gas or synthetic gas, (iv) any petroleum, petroleum-based products or crude oil, or (v) any other hazardous or toxic substances, wastes or materials, pollutants, contaminants or any other substances or materials which are included under or regulated by any Environmental Law.

(b) The Fee Owner warrants and represents to the City and the Trustee that to the knowledge of the Fee Owner there are no conditions on the Project Site which materially violate any applicable Environmental Laws and no claims or demands have been asserted or made in writing by any third parties arising out of, relating to or in connection with any Hazardous Substances on, or allegedly on, the Project Site for any injuries suffered or incurred, or allegedly suffered or incurred, by reason of the foregoing.

(c) The Fee Owner will provide the City and the Trustee with copies of any notifications of releases of Hazardous Substances or of any environmental hazards or potential hazards in material violation of Environmental Laws which are given by or on behalf of the Fee Owner to any federal, state, local or other agencies or authorities or which are received by the Fee Owner from any federal, state, local or other agencies or authorities with respect to the Project. Such copies shall be sent to the City and the Trustee concurrently with their being mailed or delivered to the governmental agencies or authorities or within 10 days after they are made or received by the Fee Owner. The Fee Owner will provide to the City for review only, any environmental assessments ("Assessments") and reports regarding the correction or remediation of material environmental issues required by Environmental Laws to be addressed in the Assessments ("Reports") concerning the Project; upon the completion of the City's review of the Assessments and Reports, the City shall immediately return to the Fee Owner all originals and copies of the Assessments and Reports.

(d) The Fee Owner warrants and represents that the Fee Owner has provided the City and the Trustee with copies of all emergency and hazardous chemical inventory forms (hereinafter "Environmental Notices") showing Hazardous Substances on the Project Site given within two years preceding the date hereof, as of the date hereof, by the Fee Owner to any federal, state or local governmental authority or agency as required pursuant to the Emergency Planning and Community Right-to-Know Act of 1986, 42 U.S.C.A. §11001 *et seq*., or any other applicable Environmental Laws. The Fee Owner will provide the City and the Trustee with copies of all Environmental Notices concerning Hazardous Substances on the Project Site subsequently sent to any such governmental authority or agency as required pursuant to the Emergency Planning and Community Right-to-Know Act of 1986 or any other applicable Environmental Laws. Such copies of subsequent Environmental Notices shall be sent to the City and the Trustee concurrently with their being mailed to any such governmental authority or agency.

(e) The Fee Owner will comply with and operate and at all times use, keep and maintain the Project and every part thereof (whether or not such property constitutes a facility, as defined in 42 U.S.C. § 9601 *et seq*.) in material conformance with all applicable Environmental Laws. Without limiting the generality of the foregoing, the Fee Owner will not use, generate, treat, store, dispose of or otherwise introduce any Hazardous Substance into or on the Project or any part thereof in any material respect nor cause, suffer, allow or permit anyone else to do so except in compliance with all applicable Environmental Laws.

(f) The Fee Owner agrees to defend, indemnify, protect and hold harmless the City and the Trustee and their directors, officers, shareholders, officials and employees from and against any and all claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, arising from (i) any release (as defined in 42 U.S.C. § 9601 (22)), actual or alleged, of any Hazardous Substances upon the Project Site or respecting any products or materials previously, now or hereafter located upon the Project Site, regardless of whether such release or alleged release has occurred before the date hereof or hereafter occurs and regardless of whether such release or alleged release occurs as the result of any act, omission, negligence or misconduct of the Fee Owner or any third party or otherwise, (ii) any violation now existing or hereafter arising (actual or alleged) of, or any other liability under or in connection with, any applicable Environmental Laws (A) relating to or affecting the Project, or (B) relating to any products or materials previously, now or hereafter located upon the Project Site, regardless of whether such violation or alleged violation or other liability is asserted or has occurred or arisen before the date hereof or hereafter is asserted or occurs or arises and regardless of whether such violation or alleged violation or other liability occurs or arises as the result of any act, omission, negligence or misconduct of the Fee Owner or any third party or otherwise, (iii) any assertion by any third party of any claims or demands for any loss or injury arising out of, relating to or in connection with any Hazardous Substances on or allegedly on the Project Site, or (iv) any material breach, falsity or failure of any of the representations, warranties, covenants and agreements contained in this Section; provided, however, that the Fee Owner's obligations under this **Section 10.9(f)** shall not apply (1) to the City to the extent such claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, are the result of work being performed at the Project by employees of the City or the negligence or willful misconduct of the City or (2) to the Trustee to the extent such claims, demands, costs, liabilities, damages or expenses, including attorneys' fees, are the result of the negligence or willful misconduct of the Trustee. The City and the Trustee shall reasonably cooperate with the Fee Owner in the defense of any matters included within the foregoing indemnity without any obligation to expend money. The City and the Trustee shall reasonably cooperate with the Fee Owner in defending any such claims, demands, costs, liabilities, damages or expenses. This subsection (f) shall survive any termination of this Lease.

ARTICLE XI

OPTION AND OBLIGATION TO PURCHASE THE PROJECT

Section 11.1. Option to Purchase the Project. The Fee Owner shall have, and is hereby granted, the option to purchase all or any portion of the City's interest in the Project, at any time, upon payment in full or redemption of the Outstanding Bonds to be redeemed or provision for their payment or redemption having been made pursuant to **Article XIII** of the Indenture. To exercise such option, the Fee Owner shall give written notice to the City and to the Trustee and shall specify therein the date of closing of such purchase, which date shall be not less than 15 nor more than 90 days from the date such notice is mailed, provide a certificate of the Fee Owner confirming all real property taxes have been paid with respect to the Project, and in case of a redemption of the Bonds in accordance with the provisions of the Indenture,

the Fee Owner shall make arrangements satisfactory to the Trustee for the giving of the required notice of redemption. Notwithstanding the foregoing, if the City or the Trustee provides notice of its intent to exercise its remedies hereunder upon an Event of Default (a "Remedies Notice"), the Fee Owner shall be deemed to have exercised its purchase option under this Section on the 29th day following the issuance of the Remedies Notice without any further action by the Fee Owner; provided said Remedies Notice has not been rescinded by such date. The Fee Owner may rescind such exercise by providing written notice to the City and the Trustee on or before the 29th day and by taking such action as may be required to cure the default that led to the giving of the Remedies Notice. The purchase price payable by the Fee Owner if it exercises the option granted in this Section shall be the sum of the following:

(a) an amount of money which, when added to the amount then on deposit in the Bond Fund, will be sufficient to redeem all or a portion of the then-Outstanding Bonds on the earliest redemption date next succeeding the closing date, including, without limitation, principal and interest to accrue to said redemption date and redemption expense; plus

(b) an amount of money equal to the Trustee's and the Paying Agent's agreed to and reasonable fees, charges and expenses under the Indenture accrued and to accrue until such redemption of the Bonds; plus

(c) an amount of money equal to the City's reasonable charges and expenses incurred in connection with the Fee Owner exercising its option to purchase all or a portion of the Project (the City hereby agreeing to provide the Fee Owner with prior written notice if such charges and expenses are expected to exceed $2,000); plus

(d) the sum of $100.00.

Section 11.2. Conveyance of the Project. At the closing of the purchase of the Project pursuant to this Article, the City will, upon receipt of the purchase price, deliver to the Fee Owner the following:

(a) a release from the Trustee of the Project from the lien and/or security interest of the Indenture and this Lease and appropriate termination of financing statements as required under the Uniform Commercial Code; and

(b) such other documents as may be reasonably necessary to effectuate the conveyance of the Project, including without limitation a termination of the Base Lease and this Lease.

Section 11.3. Relative Position of Option and Indenture. The option to purchase the Project granted to the Fee Owner in this Article shall be and remain prior and superior to the Indenture and may be exercised whether or not the Fee Owner is in default under this Lease; provided that such option will not result in nonfulfillment of any condition to the exercise of such option (including the payment of all amounts specified in **Section 11.1**) and further provided that the option herein granted shall terminate upon the termination of this Lease.

Section 11.4. Obligation to Purchase the Project. The Fee Owner hereby agrees to purchase, and the City hereby agrees to sell, the Project upon (a) the occurrence of the expiration of the Lease Term following full payment of the Bonds or provision for payment thereof having been made in accordance with the provisions of the Indenture and (b) payment of all real property taxes with respect to the Project. The amount of the purchase price under this Section shall be the sum of the items set forth in **Sections 11.1(a)-(d)**. The purchase price shall be paid by the Fee Owner within 90 days of the expiration of the Lease Term.

Section 11.5. Right to Set-Off. At its option, to be exercised at least five days before the date of closing on any purchase of the Project, the Fee Owner may deliver to the Trustee for cancellation Bonds not previously paid, and the Fee Owner shall receive a credit against the purchase price payable by the Fee Owner in an amount equal to 100% of the principal amount of the Bonds so delivered for cancellation, plus the accrued interest thereon. The Fee Owner may set-off any payment obligation under **Section 11.1(a)** by tendering, or causing the tender of, a corresponding amount of the Bonds to the Trustee for cancellation.

ARTICLE XII

DEFAULTS AND REMEDIES

Section 12.1. Events of Default. If any one or more of the following events occurs and is continuing, it is hereby defined as and declared to be and to constitute an "Event of Default" under this Lease:

(a) default in the due and punctual payment of Basic Rent or Additional Rent within 10 days after written notice thereof from the City to the Fee Owner; or

(b) default in the due observance or performance of any other covenant, agreement, obligation or provision of this Lease on the Fee Owner's part to be observed or performed, and such default continues for 60 days after the City or the Trustee has given the Fee Owner written notice specifying such default (or such longer period as is reasonably required to cure such default, provided that (i) the Fee Owner has commenced such cure within said 60-day period, and (ii) the Fee Owner diligently prosecutes such cure to completion); or

(c) the Fee Owner: (i) admits in writing its inability to pay its debts as they become due; or (ii) files a petition in bankruptcy or for reorganization, arrangement, composition, readjustment, liquidation, dissolution or similar relief under the United States Bankruptcy Code, as now or in the future amended, or any other similar present or future federal or state statute or regulation, or files a pleading asking for such relief; or (iii) makes an assignment for the benefit of creditors; or (iv) consents to the appointment of a trustee, receiver or liquidator for all or a substantial portion of its property or fails to have the appointment of any trustee, receiver or liquidator made without the Fee Owner's consent or acquiescence, vacated or set aside; or (v) is finally adjudicated as bankrupt or insolvent under any federal or state law; or (vi) is subject to any proceeding, or suffers the entry of a final and non-appealable court order, under any federal or state law appointing a trustee, receiver or liquidator for all or a substantial portion of its property or ordering the winding-up or liquidation of its affairs, or approving a petition filed against it under the United States Bankruptcy Code, as now or in the future amended, which order or proceeding, if not consented to by it, is not dismissed, vacated, denied, set aside or stayed within 90 days after the date of entry or commencement; or (vii) suffers a writ or warrant of attachment or any similar process to be issued by any court against all or a substantial portion of its property, and such writ or warrant of attachment or any similar process is not contested, stayed or released within 60 days after the final entry or levy or after any contest is finally adjudicated or any stay is vacated or set aside; or

(d) an event of default under the Redevelopment Agreement.

Section 12.2. Remedies on Default. If any Event of Default referred to in **Section 12.1** has occurred and continues beyond the period provided to cure, then the City may at the City's election (subject,

however, to any restrictions against acceleration of the maturity of the Bonds or termination of this Lease in the Indenture), then or at any time thereafter, and while such default continues, take any one or more of the following actions, in addition to the remedies provided in **Section 12.5**:

(a) cause all amounts payable with respect to the Bonds for the remainder of the term of this Lease to become due and payable, as provided in the Indenture; or

(b) give the Fee Owner written notice of intention to terminate this Lease on a date specified therein, which date shall not be earlier than 60 days after such notice is given, and if all defaults have not then been cured, on the date so specified, the Owners shall tender or be deemed to have tendered the Outstanding principal amount of the Bonds for cancellation with instruction that such tender is in lieu of payment in accordance with **Section 11.5**, the Fee Owner's rights to possession of the Project shall cease and this Lease shall thereupon be terminated, and the City may re-enter and take possession of the Project or the City may convey the Project to the Fee Owner and bring an action against the Fee Owner for the purchase price of the Project under **Section 11.1**; provided, however, if the Fee Owner has paid all obligations due and owing under the Indenture and this Lease, the City shall convey the Project in accordance with **Section 11.2**. The Fee Owner's rights to cause the conveyance of the Project in accordance with **Section 11.2** shall survive the expiration or termination of this Lease.

Section 12.3. Survival of Obligations. The Fee Owner covenants and agrees with the City and the Owners that its obligations under this Lease shall survive the cancellation and termination of this Lease, for any cause, and that the Fee Owner shall continue to pay the Basic Rent and Additional Rent (to the extent the Bonds remain Outstanding) and perform all other obligations provided for in this Lease, all at the time or times provided in this Lease; provided, however, that upon (a) the payment of all Basic Rent and Additional Rent required under **Article V** hereof, (b) the satisfaction and discharge of the Indenture under **Section 1301** thereof, and (c) the Fee Owner's exercise of the purchase option contained in **Section 11.1** hereof, the Fee Owner's obligations under this Lease shall thereupon cease and terminate in full, except that obligations with respect to compensation and indemnification of the City and the Trustee shall not so terminate.

Section 12.4. Performance of the Fee Owner's Obligations by the City. Upon an Event of Default and the continuance of such failure on the Fee Owner's part for 60 days after written notice of such failure is given to the Fee Owner by the City or the Trustee, and without waiving or releasing the Fee Owner from any obligation hereunder, as an additional but not exclusive remedy, the City, or the Trustee in the City's name, may (but shall not be obligated so to do) make any such payment or perform any such obligation, and all reasonable sums so paid by the City or the Trustee and all necessary incidental reasonable costs and expenses incurred by the City or the Trustee (including, without limitation, attorneys' fees and expenses) in performing such obligation shall be deemed Additional Rent and shall be paid to the City or the Trustee on demand, and if not so paid by the Fee Owner, the City or the Trustee shall have the same rights and remedies provided for in **Section 12.2** in the case of default by the Fee Owner in the payment of Basic Rent.

Section 12.5. Rights and Remedies Cumulative. The rights and remedies reserved by the City and the Fee Owner hereunder are in addition to those otherwise provided by law and shall be construed as cumulative and continuing rights. No one of them shall be exhausted by the exercise thereof on one or more occasions. To the extent provided by Missouri law, the City and the Fee Owner shall each be entitled to specific performance and injunctive or other equitable relief for any breach or threatened breach of any of the provisions of this Lease. Notwithstanding anything in this **Section 12.5** or elsewhere in this Lease

to the contrary, however, the Fee Owner's option to purchase the Project as provided in **Article XI** above shall not be terminated upon an Event of Default unless and until this Lease is terminated to the extent permitted pursuant to **Section 12.2(b)** above. The parties agree that no provision of this Lease shall be construed to allow the City to require the Fee Owner to acquire, construct or install the Project.

Section 12.6. Waiver of Breach. No waiver of any breach of any covenant or agreement herein contained shall operate as a waiver of any subsequent breach of the same covenant or agreement or as a waiver of any breach of any other covenant or agreement, and in case of a breach by the Fee Owner of any covenant, agreement or undertaking, the City may nevertheless accept from the Fee Owner any payment or payments hereunder without in any way waiving the City's right to exercise any of its rights and remedies provided for herein with respect to any such default or defaults of the Fee Owner which were in existence at the time such payment or payments were accepted by the City.

Section 12.7. Trustee's Exercise of the City's Remedies. Whenever any Event of Default has occurred and is continuing, the Trustee may, but except as otherwise provided in the Indenture shall not be obliged to, exercise any or all of the rights of the City under this Article, upon notice as required of the City unless the City has already given the required notice. In addition, the Trustee shall have available to it all of the remedies prescribed by the Indenture.

ARTICLE XIII

ASSIGNMENT AND SUBLEASE

Section 13.1. Assignment; Sublease.

(a) The Fee Owner may sublease, assign, transfer, encumber or dispose of this Lease or any interest herein or part hereof for any lawful purpose under the Act upon providing written notice to the City. The Fee Owner must obtain the written consent of the City Administrator before any such disposition, except such consent shall not be required for:

(i) an assignment to any Person that continues to lease the Project to the Fee Owner;

(ii) a disposition to an entity controlled by or under common control with or controlling the Fee Owner or an entity into which the Fee Owner is being merged or consolidated; or

(iii) an assignment to a Financing Party.

(b) With respect to any assignment, the Fee Owner shall comply with the following conditions:

(i) the Fee Owner shall notify the City and the Trustee of the assignment in writing;

(ii) the Fee Owner shall provide evidence of payment of all amounts then-due under this Lease;

(iii) such assignment shall be in writing, duly executed and acknowledged by the assignor and in proper form for recording;

(iv) such assignment shall include the entire then unexpired term of this Lease; and

(v) a duplicate original of such assignment shall be delivered to the City and the Trustee within 10 days after the execution thereof, together with an assumption agreement, duly executed and acknowledged by the assignee and in proper form for recording, by which the assignee shall assume all of the terms, covenants and conditions of this Lease on the part of the Fee Owner to be performed and observed.

(c) Any assignee of all the rights of the Fee Owner shall agree to be bound by the terms of this Lease, the Redevelopment Agreement and any other documents related to the issuance of the Bonds. Upon such assignment of all the rights of the Fee Owner and agreement by the assignee to be bound by the terms of this Lease, the Redevelopment Agreement and any other documents related to the issuance of the Bonds, the Fee Owner shall be released from and have no further obligations under this Lease, the Redevelopment Agreement or any other document related to the issuance of the Bonds.

Section 13.2. Assignment of Revenues by City. The City shall assign and pledge any rents, revenues and receipts receivable under this Lease to the Trustee pursuant to the Indenture as security for payment of the principal of and interest and premium, if any, on the Bonds, and the Fee Owner hereby consents to such pledge and assignment.

Section 13.3. Prohibition Against Leasehold Mortgage of Project. The City shall not mortgage its leasehold interest in the Project but may assign its interest in and pledge any moneys receivable under this Lease to the Trustee pursuant to the Indenture as security for payment of the principal of and interest on the Bonds.

Section 13.4. Restrictions on Sale or Encumbrance of Project by City. During the Lease Term, the City agrees that, except to secure the Bonds to be issued pursuant to the Indenture and except to enforce its rights under **Section 12.2(b)**, it will not sell, assign, encumber, mortgage, transfer or convey the Project or any interest therein.

ARTICLE XIV

AMENDMENTS, CHANGES AND MODIFICATIONS

Section 14.1. Amendments, Changes and Modifications. Except as otherwise provided in this Lease or in the Indenture, subsequent to the issuance of the Bonds and before the payment in full of the Bonds (or provision for the payment thereof having been made in accordance with the provisions of the Indenture), this Lease may not be effectively amended, changed, modified, altered or terminated, except for terminations of this Lease expressly authorized herein, without the prior written consent of the Trustee, given in accordance with the provisions of the Indenture, which consent, however, shall not be unreasonably withheld, and the prior written consent of all of the Owners and each Financing Party.

ARTICLE XV

MISCELLANEOUS PROVISIONS

Section 15.1. Notices. All notices, certificates or other communications required or desired to be given hereunder shall be in writing and shall be deemed duly given when delivered personally or

transmitted electronically (and receipt confirmed by telephone or electronic read receipt), addressed as follows:

(i) To the City:

City of Creve Coeur, Missouri
Creve Coeur City Hall
300 North New Ballas Road
Creve Coeur, Missouri 63141
Attention: Mark Perkins, City Administrator
Email: mperkins@crevecoeurmo.gov

with copies to:

Curtis, Heinz, Garrett & O'Keefe, P.C.
130 S. Bemiston, Suite 200
St. Louis, Missouri 63105
Attention: Carl Lumley, City Attorney
Email: CLumley@chgolaw.com

and:

Gilmore & Bell, P.C.
One Metropolitan Square, Suite 2000
St. Louis, Missouri 63102
Attention: Mark D. Grimm, Esq.
Email: mgrimm@gilmorebell.com

(ii) To the Trustee:

UMB Bank, N.A.
2 South Broadway, Suite 600
St. Louis, Missouri 63102
Attention: Corporate Trust Department
Email: _____

(iii) To the Fee Owner:

Fireside Financial LLC
90 Edwardsville Professional Park
Edwardsville, Illinois 62025
Attention: Kristie Bailey
Email: klbailey@firesidefinancial.com

with copies to:

Jack Matthews Development
3925 Blackburn Road
Edwardsville, Illinois 62025
Attention: Matthew J. Pfund

Email: matt@jackmatthewsdevelopment.com

and:

Armstrong Teasdale LLP
7700 Forsyth Boulevard, Suite 1800
St. Louis, Missouri 63105
Attention: Robert Klahr, Esq.
Email: rklahr@atllp.com

A duplicate copy of each notice, certificate or other communication given hereunder by either the City or the Fee Owner to the other shall also be given to the Trustee and each Financing Party requesting such notice. The City, the Fee Owner and the Trustee may from time to time designate, by notice given hereunder to the others of such parties, such other address to which subsequent notices, certificates or other communications shall be sent.

Section 15.2. City Shall Not Unreasonably Withhold Consents and Approvals. Wherever in this Lease it is provided that the City shall, may or must give its approval or consent, or execute supplemental agreements or schedules, the City shall not unreasonably, arbitrarily or unnecessarily withhold or refuse to give such approvals or consents or refuse to execute such supplemental agreements or schedules; provided, however, that nothing in this Lease shall be interpreted to affect the City's rights to approve or deny any additional project or matter unrelated to the Project subject to zoning, building permit or other regulatory approvals by the City.

Section 15.3. Net Lease. The parties hereto agree (a) that this Lease shall be deemed and construed to be a net lease, (b) that the payments of Basic Rent are designed to provide the City and the Trustee funds adequate in amount to pay all principal of and interest accruing on the Bonds as the same becomes due and payable, (c) that to the extent that the payments of Basic Rent are not sufficient to provide the City and the Trustee with funds sufficient for the purposes aforesaid, the Fee Owner shall be obligated to pay, and it does hereby covenant and agree to pay, upon demand therefor, as Additional Rent, such further sums of money, in cash, as may from time to time be required for such purposes, and (d) that if, after the principal of and interest on the Bonds and all costs incident to the payment of the Bonds (including the fees and expenses of the City and the Trustee) have been paid in full, the Trustee or the City holds unexpended funds received in accordance with the terms hereof, such unexpended funds shall, after payment therefrom of all sums then due and owing by the Fee Owner under the terms of this Lease, and except as otherwise provided in this Lease and the Indenture, become the absolute property of and be paid over forthwith to the Fee Owner.

Section 15.4. Limitation on Liability of City. No provision, covenant or agreement contained in this Lease, the Indenture or the Bonds, or any obligation herein or therein imposed upon the City, or the breach thereof, shall constitute or give rise to or impose upon the City a pecuniary liability or a charge upon the general credit or taxing powers of the City or the State of Missouri.

Section 15.5. Governing Law. This Lease shall be construed in accordance with and governed by the laws of the State of Missouri.

Section 15.6. Binding Effect; Third-Party Beneficiary. This Lease shall be binding upon and shall inure to the benefit of the City and the Fee Owner and their respective successors and assigns. Each Financing Party shall be a third-party beneficiary of any provisions contained herein granting rights to a Financing Party.

Section 15.7. Severability. If for any reason any provision of this Lease is determined to be invalid or unenforceable, the validity and enforceability of the other provisions hereof shall not be affected thereby.

Section 15.8. Execution in Counterparts. This Lease may be executed in several counterparts, each of which shall be deemed to be an original and all of which shall constitute but one and the same instrument.

Section 15.9. Electronic Transaction.

(a) The parties agree that the transaction described herein may be conducted and related documents may be sent, received or stored by electronic means. Copies, telecopies, facsimiles, electronic files and other reproductions of original executed documents shall be deemed to be authentic and valid counterparts of such original documents for all purposes, including the filing of any claim, action or suit in the appropriate court of law.

(b) The counterparts of this Lease may be executed and delivered by facsimile or electronic signature (including portable document format) by either of the parties hereto, and the receiving party may rely on the receipt of any counterpart so executed and delivered electronically or by facsimile as if the original had been received. Each party may sign and transmit an electronic signature on this Lease, which signature shall be binding on the party whose name is contained thereon. The intentional action in electronically signing this Lease shall be evidence of consent to be legally bound by this Lease. Each party agrees to not contest the admissibility or enforceability of the electronically signed copy of this Lease in any proceeding arising out of the terms and conditions of this Lease.

(c) Notwithstanding anything in this Section to the contrary and with respect to the recording of any electronic documents, the parties shall comply with the requirements of Section 59.569 of the Revised Statutes of Missouri.

Section 15.10. City Consents and Approvals. Pursuant to the Ordinance, the City Administrator is authorized to execute all documents on behalf of the City (including documents pertaining to the financing or refinancing of the Project by the Fee Owner) as may be required to carry out and comply with the intent of the Ordinance, the Indenture and this Lease. The City Administrator is also authorized, unless expressly prohibited herein, to grant on behalf of the City such consents, estoppels and waivers relating to the Bonds, the Indenture or this Lease as may be requested by the Fee Owner during the term hereof; provided, such consents, estoppels and/or waivers shall not increase the principal amount of the Bonds, increase the term of this Lease or the economic incentives provided herein, waive an Event of Default or materially change the nature of the transaction unless approved by ordinance of the City Council.

Section 15.11. Anti-Discrimination Against Israel Act. Pursuant to Section 34.600 of the Revised Statutes of Missouri, the Fee Owner certifies it is not currently engaged in and will not, for the duration of this Lease, engage in a boycott of goods or services from (a) the State of Israel, (b) companies doing business in or with the State of Israel or authorized by, licensed by, or organized under the laws of the State of Israel, or (c) persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have caused this Lease to be executed in their respective names by their duly authorized signatories, all as of the date first above written.

CITY OF CREVE COEUR, MISSOURI

By: _____
Mark Perkins, City Administrator

[SEAL]

ATTEST:

By: _____
Kellie Henke, City Clerk

10300 OLIVE LLC,
a Missouri limited liability company

By: _____
Name: _____
Title: _____

EXHIBIT A

PROJECT SITE

A TRACT OF LAND BEING PART OF LOTS 9, 10, 11 AND 12 OF MAJOR THOMAS SUBDIVISION, SITUATED IN THE SOUTHWEST QUARTER AND NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 45 NORTH, RANGE 5 EAST, ST. LOUIS COUNTY, MISSOURI, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE WEST RIGHT OF WAY LINE OF STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH-PUBLIC RIGHT OF WAY) BOULEVARD WITH THE NORTH LINE OF LAND NOW OR FORMERLY OF VANTAGE CREDIT UNION, AS RECORDED BY DEED IN BOOK 23850, PAGE 141 OF THE ST. LOUIS COUNTY, MISSOURI RECORDER'S OFFICE;

THENCE ALONG SAID NORTH LINE AND THE NORTH LINE OF SUNSWEPT PLAT 3, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 4 AND SUNSWEPT PLAT 2, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 23, ALL OF SAID RECORDER'S OFFICE, NORTH 89 DEGREES 11 MINUTES 17 SECONDS WEST, A DISTANCE OF 1352.62 FEET TO THE EAST LINE OF LAND NOW OR FORMERLY OF DONALD J AND MARGRETTA CASSMEYER, ETAL, AS RECORDED BY DEED IN BOOK 11070, PAGE 767 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF LAND NOW OR FORMERLY OF JAVED MUHAMMAD ALI AND ALZUBEIDI DUHA, AS RECORDED BY DEED IN BOOK 23726, PAGE 3547; TIMOTHY C TOWNSEND, ETAL, AS RECORDED BY DEED IN BOOK 23562, PAGE 160, ALL OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 12 MINUTES 14 SECONDS EAST, A DISTANCE OF 500.19 FEET TO THE EAST LINE OF SPOEDE HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 54, PAGE 26 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF SPOEDE WOODS, A SUBDIVISION FORMERLY KNOWN AS GAS LIGHT SQUARE, AS RECORDED IN PLAT BOOK 104, PAGE 18 OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 08 MINUTES 11 SECONDS EAST, A DISTANCE OF 831.21 FEET TO THE NORTH LINE OF SAID SPOEDE WOODS; THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 51 MINUTES 14 SECONDS WEST, A DISTANCE OF 826.36 FEET TO THE EAST LINE OF MISSION HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 36 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF RAMBLEWOOD, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 58 AND THE EAST LINE OF LAND NOW OR FORMERLY OF MDC COAST 22 LLC, AS RECORDED BY DEED IN BOOK 25302, PAGE 4186, ALL OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE, THE FOLLOWING COURSES AND DISTANCES: NORTH 01 DEGREES 12 MINUTES 15 SECONDS EAST, A DISTANCE OF 466.53 FEET; NORTH 88 DEGREES 57 MINUTES 33 SECONDS WEST, A DISTANCE OF 51.85 FEET AND NORTH 04 DEGREES 53 MINUTES 33 SECONDS WEST, A DISTANCE OF 682.38 FEET TO

THE SOUTH RIGHT OF WAY LINE OF MISSOURI STATE HIGHWAY 340, A.K.A. OLIVE (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTH RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: ALONG A NON- TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 11,358.19 FEET, WITH A CENTRAL ANGLE OF 00 DEGREES 49 MINUTES 02 SECONDS, WHICH CHORD BEARS SOUTH 89 DEGREES 27 MINUTES 38 SECONDS EAST, A CHORD DISTANCE OF 162.03 FEET, THROUGH AN ARC LENGTH OF 162.03 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 427.12 FEET; NORTH 01 DEGREES 00 MINUTES 53 SECONDS EAST, A DISTANCE OF 20.00 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 723.00 FEET AND SOUTH 86 DEGREES 13 MINUTES 52 SECONDS EAST, A DISTANCE OF 200.26 FEET TO THE SOUTHWEST RIGHT OF WAY TRANSITION BETWEEN STATE HIGHWAY 340 AND STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTHWEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 65 DEGREES 03 MINUTES 50 SECONDS EAST, A DISTANCE OF 328.98 FEET; SOUTH 43 DEGREES 48 MINUTES 52 SECONDS EAST, A DISTANCE OF 413.64 FEET; SOUTH 32 DEGREES 46 MINUTES 12 SECONDS EAST, A DISTANCE OF 248.25 FEET AND SOUTH 11 DEGREES 42 MINUTES 30 SECONDS EAST, A DISTANCE OF 250.82 FEET TO THE WEST RIGHT OF WAY LINE OF THE AFOREMENTIONED LINDBERGH BOULEVARD;

THENCE ALONG SAID WEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 01 DEGREES 00 MINUTES 47 SECONDS EAST, A DISTANCE OF 256.89 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 105.09 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 10.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 30.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 40.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 300.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 10.00 FEET AND SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 847.31 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND CONTAINING 4,171,444 SQUARE FEET OR 95.763 ACRES IS BASED UPON AN ACTUAL URBAN CLASS BOUNDARY SURVEY DONE IN ACCORDANCE WITH THE CURRENT MISSOURI STANDARDS FOR PROPERTY BOUNDARY SURVEYS, SUBJECT TO ALL EASEMENTS, RESTRICTIONS, RESERVATIONS, CONDITIONS OF RECORD AND NOT OF RECORD, IF ANY.

EXHIBIT B

FORM OF REQUISITION CERTIFICATE

Requisition No. _____
Date: _____

REQUISITION CERTIFICATE

TO: UMB BANK, N.A., AS TRUSTEE UNDER A TRUST INDENTURE DATED AS OF _____ 1, 2024, BETWEEN THE CITY OF CREVE COEUR, MISSOURI, AND THE TRUSTEE, AND A LEASE AGREEMENT DATED AS OF _____ 1, 2024, BETWEEN THE CITY OF CREVE COEUR, MISSOURI, AND 10300 OLIVE LLC

The undersigned Authorized Fee Owner Representative hereby states and certifies that:

1. A total of $_____ is requested to pay for Project Costs. The total amount of this requisition and all prior requisitions is as follows:

Date of Project Costs	***Amount Submitted in this Requisition***	***Requisitions Submitted to Date (Including this Requisition)***

2. Said Project Costs shall be paid in whole from Bond proceeds in such amounts, to such payees and for such purposes as set forth on **Schedule 1**.

3. Each of the items for which payment is requested is or was desirable and appropriate in connection with the purchase and construction of the Project, has been properly incurred and is a proper charge against the Project Fund, has been paid by the Fee Owner or is justly due to the Persons whose names and addresses are stated on **Schedule 1**, and has not been the basis of any previous requisition from the Project Fund.

4. As of this date, except for the amounts referred to above, to the best of my knowledge there are no outstanding disputed statements for which payment is requested for labor, wages, materials, supplies or services in connection with the purchase and construction of the Project which, if unpaid, might become the basis of a vendors', mechanics', laborers' or materialmen's statutory or similar lien upon the Project or any part thereof.

5. With respect to this disbursement, the Fee Owner (i) certifies it has reviewed any wire instructions set forth herein to confirm such wire instructions are accurate and (ii) agrees it will not seek

recourse from the Trustee as a result of losses incurred by it for making the disbursement in accordance with such wire instructions.

6. Capitalized words and terms used in this Requisition Certificate have the meanings given to such words and terms in **Section 101** of the Trust Indenture.

10300 OLIVE LLC

By: _____
Authorized Fee Owner Representative

Approved this _____ day of _____, 20___.

CITY OF CREVE COEUR, MISSOURI

By: _____
Authorized City Representative

SCHEDULE 1 TO REQUISITION CERTIFICATE

PROJECT COSTS

Payee and Address	Description	Amount

CITY OF CREVE COEUR, MISSOURI,

AND

UMB BANK, N.A.,
as Trustee

_____

TRUST INDENTURE

Dated as of _____ 1, 2024

_____

Relating to:

$135,000,000
(Aggregate Maximum Principal Amount)
City of Creve Coeur, Missouri
Taxable Industrial Revenue Bonds
(Olia Village Project)
Series 2024

TRUST INDENTURE

TABLE OF CONTENTS

Page

Parties 1
Recitals 1
Granting Clauses 2

ARTICLE I

DEFINITIONS

Section 101. Definitions of Words and Terms 3
Section 102. Rules of Interpretation 8
Section 103. Date of Indenture 8

ARTICLE II

THE BONDS

Section 201. Title and Amount of Bonds 8
Section 202. Nature of Obligation 9
Section 203. Denomination, Number and Dating of the Bonds 9
Section 204. Method and Place of Payment of Bonds 9
Section 205. Execution and Authentication of Bonds 10
Section 206. Registration, Transfer and Exchange of Bonds 10
Section 207. Persons Deemed Owners of Bonds 11
Section 208. Authorization of the Bonds 11
Section 209. Mutilated, Lost, Stolen or Destroyed Bonds 13
Section 210. Cancellation and Destruction of Bonds Upon Payment 13

ARTICLE III

REDEMPTION OF BONDS

Section 301. Redemption of Bonds 14
Section 302. Effect of Call for Redemption 14
Section 303. Notice of Redemption 14

ARTICLE IV

FORM OF BONDS

Section 401. Form Generally 15

ARTICLE V

CUSTODY AND APPLICATION OF BOND PROCEEDS

Section 501. Creation of Funds 15
Section 502. Deposits into the Project Fund....15
Section 503. Disbursements from the Project Fund 15
Section 504. Completion of the Project....16
Section 505. Disposition Upon Acceleration 16

ARTICLE VI

REVENUES AND FUNDS

Section 601. Deposits into the Bond Fund 16
Section 602. Application of Moneys in the Bond Fund 17
Section 603. Payments Due on Days Other than Business Days 17
Section 604. Nonpresentment of Bonds 17

ARTICLE VII

SECURITY FOR DEPOSITS AND INVESTMENT OF FUNDS

Section 701. Moneys to be Held in Trust 18
Section 702. Investment of Moneys in Project Fund and Bond Fund....18
Section 703. Record Keeping 18

ARTICLE VIII

GENERAL COVENANTS AND PROVISIONS

Section 801. Payment of Principal and Interest....19
Section 802. Authority to Execute Indenture and Issue Bonds 19
Section 803. Performance of Covenants....19
Section 804. Instruments of Further Assurance....19
Section 805. Recordings and Filings 19
Section 806. Inspection of Project Books....20
Section 807. Enforcement of Rights Under the Lease....20

ARTICLE IX

DEFAULT AND REMEDIES

Section 901. Events of Default; Notice; Opportunity to Cure....20
Section 902. Acceleration of Maturity in Event of Default....20
Section 903. Surrender of Possession of Trust Estate; Rights and Duties of Trustee in Possession....21
Section 904. Appointment of Receivers in Event of Default 21
Section 905. Exercise of Remedies by the Trustee 21
Section 906. Limitation on Exercise of Remedies by Owners 22
Section 907. Right of Owners to Direct Proceedings....22
Section 908. Application of Moneys in Event of Default 23

Section 909. Remedies Cumulative 24
Section 910. Waivers of Events of Default 24

ARTICLE X

THE TRUSTEE

Section 1001. Acceptance of the Trusts 25
Section 1002. Fees, Charges and Expenses of the Trustee 28
Section 1003. Notice to Owners if Default Occurs 28
Section 1004. Intervention by the Trustee 28
Section 1005. Successor Trustee Upon Merger, Consolidation or Sale 28
Section 1006. Resignation of Trustee 29
Section 1007. Removal of Trustee 29
Section 1008. Appointment of Successor Trustee 29
Section 1009. Vesting of Trusts in Successor Trustee 29
Section 1010. Right of Trustee to Pay Taxes and Other Charges 30
Section 1011. Trust Estate May be Vested in Co-Trustee 30
Section 1012. Accounting 31
Section 1013. Performance of Duties Under the Lease 31

ARTICLE XI

SUPPLEMENTAL INDENTURES

Section 1101. Supplemental Indentures Not Requiring Consent of Owners 31
Section 1102. Supplemental Indentures Requiring Consent of Owners 31
Section 1103. Fee Owner's Consent to Supplemental Indentures 32
Section 1104. Opinion of Counsel 32

ARTICLE XII

SUPPLEMENTAL LEASES

Section 1201. Supplemental Leases Not Requiring Consent of Owners 32
Section 1202. Supplemental Leases Requiring Consent of Owners 33
Section 1203. Opinion of Counsel 33

ARTICLE XIII

SATISFACTION AND DISCHARGE OF INDENTURE

Section 1301. Satisfaction and Discharge of this Indenture 33
Section 1302. Bonds Deemed to be Paid 34

ARTICLE XIV

MISCELLANEOUS PROVISIONS

Section 1401. Consents and Other Instruments by Owners 34
Section 1402. Limitation of Rights Under this Indenture 35

Section 1403. Notices 35
Section 1404. Severability 36
Section 1405. Execution in Counterparts 37
Section 1406. Governing Law 37
Section 1407. Electronic Transaction 37
Section 1408. City Consent and Approvals 37
Section 1409. Anti-Discrimination Against Israel Act 37

Signature and Seals 38

Exhibit A - Project Site
Exhibit B - Form of Bonds
Exhibit C - Form of Representation Letter

TRUST INDENTURE

THIS TRUST INDENTURE, dated as of _____ 1, 2024 (this "Indenture"), between the **CITY OF CREVE COEUR, MISSOURI**, a home rule charter city organized and existing under the laws of the State of Missouri (the "City"), and **UMB BANK, N.A.**, a national banking association duly organized and existing and authorized to accept and execute trusts of the character herein set forth under the laws of the United States of America, with a corporate trust office located in St. Louis, Missouri, as Trustee (the "Trustee");

RECITALS:

1. The City is authorized and empowered pursuant to the provisions of Article VI, Section 27(b) of the Missouri Constitution, Sections 100.010 through 100.200, inclusive, of the Revised Statutes of Missouri (collectively, the "Act") and the City Charter to purchase, construct, extend and improve certain projects (as defined in the Act), to issue industrial development revenue bonds for the purpose of providing funds to pay the costs of such projects and to lease or otherwise dispose of such projects to private persons or corporations for manufacturing, commercial, research and development, office industry, warehousing and industrial development purposes upon such terms and conditions as the City deems advisable.

2. Pursuant to the Act, the City Council passed Ordinance No. _____ (the "Ordinance") on _____, 2024, authorizing the City to (a) acquire from 10300 Olive LLC, a Missouri limited liability company (the "Fee Owner"), a leasehold interest in approximately 96 acres of real property located at 10300 Olive Boulevard in the City (as legally described on **Exhibit A**, together with all improvements now or hereafter located thereon, the "Project Site"), and (b) issue its Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024, in the maximum principal amount of $135,000,000 (the "Bonds"), for the purpose of completing site infrastructure improvements, including, without limitation, demolishing a portion of the existing improvements, site clearing and grading, constructing roadways, streets, basins and utilities, and completing associated offsite work (collectively, the "Project Improvements").

3. Pursuant to the Ordinance, the City is authorized to enter into (1) this Indenture with the Trustee for the purpose of issuing and securing the Bonds, as herein provided, (2) a Base Lease of even date herewith (the "Base Lease") with the Fee Owner for the purpose of acquiring a leasehold interest in the Project Site and (3) a Lease Agreement of even date herewith (the "Lease") with the Fee Owner, under which the City will lease the City's interest in the Project Site and the Project Improvements (collectively, the "Project") to the Fee Owner in consideration of rental payments by the Fee Owner that will be sufficient to pay the principal of and interest on the Bonds.

4. All things necessary to make the Bonds, when authenticated by the Trustee and issued as provided in this Indenture, the valid and legally binding obligations of the City, and to constitute this Indenture a valid and legally binding pledge and assignment of the Trust Estate (as defined herein) herein made for the security of the payment of the principal of and interest on the Bonds, have been done and performed, and the execution and delivery of this Indenture and the execution and issuance of the Bonds, subject to the terms hereof, have in all respects been duly authorized.

NOW, THEREFORE, THIS TRUST INDENTURE WITNESSETH:

GRANTING CLAUSES

That the City, in consideration of the premises, the acceptance by the Trustee of the trusts hereby created, the purchase and acceptance of the Bonds by the Owners (as defined herein) thereof, and of other good and valuable consideration, the receipt of which is hereby acknowledged, and to secure the payment of the principal of and interest on all of the Bonds issued and Outstanding (as defined herein) under this Indenture from time to time according to their tenor and effect, and to secure the performance and observance by the City of all the covenants, agreements and conditions herein and in the Bonds contained, does hereby pledge and assign to the Trustee and its successors and assigns forever, the property described in paragraphs (a), (b) and (c) below (said property being herein referred to as the "Trust Estate"), to-wit:

(a) All right, title and interest of the City in and to the Project together with the tenements, hereditaments, appurtenances, rights, easements, privileges and immunities thereunto belonging or appertaining and, to the extent permissible, all permits, certificates, approvals and authorizations;

(b) All right, title and interest of the City in, to and under the Base Lease (as defined herein) and the Lease (excluding the Unassigned Rights, as defined herein), and all rents, revenues and receipts derived by the City from the Project including, without limitation, all rentals and other amounts to be received by the City and paid by the Fee Owner under and pursuant to and subject to the provisions of the Lease; and

(c) All moneys and securities from time to time held by or now or hereafter required to be paid to the Trustee under the terms of this Indenture, and any and all other real or personal property of every kind and nature from time to time hereafter, by delivery or by writing of any kind, pledged, assigned or transferred as and for additional security hereunder by the City or by anyone in its behalf, or with its written consent, to the Trustee, which is hereby authorized to receive any and all such property at any and all times and to hold and apply the same subject to the terms hereof.

TO HAVE AND TO HOLD, all and singular, the Trust Estate with all rights and privileges hereby pledged and assigned or agreed or intended so to be, to the Trustee and its successors and assigns forever;

IN TRUST NEVERTHELESS, upon the terms and subject to the conditions herein set forth, for the equal and proportionate benefit, protection and security of all Owners from time to time of the Bonds Outstanding under this Indenture, without preference, priority or distinction as to lien or otherwise of any of the Bonds over any other of the Bonds except as expressly provided in or permitted by this Indenture;

PROVIDED, HOWEVER, that if the City pays, or causes to be paid, the principal of and interest on the Bonds, at the time and in the manner mentioned in the Bonds, according to the true intent and meaning thereof, or provides for the payment thereof (as provided in **Article XIII**), and pays or causes to be paid to the Trustee all other sums of money due or to become due to it in accordance with the terms and provisions hereof, then upon such final payments this Indenture and the rights hereby granted shall cease, determine and be void; otherwise, this Indenture shall be and remain in full force and effect.

THIS INDENTURE FURTHER WITNESSETH, and it is hereby expressly declared, covenanted and agreed by and between the parties hereto, that all Bonds issued and secured hereunder are to be issued, authenticated and delivered and that all of the Trust Estate is to be held and applied under,

upon and subject to the terms, conditions, stipulations, covenants, agreements, trusts, uses and purposes as hereinafter expressed, and the City does hereby agree and covenant with the Trustee and with the respective Owners from time to time, as follows:

ARTICLE I

DEFINITIONS

Section 101. Definitions of Words and Terms. In addition to any words and terms defined in the Lease (which definitions are hereby incorporated by reference) and any words and terms defined elsewhere in this Indenture, the following words and terms as used in this Indenture shall have the following meanings, unless some other meaning is plainly intended:

"Act" means, collectively, Article VI, Section 27(b) of the Missouri Constitution and Sections 100.010 through 100.200 of the Revised Statutes of Missouri.

"Additional Rent" means the additional rental described in **Section 5.2** of the Lease.

"Approved Investor" means (a) the Fee Owner, (b) a Financing Party, (c) a "qualified institutional buyer" under Rule 144A promulgated under the Securities Act of 1933, as amended, or (d) any Person approved by the City Council.

"Authorized City Representative" means the City Administrator or such other Person at the time designated to act on behalf of the City as evidenced by written certificate furnished to the Fee Owner and the Trustee containing the specimen signature of such Person and signed on behalf of the City by its City Administrator. Such certificate may designate an alternate or alternates, each of whom may perform all duties of the Authorized City Representative.

"Authorized Fee Owner Representative" means the Person at the time designated to act on behalf of the Fee Owner as evidenced by written certificate furnished to the City and the Trustee containing the specimen signature of such Person and signed on behalf of the Fee Owner by an authorized officer of the Fee Owner. Such certificate may designate an alternate or alternates, each of whom may perform all duties of the Authorized Fee Owner Representative.

"Base Lease" means the Base Lease dated as of _____ 1, 2024, between the Fee Owner and the City, as from time to time amended and supplemented.

"Basic Rent" means the rental described in **Section 5.1** of the Lease.

"Bond" or **"Bonds"** means the Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024, in the maximum aggregate principal amount of $135,000,000, issued, authenticated and delivered under and pursuant to this Indenture.

"Bond Fund" means the "City of Creve Coeur, Missouri, Bond Fund -- Olia Village Project" created in **Section 501**.

"Bond Purchase Agreement" means the agreement by that name with respect to the Bonds by and between the City and the Purchaser.

"Business Day" means any day other than a Saturday or Sunday or legal holiday or a day on which banks located in the city in which the principal corporate trust office or the principal payment office of the Trustee are required or authorized by law to remain closed.

"City" means the City of Creve Coeur, Missouri, a home rule charter city organized and existing under the laws of the State.

"Closing Date" means the date identified in the Bond Purchase Agreement for the initial issuance and delivery of the Bonds.

"Closing Price" means the amount specified in writing by the Purchaser and agreed to by the City as the amount required to pay for the initial issuance of the Bonds on the Closing Date, which amount shall be equal to any Project Costs paid by the Fee Owner from its own funds on or before the Closing Date, and, at the Fee Owner's option, the costs of issuance of the Bonds if such costs are not paid for from Bond proceeds.

"Completion Date" means the date of execution of the certificate required by **Section 4.5** of the Lease and **Section 504** hereof, which shall be deemed executed and filed on March 31, 2026 if not actually filed with the City by such date, except as otherwise provided in **Section 4.5** of the Lease.

"Cumulative Outstanding Principal Amount" means the aggregate principal amount of all Bonds Outstanding under the provisions of this Indenture, not to exceed $135,000,000, as reflected in the records maintained by the Trustee as provided in the Bonds and this Indenture.

"Fee Owner" means 10300 Olive LLC, a Missouri limited liability company, and its successors or assigns.

"Event of Default" means, with respect to this Indenture, any Event of Default as defined in **Section 901** hereof and, with respect to the Lease, any Event of Default as described in **Section 12.1** of the Lease.

"Financing Document" means any loan agreement, credit agreement, security agreement, mortgage, participation agreement, lease agreement, sublease, ground lease, hedging agreement or other document related to the Project and executed by or on behalf of, or for the benefit of, a Financing Party.

"Financing Party" means any Person providing debt, lease or equity financing (including equity contributions or commitments) or hedging arrangements, or any renewal, extension or refinancing of any such financing or hedging arrangements, or any guarantee, insurance, letter of credit or credit support for or in connection with such financing or hedging arrangements, in connection with the development, construction, ownership, lease, operation or maintenance of the Project or interests or rights in the Lease, or any part thereof, including any trustee or agent acting on any such Person's behalf.

"Full Insurable Value" means the reasonable replacement cost of the Project less physical depreciation and exclusive of land, excavations, footings, foundation and parking lots as determined at the expense of the Fee Owner from time to time.

"Government Securities" means direct obligations of, or obligations the payment of principal of and interest on which is unconditionally guaranteed by, the United States of America.

"Indenture" means this Trust Indenture, as from time to time amended and supplemented by Supplemental Indentures in accordance with the provisions of **Article XI**.

"Investment Securities" means any investment approved in writing by an Authorized Fee Owner Representative and the Owners of all of the Outstanding Bonds.

"Lease" means the Lease Agreement dated as of _____ 1, 2024, between the City, as lessor, and the Fee Owner, as lessee, entered into in connection with the lease of the Project, as from time to time amended and supplemented by Supplemental Leases in accordance with the provisions thereof and of **Article XII** of this Indenture.

"Lease Term" means the period from the effective date of the Lease until the expiration thereof pursuant to **Section 3.2** of the Lease.

"Leasehold Mortgage" means any leasehold mortgage, leasehold deed of trust, assignment of rents and leases, security agreement or other agreement relating to the Project permitted pursuant to the provisions of **Section 10.4** of the Lease.

"Net Proceeds" means, when used with respect to any insurance or condemnation award with respect to the Project, the gross proceeds from the insurance or condemnation award remaining after payment of all expenses (including attorneys' fees, the Trustee's fees and any extraordinary expenses of the City and the Trustee) incurred in the collection of such gross proceeds.

"Outstanding" means, when used with reference to Bonds, as of a particular date, all Bonds theretofore authenticated and delivered, except:

(a) Bonds theretofore canceled by the Trustee or delivered to the Trustee for cancellation;

(b) Bonds deemed to be paid in accordance with the provisions of **Section 1302**; and

(c) Bonds in exchange for or in lieu of which other Bonds have been authenticated and delivered pursuant to this Indenture.

"Owner" means the registered owner of any Bond as recorded on the bond registration records maintained by the Trustee.

"Paying Agent" means the Trustee and any other bank or trust company designated by this Indenture as paying agent for the Bonds at which the principal of or interest on the Bonds shall be payable.

"Payment Date" means the date on which the principal of or interest on any Bond, whether at the stated maturity thereof or the redemption date thereof, is payable, which shall be December 1 of each year that the Bonds are Outstanding.

"Permitted Encumbrances" means, as of any particular time, as the same may encumber the Project Site, (a) liens for ad valorem taxes, special assessments and other governmental charges not then delinquent, (b) this Indenture, the Base Lease, the Lease and the Redevelopment Agreement, (c) utility, access and other easements and rights-of-way, mineral rights, restrictions, exceptions and encumbrances that will not materially interfere with or impair the operations being conducted on the Project Site or easements granted to the City, (d) such minor defects, irregularities, encumbrances, easements,

rights-of-way and clouds on title as normally exist with respect to properties similar in character to the Project Site and as do not in the aggregate materially impair the property affected thereby for the purpose for which it was acquired or is held by the City, (e) liens or security interests granted pursuant to any Leasehold Mortgage or any other Financing Document, and (f) such exceptions to title set forth in the [*ALTA Commitment for Title Insurance, Commitment/File No. _____, issued by _____ on _____, 20___*].

"Person" means an individual, partnership, corporation, business trust, joint stock company, limited liability company, bank, insurance company, unincorporated association, joint venture or other entity of whatever nature.

"Plans and Specifications" means the plans and specifications prepared for and showing the Project, as amended by the Fee Owner from time to time, the same being on file at the principal office of the Fee Owner, and which shall be available for reasonable inspection during normal business hours and upon not less than one Business Day's prior notice by the City, the Trustee and their duly appointed representatives.

"Principal Amount Advanced" means the amount set forth in each requisition certificate submitted to the Trustee in accordance with **Section 4.4** of the Lease and reflected in the records maintained by the Trustee as provided in the Bonds and this Indenture.

"Project" means, collectively, the Project Site and the Project Improvements as they may at any time exist.

"Project Costs" means all costs of purchasing and constructing the Project, including the following:

(a) all costs and expenses necessary or incident to the acquisition, construction and improvement of the Project Improvements located on the Project Site;

(b) fees and expenses of architects, appraisers, surveyors and engineers for estimates, surveys, soil borings and soil tests and other preliminary investigations and items necessary for the commencement of construction, preparation of plans, drawings and specifications and supervision of construction, as well as for the performance of all other duties of professionals and consultants in relation to the purchase and construction of the Project or the issuance of the Bonds;

(c) all costs and expenses of every nature incurred in purchasing and constructing the Project Improvements and otherwise improving the Project Site, including the actual cost of labor and materials as payable to contractors, builders and materialmen in connection with the purchase and construction of the Project;

(d) interest accruing on the Bonds during the construction period of the Project;

(e) the cost of title insurance policies and the cost of any other insurance maintained during the construction period in accordance with **Article VII** of the Lease;

(f) reasonable expenses of administration, supervision and inspection properly chargeable to the Project, legal fees and expenses, fees and expenses of accountants and other consultants, publication and printing expenses, and initial fees and expenses of the Trustee to the

extent that said fees and expenses are necessary or incident to the issuance and sale of the Bonds or the purchase and construction of the Project;

(g) all other items of expense not elsewhere specified in this definition as may be necessary or incident to: (1) the authorization, issuance and sale of the Bonds, including costs of issuance of the Bonds; (2) the purchase and construction of the Project; and (3) the financing thereof; and

(h) reimbursement to the Fee Owner or those acting for it for any of the above enumerated costs and expenses incurred and paid by them before or after the execution of the Lease.

"Project Fund" means the "City of Creve Coeur, Missouri, Project Fund -- Olia Village Project" created in **Section 501**.

"Project Improvements" means the buildings, structures, improvements and fixtures to be purchased, constructed, installed and otherwise improved on the Project Site pursuant to **Article IV** of the Lease and paid for in whole from proceeds of the Bonds, and all additions, alterations, modifications and improvements thereto made pursuant to the Lease.

"Project Site" means all of the real estate described in **Exhibit A**, together with all improvements now or hereafter located thereon.

"Purchaser" means the Person identified in the Bond Purchase Agreement as the purchaser of the Bonds.

"Redevelopment Agreement" means the Master Redevelopment Agreement dated as of _____, 2024, among the City, the Fee Owner, 10300 Olive Dev LLC and Olia Village Redevelopment Corporation, as from time to time amended and supplemented.

"State" means the State of Missouri.

"Supplemental Indenture" means any indenture supplemental or amendatory to this Indenture entered into by the City and the Trustee pursuant to **Article XI**.

"Supplemental Lease" means any supplement or amendment to the Lease entered into pursuant to **Article XII**.

"Trust Estate" means the Trust Estate described in the Granting Clauses of this Indenture.

"Trustee" means UMB Bank, N.A., St. Louis, Missouri, a national banking association duly organized and existing and authorized to accept and execute trusts of the character herein set forth under the laws of the United States of America, in its capacity as trustee hereunder, and its successor or successors and any other Person which at the time may be substituted in its place pursuant to and at the time serving as Trustee under this Indenture.

"Unassigned Rights" means the City's rights under the Lease to receive moneys for its own account and the City's rights to indemnification or to be protected from liabilities by insurance policies required by the Lease, as provided in the Lease.

Section 102. Rules of Interpretation.

(a) Words of the masculine gender shall be deemed and construed to include correlative words of the feminine and neuter genders.

(b) Unless the context otherwise indicates, words importing the singular number shall include the plural and vice versa, and words importing Persons shall include firms, associations and corporations, including governmental entities, as well as natural Persons.

(c) Wherever in this Indenture it is provided that either party shall or will make any payment or perform or refrain from performing any act or obligation, each such provision shall, even though not so expressed, be construed as an express covenant to make such payment or to perform, or not to perform, as the case may be, such act or obligation.

(d) All references in this instrument to designated "Articles," "Sections" and other subdivisions are, unless otherwise specified, to the designated Articles, Sections and other subdivisions of this instrument as originally executed. The words "herein," "hereof," "hereunder" and other words of similar import refer to this Indenture as a whole and not to any particular Article, Section or other subdivision.

(e) The Table of Contents and the Article and Section headings of this Indenture shall not be treated as a part of this Indenture or as affecting the true meaning of the provisions hereof.

(f) Whenever an item or items are listed after the word "including," such listing is not intended to be a listing that excludes items not listed.

Section 103. Date of Indenture. The dating of this Indenture as of _____ 1, 2024, is intended as and for the convenient identification of this Indenture only and is not intended to indicate that this Indenture was executed and delivered on said date, this Indenture being executed and delivered and becoming effective simultaneously with the initial issuance of the Bonds.

ARTICLE II

THE BONDS

Section 201. Title and Amount of Bonds. No Bonds may be issued under this Indenture except in accordance with the provisions of this Article. The Bonds authorized to be issued under this Indenture shall be designated as the "City of Creve Coeur, Missouri, Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024." The maximum total principal amount of Bonds that may be issued hereunder is hereby expressly limited to $135,000,000.

Section 202. Nature of Obligation. The Bonds and the interest thereon shall be special obligations of the City payable solely out of the rents, revenues and receipts derived by the City from the Project and the Lease and not from any other fund or source of the City. The Bonds are secured by a pledge and assignment of the Trust Estate to the Trustee in favor of the Owners, as provided in this Indenture. The Bonds and the interest thereon shall not constitute general obligations of the City, the State or any political subdivision thereof, and none of the City, the State or any political subdivision thereof shall be liable

thereon, and the Bonds shall not constitute an indebtedness within the meaning of any constitutional, charter or statutory debt limitation or restriction and are not payable in any manner by taxation.

Section 203. Denomination, Number and Dating of the Bonds.

(a) The Bonds shall be issuable in the form of one fully-registered Bond, in substantially the form set forth in **Exhibit B**, in the denomination of $0.01 or any multiple thereof.

(b) The Bonds shall be dated by the Trustee as of the date of initial delivery thereof as provided herein. If the Bonds are at any time thereafter transferred, any replacement Bonds shall be dated as of the date of authentication thereof.

Section 204. Method and Place of Payment of Bonds.

(a) The principal of and interest on the Bonds shall be payable in any coin or currency of the United States of America which on the respective dates of payment thereof is legal tender for payment of public and private debts.

(b) Payment of the principal of the Bonds shall be made upon the presentation and surrender of such Bonds at the principal payment office of the Paying Agent named in the Bonds. The payment of principal of the Bonds shall be noted on the Bonds on **Schedule I** thereto and the registration books maintained by the Trustee pursuant to **Section 206**. Payment of the interest on the Bonds shall be made by the Trustee on each Payment Date to the Person appearing on the registration books of the Trustee hereinafter provided for as the Owner thereof on the 15th day (whether or not a Business Day) of the calendar month next preceding such Payment Date by check or draft mailed to such Owner at such Owner's address as it appears on such registration books.

(c) The Bonds and the original **Schedule I** thereto shall be held by the Trustee in trust, unless otherwise directed in writing by the Owner. If the Bonds are held by the Trustee, the Trustee shall, on each Payment Date, send a revised copy of **Schedule I** via facsimile or other electronic means to the Owner, the Fee Owner (if not the Owner) and the City. Absent manifest error, the amounts shown on **Schedule I** as noted by the Trustee shall be conclusive evidence of the principal amount paid on the Bonds.

(d) If there is one Owner of the Bonds, the Trustee is authorized to make the final or any interim payment of principal of such Bonds by internal bank transfer or by electronic transfer to an account at a commercial bank or savings institution designated in writing by such Owner and located in the continental United States. The Trustee is also authorized to make interest payments on such Bonds by internal bank transfer or by electronic transfer to an account at a commercial bank or savings institution designated by such Owner and located in the continental United States.

(e) If the Fee Owner or any Financing Party is the sole Owner of the Bonds, then the Fee Owner, as lessee under the Lease, may set-off its obligation to the City to pay Basic Rent under the Lease against the City's obligation to the Fee Owner (or such Financing Party), as bondholder, to pay principal of and interest on the Bonds under this Indenture. The Trustee may conclusively rely on the absence of any written notice from the Fee Owner to the contrary as evidence that such set-off has occurred and that pursuant to the set-off, the Fee Owner, as lessee under the Lease, is deemed to have paid its obligation to the City to pay Basic Rent under the Lease and the City is deemed to have paid its obligation to the Fee Owner (or such Financing Party), as bondholder, to pay principal of and interest on the Bonds under this Indenture. On the final Payment Date, the Fee Owner may deliver the Bonds to the Trustee for cancellation, and the Fee Owner shall receive a credit against the Basic Rent payable by the Fee Owner under **Section**

5.1 of the Lease in an amount equal to the remaining principal of the Bonds so tendered for cancellation plus accrued interest thereon.

Section 205. Execution and Authentication of Bonds.

(a) The Bonds shall be executed on behalf of the City by the manual or facsimile signature of its City Administrator and attested by the manual or facsimile signature of its City Clerk and shall have the corporate seal of the City affixed thereto or imprinted thereon. If any officer whose signature or facsimile thereof appears on the Bonds ceases to be such officer before the delivery of such Bonds, such signature or facsimile thereof shall nevertheless be valid and sufficient for all purposes, the same as if such Person had remained in office until delivery. Any Bond may be signed by such Persons as at the actual time of the execution of such Bond are the proper officers to sign such Bond although at the date of such Bond such Persons may not have been such officers.

(b) The Bonds shall have endorsed thereon a Certificate of Authentication substantially in the form thereof set forth in **Exhibit B**, which shall be manually executed by the Trustee. No Bond shall be entitled to any security or benefit under this Indenture or shall be valid or obligatory for any purposes until such Certificate of Authentication has been duly executed by the Trustee. The executed Certificate of Authentication upon any Bond shall be conclusive evidence that such Bond has been duly authenticated and delivered under this Indenture. The Certificate of Authentication on any Bond shall be deemed to have been duly executed if signed by any authorized signatory of the Trustee.

Section 206. Registration, Transfer and Exchange of Bonds.

(a) The Trustee shall keep books for the registration and transfer of Bonds as provided in this Indenture.

(b) The Bonds may be transferred to an Approved Investor only upon the books kept for the registration and transfer of Bonds upon surrender thereof to the Trustee duly endorsed for transfer or accompanied by an assignment duly executed by the Owner or such Owner's attorney or legal representative in such form as shall be satisfactory to the Trustee. In connection with any such transfer of the Bonds, the City and the Trustee shall receive an executed representation letter signed by the proposed assignee in substantially the form of **Exhibit C**. The Trustee has no duty or obligation to confirm that any transferee that provides such representation letter is an Approved Investor. Upon any such transfer, the City shall execute and the Trustee shall authenticate and deliver in exchange for such Bonds a new fully-registered Bond or Bonds, registered in the name of the transferee, of any denomination or denominations authorized by this Indenture, in an aggregate principal amount equal to the Outstanding principal amount of such Bonds, of the same maturity and bearing interest at the same rate.

(c) In all cases in which Bonds are exchanged or transferred hereunder the provisions of any legend restrictions on the Bonds shall be complied with and the City shall execute and the Trustee shall authenticate and deliver at the earliest practicable time Bonds in accordance with the provisions of this Indenture. All Bonds surrendered in any such exchange or transfer shall forthwith be canceled by the Trustee. The City or the Trustee may make a reasonable charge for every such exchange or transfer of Bonds sufficient to reimburse it for any tax, fee or other governmental charge required to be paid with respect to such exchange or transfer, and such charge shall be paid before any new Bond shall be delivered. Neither the City nor the Trustee shall be required to make any such exchange or transfer of Bonds during the 15 days immediately preceding a Payment Date on the Bonds or, in the case of any proposed redemption

of Bonds, during the 15 days immediately preceding the selection of Bonds for such redemption or after such Bonds or any portion thereof has been selected for redemption.

(d) If any Owner fails to provide a certified taxpayer identification number to the Trustee, the Trustee may make a charge against such Owner sufficient to pay any governmental charge required to be paid as a result of such failure, which amount may be deducted by the Trustee from amounts otherwise payable to such Owner under such Owner's Bond.

Section 207. Persons Deemed Owners of Bonds. As to any Bond, the Person in whose name the same is registered as shown on the bond registration books required by **Section 206** shall be deemed and regarded as the absolute owner thereof for all purposes. Payment of or on account of the principal of and interest on any such Bond shall be made only to or upon the order of the Owner thereof or a legal representative thereof. All such payments shall be valid and effectual to satisfy and discharge the liability upon such Bond, including the interest thereon, to the extent of the sum or sums so paid.

Section 208. Authorization of the Bonds.

(a) The Bonds are authorized in the aggregate maximum principal amount of $135,000,000 for the purpose of providing funds to pay Project Costs, which Bonds shall be designated the "City of Creve Coeur, Missouri, Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024." The Bonds shall be dated as provided in **Section 203(b)**, shall become due on the Completion Date (subject to prior redemption as provided in **Article III**) and shall bear interest as specified in **Section 208(f)**, payable on the dates specified in **Section 208(f)**.

(b) The Trustee is hereby designated as the Paying Agent. The Owners of a majority of Bonds then-Outstanding may designate a different Paying Agent upon written notice to the City and the Trustee.

(c) The Bonds shall be executed without material variance from the form and in the manner set forth in **Exhibit B** and delivered to the Trustee for authentication. Prior to or simultaneously with the authentication and delivery of the Bonds by the Trustee, there shall be filed with the Trustee the following:

(1) a copy of the Ordinance;

(2) executed counterparts of this Indenture, the Base Lease, the Lease, the Bond Purchase Agreement and the Redevelopment Agreement;

(3) a representation letter from the Purchaser in substantially the form attached as **Exhibit C**;

(4) a request and authorization to the Trustee on behalf of the City, executed by an Authorized City Representative, to authenticate the Bonds and deliver the same to or at the written direction of the Purchaser upon payment to the Trustee, for the account of the City, of the purchase price thereof specified in the Bond Purchase Agreement. The Trustee shall be entitled to conclusively rely upon such request and authorization as to the name of the Purchaser and the amount of such purchase price; and

(5) such other certificates, statements, receipts, opinions and documents as the Trustee shall reasonably require for the delivery of the Bonds.

In authenticating Bonds, the Trustee makes no certification or representation that the Bonds have been validly issued or constitute legally binding obligations of the City.

(d) When the documents specified in subsection (c) of this Section have been filed with the Trustee, and when the Bonds have been executed and authenticated as required by this Indenture, either:

(1) the Purchaser shall pay the Closing Price to the Trustee, and the Trustee shall endorse the Bonds in an amount equal to the Closing Price and then either hold the Bonds in trust or if so directed in writing deliver the Bonds to or upon the order of the Purchaser; or

(2) the Fee Owner shall submit a requisition certificate in accordance with **Section 4.4** of the Lease, in an amount equal to the Closing Price, and the Trustee shall endorse the Bonds in an amount equal to the Closing Price and then either hold the Bonds in trust or if so directed in writing deliver the Bonds to the Fee Owner (or another purchaser designated by the Fee Owner).

In either case, the Purchaser shall be deemed to have paid over to the Trustee, and the Trustee shall be deemed to have deposited into the Project Fund, an amount equal to the Closing Price.

(e) Following the initial issuance and delivery of the Bonds, the Fee Owner may submit additional requisition certificates in accordance with **Section 4.4** of the Lease. If the Purchaser does not pay to the Trustee the amount set forth in the requisition certificates, the Purchaser will be deemed to have advanced an amount equal to the amount set forth in the requisition certificates, and if the Trustee is holding the Bonds, the Trustee shall endorse the Bonds in an amount equal to the amount set forth in the requisition certificates. The date of endorsement of each Principal Amount Advanced as set forth on **Schedule I** to the Bonds shall be the date of the City's approval of each requisition certificate. The Trustee shall keep a record of the total requisitions submitted for the Project and shall notify the City if the requisitions submitted exceed the maximum principal amount of the Bonds.

(f) The Bonds shall bear interest at the rate of 5.0% per annum on the Cumulative Outstanding Principal Amount of the Bonds. Such interest shall be payable in arrears on each December 1, commencing on December 1, 2024, and continuing thereafter until the Cumulative Outstanding Principal Amount is paid in full, but not later than the Completion Date. Interest shall be calculated on the basis of a year of 360 days consisting of 12 months of 30 days each.

(g) The Trustee shall keep and maintain a record of the amount deposited or deemed to be deposited into the Project Fund pursuant to the terms of this Indenture as the "Principal Amount Advanced" and shall enter the aggregate principal amount of the Bonds then-Outstanding on its records as the "Cumulative Outstanding Principal Amount." If the Trustee is holding the Bonds, such advanced amounts shall be reflected on **Schedule I** to the Bonds. To the extent that advances are deemed to have been made pursuant to requisitions, the Trustee's records of such advances shall be based solely on the requisitions provided to it. On each date upon which a portion of the Cumulative Outstanding Principal Amount is paid to the Owners, pursuant to the redemption provisions of this Indenture, the Trustee shall enter on its records and **Schedule I** to the Bonds (if the Trustee is holding the Bonds) the principal amount paid on the Bonds as the "Principal Amount Redeemed" and shall enter the then-Outstanding principal amount of the Bonds as the "Cumulative Outstanding Principal Amount." The records maintained by the Trustee as to amounts deposited into the Project Fund or principal amounts paid on the Bonds shall be the official records of the Cumulative Outstanding Principal Amount for all purposes, absent manifest error, and shall be in substantially the form of the Table of Cumulative Outstanding Principal Amount as set out in the form of Bonds in **Exhibit B**. To the extent the Fee Owner, as lessee under the Lease, sets off its obligation to the

City against the City's obligation to the Fee Owner, as bondholder, as permitted by **Section 204(e)**, the Trustee shall not be required to confirm that such set-off has occurred. If any moneys are deposited by the Trustee into the Project Fund, then the Trustee shall provide a statement of receipts and disbursements with respect thereto to the City and the Fee Owner on a monthly basis. After the Project has been completed and the certificate of payment of all costs is filed as provided in **Section 4.5** of the Lease, the Trustee, to the extent it has not already done so pursuant to this Section or **Section 1012**, shall file a final statement of receipts and disbursements with respect thereto with the City and the Fee Owner.

Section 209. Mutilated, Lost, Stolen or Destroyed Bonds. If any Bond becomes mutilated or is lost, stolen or destroyed, the City shall execute and the Trustee shall authenticate and deliver a new Bond of like series, date and tenor as the Bond mutilated, lost, stolen or destroyed; provided that, in the case of any mutilated Bond, such mutilated Bond shall first be surrendered to the Trustee, and in the case of any lost, stolen or destroyed Bond, there shall be first furnished to the City and the Trustee evidence of such loss, theft or destruction satisfactory to the Trustee, together with indemnity satisfactory to the Trustee to save and hold each of the City and the Trustee harmless. If any such Bond has matured, instead of delivering a substitute Bond, the Trustee may pay the same without surrender thereof. Upon the issuance of any substitute Bond, the City and the Trustee may require the payment of an amount sufficient to reimburse the City and the Trustee for any tax or other governmental charge that may be imposed in relation thereto and any other reasonable fees and expenses incurred in connection therewith.

Section 210. Cancellation and Destruction of Bonds Upon Payment.

(a) All Bonds that have been paid or redeemed or that the Trustee has purchased or that have otherwise been surrendered to the Trustee under this Indenture, either at or before maturity, shall be canceled by the Trustee immediately upon the payment, redemption or purchase of such Bonds and the surrender thereof to the Trustee.

(b) All Bonds canceled under any of the provisions of this Indenture shall be destroyed by the Trustee in accordance with applicable laws and regulations and the Trustee's policies and practices. The Trustee shall execute a certificate describing the Bonds so destroyed and shall file executed counterparts of such certificate with the City and the Fee Owner.

ARTICLE III

REDEMPTION OF BONDS

Section 301. Redemption of Bonds.

(a) The Bonds are subject to redemption and payment at any time before the stated maturity thereof, at the option of the City, upon written instructions from the Fee Owner, (1) in whole, if the Fee Owner exercises its option to purchase the Project and deposits an amount sufficient to effect such purchase pursuant to the Lease on the applicable redemption date, or (2) in part, if the Fee Owner prepays additional Basic Rent pursuant to the Lease. If only a portion of the Bonds are to be redeemed, (A) Bonds aggregating at least 10% of the maximum aggregate principal amount of Bonds authorized hereunder shall not be subject to redemption and payment before the stated maturity thereof, and (B) the Trustee shall keep a record of the amount of Bonds to remain Outstanding following such redemption. Any redemption of Bonds pursuant to this paragraph shall be at a redemption price equal to the par value thereof being redeemed, plus accrued interest thereon, without premium or penalty, to the redemption date.

(b) The Bonds are subject to mandatory redemption, in whole or in part, to the extent of amounts deposited in the Bond Fund pursuant to **Section 9.1(f)** or **9.2(c)** of the Lease, in the event of substantial damage to or destruction or condemnation of substantially all of the Project. Bonds to be redeemed pursuant to this paragraph shall be called for redemption by the Trustee on the earliest practicable date for which timely notice of redemption may be given as provided hereunder. Any redemption of Bonds pursuant to this paragraph shall be at a redemption price equal to the par value thereof being redeemed, plus accrued interest thereon, without premium or penalty, to the redemption date. Before giving notice of redemption to the Owners pursuant to this paragraph (b), money in an amount equal to the redemption price shall have been deposited in the Bond Fund.

(c) At its option, the Fee Owner may deliver to the Trustee for cancellation any Bonds owned by the Fee Owner or any Financing Party and not previously paid, and the Fee Owner shall receive a credit against the amounts payable by the Fee Owner for the redemption of such Bonds in an amount equal to the principal amount of the Bonds so tendered for cancellation, plus accrued interest.

Section 302. Effect of Call for Redemption. Before or on the date fixed for redemption, funds, Government Securities, or a combination thereof, shall be placed with the Trustee which are sufficient to pay the Bonds called for redemption and accrued interest thereon, if any, to the redemption date. Upon the happening of the above conditions and appropriate written notice having been given, the Bonds or the portions of the principal amount of Bonds thus called for redemption shall cease to bear interest on the specified redemption date, shall no longer be entitled to the protection, benefit or security of this Indenture and shall not be deemed to be Outstanding under the provisions of this Indenture. If the Bonds are fully redeemed before maturity and an amount of money equal to the Trustee's and the Paying Agent's agreed to fees and expenses hereunder accrued and to accrue in connection with such redemption is paid or provided for, the City shall, at the Fee Owner's direction, deliver to the Fee Owner the items described in **Section 11.2** of the Lease.

Section 303. Notice of Redemption. If the Bonds are to be called for redemption as provided in **Section 301(a)**, the Fee Owner shall deliver written notice to the City and the Trustee that it has elected to redeem all or a portion of the Bonds at least 40 days (10 days if there is one Owner) before the scheduled redemption date. The Trustee shall then deliver written notice to the Owners at least 30 days (five days if there is one Owner) before the scheduled redemption date by first-class mail (or facsimile or other electronic communication, if there is one Owner) stating the date upon which the Bonds will be redeemed and paid, unless such notice period is waived by the Owners in writing.

ARTICLE IV

FORM OF BONDS

Section 401. Form Generally. The Bonds and the Trustee's Certificate of Authentication to be endorsed thereon shall be issued in substantially the forms set forth in **Exhibit B**. The Bonds may have endorsed thereon such legends or text as may be necessary or appropriate to conform to any applicable rules and regulations of any governmental authority or any custom, usage or requirements of law with respect thereto.

ARTICLE V

CUSTODY AND APPLICATION OF BOND PROCEEDS

Section 501. Creation of Funds. There are hereby created and ordered to be established in the custody of the Trustee the following special trust funds in the name of the City:

(a) "City of Creve Coeur, Missouri, Project Fund -- Olia Village Project" (herein called the "Project Fund").

(b) "City of Creve Coeur, Missouri, Bond Fund -- Olia Village Project" (herein called the "Bond Fund").

Section 502. Deposits into the Project Fund. The proceeds of the sale of the Bonds (whether actually paid or deemed paid under **Section 208(d)**), including Additional Payments (as defined in the Bond Purchase Agreement), when received, excluding such amounts required to be paid into the Bond Fund pursuant to **Section 601**, shall be deposited by the Trustee into the Project Fund. Any money received by the Trustee from any other source for the purpose of purchasing, constructing and installing the Project shall pursuant to any written directions from the Person depositing such moneys also be deposited into the Project Fund.

Section 503. Disbursements from the Project Fund.

(a) The moneys in the Project Fund shall be disbursed by the Trustee for the payment of, or reimbursement to the Fee Owner (or any other party that has made payment on behalf of the Fee Owner) for payment of, Project Costs upon receipt of requisition certificates signed by the Fee Owner and approved by the City in accordance with the provisions of **Article IV** of the Lease. The Trustee hereby covenants and agrees to disburse such moneys in accordance with such provisions.

(b) If, pursuant to **Section 208(d)** or **(e)**, the Trustee is deemed to have deposited into the Project Fund the amount specified in a requisition certificate submitted by the Fee Owner, the Trustee shall upon endorsement of the Bonds in an equal amount be deemed to have disbursed such funds from the Project Fund to the Fee Owner (or such other purchaser designated by the Fee Owner) in satisfaction of such requisition certificate.

(c) In paying any requisition certificate under this Section, the Trustee may rely as to the completeness and accuracy of all statements in such requisition certificate if such requisition certificate is signed by an Authorized Fee Owner Representative and approved by an Authorized City Representative without inquiry or investigation. It is understood that the Trustee shall not be required to make any inspections of the Project, nor any improvements with respect thereto, make any provision to obtain completion bonds, mechanic's or materialman's lien releases or otherwise supervise the Project. The approval of each requisition certificate by an Authorized Fee Owner Representative and an Authorized City Representative shall constitute, unto the Trustee, an irrevocable determination that all conditions precedent to the payment of the specified amounts from the Project Fund have been completed. If the City so requests in writing, a copy of each requisition certificate submitted to the Trustee for payment under this Section shall be promptly provided by the Trustee to the City. The City hereby authorizes and directs the Trustee to make disbursements in the manner and as provided for by the aforesaid provisions of the Lease.

Section 504. Completion of the Project. The completion of the purchase and construction of the Project and payment of all costs and expenses incident thereto shall be evidenced by the filing with the

Trustee of the certificate required by the provisions of **Section 4.5** of the Lease. As soon as practicable after the Completion Date, any balance remaining in the Project Fund shall without further authorization be transferred by the Trustee to the Bond Fund and applied as provided in **Section 4.6** of the Lease.

Section 505. Disposition Upon Acceleration. If the principal of the Bonds has become due and payable pursuant to **Section 902**, upon the date of payment by the Trustee of any moneys due as hereinafter provided in **Article IX**, any balance remaining in the Project Fund shall without further authorization be deposited in the Bond Fund by the Trustee, with advice to the City and the Fee Owner of such action.

ARTICLE VI

REVENUES AND FUNDS

Section 601. Deposits into the Bond Fund.

(a) The Trustee shall deposit into the Bond Fund, as and when received, (1) all accrued interest on the Bonds, if any, paid by the Purchaser; (2) all Basic Rent payable by the Fee Owner to the City specified in **Section 5.1** of the Lease; (3) any Additional Rent payable by the Fee Owner specified in **Section 5.2** of the Lease; (4) any amount in the Project Fund to be transferred to the Bond Fund pursuant to **Section 504** upon completion of the Project or pursuant to **Section 505** upon acceleration of the Bonds; (5) the balance of any Net Proceeds of condemnation awards or insurance received by the Trustee pursuant to **Article IX** of the Lease; (6) the amounts to be deposited in the Bond Fund pursuant to **Sections 9.1(f)** and **9.2(c)** of the Lease; (7) all interest and other income derived from the investment of Bond Fund moneys as provided in **Section 702**; and (8) all other moneys received by the Trustee under and pursuant to any of the provisions of the Lease when accompanied by written directions from the Person depositing such moneys that such moneys are to be paid into the Bond Fund.

(b) The Trustee shall notify the Fee Owner in writing, at least 15 days before each date on which a payment is due under **Section 5.1** of the Lease, of the amount that is payable by the Fee Owner pursuant to such Section.

Section 602. Application of Moneys in the Bond Fund.

(a) Except as provided in **Section 604** and **Section 908** hereof and **Section 4.6** of the Lease, moneys in the Bond Fund shall be expended solely for the payment of the principal of and interest on the Bonds as the same matures and becomes due or upon the redemption thereof before maturity; provided, however, that any amounts received by the Trustee as Additional Rent under **Section 5.2** of the Lease and deposited to the Bond Fund as provided in **Section 601** above, shall be expended by the Trustee for such items of Additional Rent as they are received or due without further authorization from the City.

(b) The City hereby authorizes and directs the Trustee to withdraw sufficient funds from the Bond Fund to pay the principal of and interest on the Bonds as the same becomes due and payable and to make said funds so withdrawn available to the Paying Agent for the purpose of paying said principal and interest.

(c) Whenever the amount in the Bond Fund from any source whatsoever is sufficient to redeem all of the Bonds Outstanding and to pay interest to accrue thereon before and until such redemption, the

City covenants and agrees, upon request of the Fee Owner, to take and cause to be taken the necessary steps to redeem all such Bonds on the next succeeding redemption date for which the required redemption notice may be given or on such later redemption date as may be specified by the Fee Owner. The Trustee may use any moneys in the Bond Fund to redeem a part of the Bonds Outstanding in accordance with and to the extent permitted by **Article III** so long as the Fee Owner is not in default with respect to any payments under the Lease and to the extent said moneys are in excess of the amount required for payment of Bonds theretofore matured or called for redemption and past due interest, if any, in all cases when such Bonds have not been presented for payment.

(d) After payment in full of the principal of and interest, if any, on the Bonds (or provision has been made for the payment thereof as provided in this Indenture) and the fees, charges and expenses of the Trustee, the City and the Paying Agent and any other amounts required to be paid under this Indenture and the Lease, all amounts remaining in the Bond Fund shall be paid to the Fee Owner upon the expiration or sooner termination of the Lease.

Section 603. Payments Due on Days Other than Business Days. In any case where the date of maturity of principal of or interest, if any, on the Bonds or the date fixed for redemption of any Bonds is not a Business Day, then payment of principal or interest, if any, need not be made on such date but may be made on the next succeeding Business Day with the same force and effect as if made on the date of maturity or the date fixed for redemption, and no interest, if any, shall continue to accrue for the period after such date.

Section 604. Nonpresentment of Bonds. If any Bond is not presented for payment when the principal thereof becomes due, either at maturity or otherwise, or at the date fixed for redemption thereof, if funds sufficient to pay such Bond have been made available to the Trustee, all liability of the City to the Owner thereof for the payment of such Bond shall forthwith cease, determine and be completely discharged, and thereupon it shall be the duty of the Trustee to hold such funds, without liability for interest thereon, for the benefit of the Owner of such Bond who shall thereafter be restricted exclusively to such funds for any claim of whatever nature on his part under this Indenture or on, or with respect to, said Bond. If any Bond is not presented for payment within one year following the date when such Bond becomes due, whether at maturity or otherwise, the Trustee shall without liability for interest thereon repay to the Fee Owner the funds theretofore held by it for payment of such Bond, and such Bond shall, subject to the defense of any applicable statute of limitation, thereafter be an unsecured obligation of the Fee Owner, and the Owner thereof may look only to the Fee Owner for payment, and then only to the extent of the amount so repaid, and the Fee Owner shall not be liable for any interest thereon and shall not be regarded as a trustee of such money.

ARTICLE VII

SECURITY FOR DEPOSITS AND INVESTMENT OF FUNDS

Section 701. Moneys to be Held in Trust. All moneys deposited with or paid to the Trustee for account of the Bond Fund or the Project Fund under any provision of this Indenture, and all moneys deposited with or paid to the Paying Agent under any provision of this Indenture, shall be held by the Trustee or the Paying Agent in trust and shall be applied only in accordance with the provisions of this Indenture and the Lease, and, until used or applied as herein provided, shall constitute part of the Trust Estate and be subject to the lien hereof. Neither the Trustee nor the Paying Agent shall be under any liability for interest on any moneys received hereunder except such as may be agreed upon in writing.

Section 702. Investment of Moneys in Project Fund and Bond Fund. Moneys held in the Project Fund and the Bond Fund shall, pursuant to written direction of the Fee Owner, signed by an Authorized Fee Owner Representative, be separately invested and reinvested by the Trustee in Investment Securities which mature or are subject to redemption by the Owner before the date such funds will be needed. If the Fee Owner fails to provide written directions concerning the investment of moneys held in the Project Fund and the Bond Fund, the Trustee shall hold such amounts uninvested in cash. The Trustee is specifically authorized to implement its automated cash investment system to assure that cash on hand is invested and to charge its normal cash management fees and cash sweep account fees, which may be deducted from income earned on investments; provided that any such fees shall not exceed the interest income on the investment. The Trustee shall be provided ample time to clear any such fees that exceed interest income on the investment. Any such Investment Securities shall be held by or under the control of the Trustee and shall be deemed at all times a part of the fund in which such moneys are originally held, and the interest accruing thereon and any profit realized from such Investment Securities shall be credited to such fund, and any loss resulting from such Investment Securities shall be charged to such fund. After the Trustee has notice pursuant to **Section 1001(h)** of the existence of an Event of Default, the Trustee shall direct the investment of moneys in the Bond Fund and the Project Fund. The Trustee shall sell and reduce to cash a sufficient amount of such Investment Securities whenever the cash balance in any fund is insufficient for the purposes of such fund. In determining the balance in any fund, investments in such fund shall be valued at the lower of their original cost or their fair market value as of the most recent Payment Date. The Trustee may make any and all investments permitted by the provisions of this Section through its own bond department or any affiliate or short-term investment department.

Section 703. Record Keeping. The Trustee shall maintain records designed to show compliance with the provisions of this Article and with the provisions of **Article VI** while any of the Bonds are Outstanding.

ARTICLE VIII

GENERAL COVENANTS AND PROVISIONS

Section 801. Payment of Principal and Interest. The City covenants and agrees that it will, but solely from the rents, revenues and receipts derived from the Project and the Lease as described herein, deposit or cause to be deposited in the Bond Fund sufficient sums payable under the Lease promptly to meet and pay the principal of and interest on the Bonds as they become due and payable at the place, on the dates and in the manner provided herein and in the Bonds according to the true intent and meaning thereof. Nothing herein shall be construed as requiring the City to operate the Project as a business other than as lessor or to use any funds or revenues from any source other than funds and revenues derived from the Project.

Section 802. Authority to Execute Indenture and Issue Bonds. The City covenants that it is duly authorized under the Constitution and laws of the State to execute this Indenture, to lease the Project, to issue the Bonds and to pledge and assign the Trust Estate in the manner and to the extent herein set forth; that all action on its part for the execution and delivery of this Indenture and the issuance of the Bonds has been duly and effectively taken; and that the Bonds in the hands of the Owners thereof are and will be valid and enforceable obligations of the City according to the import thereof.

Section 803. Performance of Covenants. The City covenants that it will faithfully perform or cause to be performed at all times any and all covenants, undertakings, stipulations and provisions contained in this Indenture, in the Bonds and in all proceedings of its governing body pertaining thereto. The Trustee may take such action as it deems appropriate to enforce all such covenants, undertakings, stipulations and provisions of the City hereunder.

Section 804. Instruments of Further Assurance. The City covenants that it will do, execute, acknowledge and deliver, or cause to be done, executed, acknowledged and delivered, such Supplemental Indentures and such further acts, instruments, financing statements and other documents as the Trustee may reasonably require for the better pledging and assigning unto the Trustee the property and revenues herein described to the payment of the principal of and interest, if any, on the Bonds, upon being first indemnified by the Fee Owner for the cost thereof. The City covenants and agrees that, except as herein and in the Lease provided, it will not sell, convey, mortgage, encumber or otherwise dispose of any part of the Project or the rents, revenues and receipts derived therefrom or from the Lease, or of its rights under the Lease.

Section 805. Recordings and Filings. The City shall file or cause to be kept and filed all financing statements and hereby authorizes and directs the Trustee to file or cause to be kept and filed continuation statements with respect to such originally filed financing statements related to this Indenture and all supplements hereto in order to fully preserve and protect the security of the Owners and the rights of the Trustee hereunder. The City will cooperate in causing this Indenture and all Supplemental Indentures, the Lease and all Supplemental Leases, the Base Lease and all other security instruments to be recorded and filed in such manner and in such places as may be required by law in order to fully preserve and protect the security of the Owners and the rights of the Trustee hereunder. The Trustee shall file continuation statements with respect to each Uniform Commercial Code financing statement relating to the Trust Estate filed by the City at the time of the issuance of the Bonds; provided that a copy of the filed initial financing statement is timely delivered to the Trustee. In addition, unless the Trustee has been notified in writing by the City that any such initial filing or description of collateral was or has become defective, the Trustee shall be fully protected in (a) relying on such initial filing and description of collateral in filing any continuation statement or modification thereto pursuant to this Section, and (b) filing any continuation statement in the same filing office as the initial filing was made. The Fee Owner shall be responsible for the customary fees charged by the Trustee for the preparation and filing of continuation statements and for the reasonable costs incurred by the Trustee in the preparation and filing of all continuation statements hereunder, including attorneys' fees and expenses. These fees shall be considered "extraordinary services" fees.

Section 806. Inspection of Project Books. The City covenants and agrees that all books and documents in its possession relating to the Project and the rents, revenues and receipts derived from the Project shall at all times be open to inspection by such accountants or other agencies as the Trustee may from time to time designate.

Section 807. Enforcement of Rights Under the Lease. The Trustee, as assignee, transferee, pledgee and owner of a security interest under this Indenture, in its name or in the name of the City, may enforce all assigned rights of the City and the Trustee and all obligations of the Fee Owner under and pursuant to the Lease for and on behalf of the Owners, whether or not the City is in default hereunder.

ARTICLE IX

DEFAULT AND REMEDIES

Section 901. Events of Default; Notice; Opportunity to Cure. If any of the following events occur, it is hereby defined as and declared to be and to constitute an "Event of Default":

(a) Default in the due and punctual payment of the principal of any Bond, whether at the stated maturity or accelerated maturity thereof, or at any date fixed for the redemption thereof;

(b) Default in the due and punctual payment of the interest on any Bond, whether at the stated maturity or accelerated maturity thereof, or at any date fixed for the redemption thereof;

(c) Default as specified in **Section 12.1** of the Lease has occurred; or

(d) Default in the performance, or breach, of any other covenant or agreement under this Indenture.

No default specified above shall constitute an Event of Default until the City, the Trustee or the Owners of 25% in aggregate principal amount of all Bonds Outstanding has given actual notice of such default by registered or certified mail or a recognized overnight delivery service to the Fee Owner, and the Fee Owner has had 30 days after receipt of such notice to correct said default or cause said default to be corrected and has not corrected said default or caused said default to be corrected within such period; provided, however, if any such default (other than a default in the payment of any money) is such that it cannot be corrected within such period, it shall not constitute an Event of Default if corrective action is instituted by the Fee Owner within such period and diligently pursued until the default is corrected.

Section 902. Acceleration of Maturity in Event of Default.

(a) If an Event of Default has occurred and is continuing after the notice and cure period described in **Section 901** elapses, the Trustee may, and upon the written request of the City or the Owners of not less than 25% in aggregate principal amount of Bonds then-Outstanding, shall, by notice in writing delivered to the City and the Fee Owner, declare the principal of all Bonds then-Outstanding and the interest accrued thereon immediately due and payable, and such principal and interest and all other amounts due hereunder shall thereupon become and be immediately due and payable.

(b) If, at any time after such declaration, but before the Bonds have matured by their terms, all overdue installments of principal and interest upon the Bonds, together with the reasonable and proper expenses of the Trustee, and all other sums then payable by the City under this Indenture are either paid or provisions satisfactory to the Trustee are made for such payment, then and in every such case the Trustee shall, but only with the written approval of a majority of the Owners of the Bonds then-Outstanding, rescind such declaration and annul such default in its entirety. In such event, the Trustee shall rescind any declaration of acceleration of installments of rent payments on the Bonds as provided in **Section 11.1** of the Lease.

(c) In case of any rescission, then and in every such case the City, the Trustee, the Fee Owner and the Owners shall be restored to their former positions and rights hereunder respectively, but no such rescission shall extend to any subsequent or other default or Event of Default or impair any right consequent thereon.

Section 903. Surrender of Possession of Trust Estate; Rights and Duties of Trustee in Possession. If an Event of Default has occurred and is continuing after the notice and cure period described in **Section 901** elapses, the City, upon demand of the Trustee, shall forthwith surrender the possession of,

and it shall be lawful for the Trustee, by such officer or agent as it may appoint, to take possession of all or any part of the Trust Estate, together with the books, papers and accounts of the City pertaining thereto, and including the rights and the position of the City under the Lease, and to hold, operate and manage the same, and from time to time make all needful repairs and improvements. The Trustee may lease the Project or any part thereof, in the name and for the account of the City, and collect, receive and sequester the rents, revenues and receipts therefrom, and out of the same and any moneys received from any receiver of any part thereof, pay and set up proper reserves for the payment of all proper costs and expenses of so taking, holding and managing the same, including without limitation (a) reasonable compensation to the Trustee, its agents and counsel, (b) any reasonable charges of the Trustee hereunder, (c) any taxes and assessments and other charges before the lien of this Indenture, and (d) all expenses of such repairs and improvements. The Trustee shall apply the remainder of the moneys so received in accordance with the provisions of **Section 908**. Whenever all that is due upon the Bonds has been paid and all defaults cured, the Trustee shall surrender possession of the Trust Estate to the City, its successors or assigns, the same right of entry, however, to exist upon any subsequent Event of Default. While in possession of such property, the Trustee shall render annually to the City and the Fee Owner a summarized statement of receipts and expenditures in connection therewith.

Section 904. Appointment of Receivers in Event of Default. If an Event of Default has occurred and is continuing after the notice and cure period described in **Section 901** elapses, and upon the filing of a suit or other commencement of judicial proceedings to enforce the rights of the Trustee and of the Owners under this Indenture, the Trustee shall be entitled, as a matter of right, to the appointment of a receiver or receivers of the Trust Estate or any part thereof, pending such proceedings, with such powers as the court making such appointment shall confer.

Section 905. Exercise of Remedies by the Trustee.

(a) Upon the occurrence of an Event of Default, the Trustee may pursue any available remedy at law or in equity by suit, action, mandamus or other proceeding to enforce the payment of the principal of and interest on the Bonds then-Outstanding and all other amounts due hereunder, and to enforce and compel the performance of the duties and obligations of the City or the Fee Owner as herein set forth or as set forth in the Lease, respectively.

(b) If an Event of Default has occurred and is continuing after the notice and cure period described in **Section 901** elapses, and if requested in writing to do so by (1) the City (in the case of an Event of Default pursuant to **Section 12.1(a)** (but only as it relates to Additional Rent), **(b)** (but only as it relates to Unassigned Rights), **(c)** or **(d)** of the Lease), or (2) the Owners of 25% in aggregate principal amount of Bonds then-Outstanding and indemnified as provided in **Section 1001(l)**, the Trustee shall be obligated to exercise such one or more of the rights and powers conferred by this Article as the Trustee, being advised by counsel, shall deem most expedient and in the interests of the City or the Owners, as the case may be.

(c) All rights of action under this Indenture or under any of the Bonds may be enforced by the Trustee without the possession of any of the Bonds or the production thereof in any trial or other proceedings relating thereto, and any such suit or proceeding instituted by the Trustee shall be brought in its name as Trustee without necessity of joining as plaintiffs or defendants any Owners, and any recovery of judgment shall, subject to the provisions of **Section 908**, be for the equal benefit of all the Owners of the Outstanding Bonds.

Section 906. Limitation on Exercise of Remedies by Owners. No Owner shall have any right to institute any suit, action or proceeding in equity or at law for the enforcement of this Indenture or for the

execution of any trust hereunder or for the appointment of a receiver or any other remedy hereunder, unless (a) a default has occurred of which the Trustee has been notified as provided in **Section 1001(h)** or of which by said subsection the Trustee is deemed to have notice, (b) such default has become an Event of Default, (c) the Owners of 25% in aggregate principal amount of Bonds then-Outstanding have made written request to the Trustee, have offered it reasonable opportunity either to proceed for such reasonable period not to exceed 60 days following such notice and to exercise the powers hereinbefore granted or to institute such action, suit or proceeding in its own name, and have offered to the Trustee indemnity as provided in **Section 1001(l)**, and (d) the Trustee thereafter fails or refuses to exercise the powers herein granted or to institute such action, suit or proceeding in its own name; such notification, request and offer of indemnity are hereby declared in every case, at the option of the Trustee, to be conditions precedent to the execution of the powers and trusts of this Indenture, and to any action or cause of action for the enforcement of this Indenture, or for the appointment of a receiver or for any other remedy hereunder, it being understood and intended that no one or more Owners shall have any right in any manner whatsoever to affect, disturb or prejudice this Indenture by their action or to enforce any right hereunder except in the manner herein provided, and that all proceedings at law or in equity shall be instituted, had and maintained in the manner herein provided and for the equal benefit of the Owners of all Bonds then-Outstanding. Nothing in this Indenture contained shall, however, affect or impair the right of any Owner to payment of the principal of and interest on any Bond at and after the maturity thereof or the obligation of the City to pay the principal of and interest on each of the Bonds issued hereunder to the respective Owners thereof at the time, place, from the source and in the manner herein and in the Bonds expressed.

Section 907. Right of Owners to Direct Proceedings.

(a) The Owners of a majority in aggregate principal amount of Bonds then-Outstanding may, at any time, by an instrument or instruments in writing executed and delivered to the Trustee, direct the time, method and place of conducting all proceedings to be taken in connection with the enforcement of the terms and conditions of this Indenture, or for the appointment of a receiver or any other proceedings hereunder; provided that such direction shall not be otherwise than in accordance with the provisions of law and of this Indenture, including **Section 1001(l)**.

(b) Notwithstanding any provision in this Indenture to the contrary, including paragraph (a) of this Section, the Owners shall not have the right to control or direct any remedies hereunder upon an Event of Default under **Section 12.1(a)** (but only as it relates to Additional Rent), **(b)** (but only as it relates to Unassigned Rights), **(c)** or **(d)** of the Lease.

Section 908. Application of Moneys in Event of Default.

(a) All moneys received by the Trustee pursuant to any right given or action taken under the provisions of this Article shall be applied first to the costs and expenses of the proceedings resulting in the collection of such moneys and to the fees, expenses, liabilities and advances incurred or made by the Trustee (including any attorneys' fees and expenses) or amounts to be paid pursuant to **Section 903** and second to any obligations outstanding under the Lease. Any remaining moneys shall be deposited in the Bond Fund, and all moneys in the Bond Fund shall be applied as follows:

(1) Unless the principal of all the Bonds has become or has been declared due and payable, all such moneys shall be applied:

FIRST -- To the payment to the Persons entitled thereto of all installments of interest, if any, then due and payable on the Bonds, in the order in which such installments

of interest became due and payable, and, if the amount available shall not be sufficient to pay in full any particular installment, then to the payment, ratably, according to the amounts due on such installment, to the Persons entitled thereto, without any discrimination or privilege;

SECOND -- To the payment to the Persons entitled thereto of the unpaid principal of any of the Bonds which have become due and payable (other than Bonds called for redemption for the payment of which moneys are held pursuant to the provisions of this Indenture), in the order of their due dates, and, if the amount available shall not be sufficient to pay in full Bonds due on any particular date, together with such interest, then to the payment, ratably, according to the amount of principal due on such date, to the Persons entitled thereto, without any discrimination or privilege.

(2) If the principal of all the Bonds has become due or has been declared due and payable, all such moneys shall be applied to the payment of the principal and interest, if any, then due and unpaid on all of the Bonds, without preference or priority of principal over interest or of interest over principal or of any installment of interest over any other installment of interest or of any Bond over any other Bond, ratably, according to the amounts due respectively for principal and interest, to the Persons entitled thereto, without any discrimination or privilege.

(3) If the principal of all the Bonds has been declared due and payable, and if such declaration thereafter has been rescinded and annulled under the provisions of **Section 910**, then, subject to the provisions of subsection (2) of this Section, if the principal of all the Bonds later becomes due or is declared due and payable, the moneys shall be applied in accordance with the provisions of subsection (1) of this Section.

(b) Whenever moneys are to be applied pursuant to the provisions of this Section, such moneys shall be applied at such times and from time to time as the Trustee shall determine, having due regard to the amount of such moneys available and which may become available for such application in the future. Whenever the Trustee shall apply such moneys, it shall fix the date (which shall be a Payment Date unless it shall deem another date more suitable) upon which such application is to be made and upon such date interest on the amounts of principal to be paid on such date shall cease to accrue.

(c) Whenever all of the Bonds and interest thereon, if any, have been paid under the provisions of this Section, and all fees, expenses and charges of the City and the Trustee and any other amounts required to be paid under this Indenture and the Lease have been paid, any balance remaining in the Bond Fund shall be paid to the Fee Owner as provided in **Section 602**.

Section 909. Remedies Cumulative. No remedy by the terms of this Indenture conferred upon or reserved to the Trustee or to the Owners is intended to be exclusive of any other remedy, but each and every such remedy shall be cumulative and shall be in addition to any other remedy given to the Trustee or to the Owners hereunder or now or hereafter existing at law or in equity or by statute. No delay or omission to exercise any right, power or remedy accruing upon any Event of Default shall impair any such right, power or remedy or shall be construed to be a waiver of any such Event of Default or acquiescence therein; every such right, power or remedy may be exercised from time to time and as often as may be deemed expedient. If the Trustee has proceeded to enforce any right under this Indenture by the appointment of a receiver, by entry, or otherwise, and such proceedings have been discontinued or abandoned for any reason, or have been determined adversely, then and in every such case the City, the Fee Owner, the Trustee and

the Owners shall be restored to their former positions and rights hereunder, and all rights, remedies and powers of the Trustee shall continue as if no such proceedings had been taken.

Section 910. Waivers of Events of Default. The Trustee shall waive any Event of Default hereunder and its consequences and rescind any declaration of maturity of principal of and interest, if any, on the Bonds, but only upon the written request of the Owners of at least 50% in aggregate principal amount of all the Bonds then-Outstanding, provided, however, that (a) there shall not be waived without the consent of the City an Event of Default hereunder arising from an Event of Default under **Section 12.1(a)** (but only as it relates to Additional Rent), **(b)** (but only as it relates to Unassigned Rights), **(c)** or **(d)** of the Lease, and (b) there shall not be waived without the consent of the Owners of all the Bonds Outstanding (1) any Event of Default in the payment of the principal of any Outstanding Bonds when due (whether at the date of maturity or redemption specified therein), or (2) any Event of Default in the payment when due of the interest on any such Bonds, unless before such waiver or rescission, all arrears of interest, or all arrears of payments of principal when due, as the case may be, and all reasonable expenses of the Trustee and the City (including reasonable attorneys' fees and expenses), in connection with such default, have been paid or provided for. In case of any such waiver or rescission, or in case any proceedings taken by the Trustee on account of any such default have been discontinued or abandoned or determined adversely, then and in every such case the City, the Fee Owner, the Trustee and the Owners shall be restored to their former positions, rights and obligations hereunder, respectively, but no such waiver or rescission shall extend to any subsequent or other default, or impair any right consequent thereon and all rights, remedies and powers of the Trustee shall continue as if no such proceedings had been taken.

ARTICLE X

THE TRUSTEE

Section 1001. Acceptance of the Trusts. The Trustee hereby accepts the trusts imposed upon it by this Indenture but only upon and subject to the following express terms and conditions, and no implied covenants or obligations shall be read into this Indenture against the Trustee:

(a) The Trustee, before the occurrence of an Event of Default and after the curing or waiver of all Events of Default that may have occurred, undertakes to perform such duties and only such duties as are specifically set forth in this Indenture. If any Event of Default has occurred and is continuing, subject to **Section 1001(l)** below, the Trustee shall exercise such of the rights and powers vested in it by this Indenture and shall use the same degree of care and skill in their exercise as a prudent Person would exercise or use under the circumstances in the conduct of its own affairs.

(b) The Trustee undertakes to perform such duties as are specifically set forth in this Indenture, and in the absence of bad faith, negligence or willful misconduct on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee. The Trustee may execute any of the trusts or powers hereunder or perform any duties hereunder either directly or through agents, affiliates, attorneys or receivers and shall not be responsible for any misconduct or negligence on the part of any agent, attorney or receiver appointed or chosen by it with due care. The Trustee may conclusively rely upon and act or refrain from acting upon any opinion or advice of counsel, who may be counsel to the City or to the Fee Owner, concerning all matters of trust hereof and the duties hereunder, and may in all cases pay such reasonable compensation to all such agents, attorneys and receivers as may reasonably be employed in connection with the trusts hereof. The

Trustee shall not be responsible for any loss or damage resulting from any action or nonaction by it taken or omitted to be taken in good faith in reliance upon such opinion or advice of counsel addressed to the City and the Trustee.

(c) The Trustee shall not be responsible for any recital herein or in the Bonds (except with respect to the Certificate of Authentication of the Trustee endorsed on the Bonds), or except as provided in the Lease and particularly **Section 10.8** thereof, for the recording or rerecording, filing or refiling of this Indenture or any security agreement in connection therewith (excluding the continuation of Uniform Commercial Code financing statements), or for insuring the Project or collecting any insurance moneys, or for the validity of the execution by the City of this Indenture or of any Supplemental Indentures or instruments of further assurance, or for the sufficiency of the security for the Bonds. The Trustee shall not be responsible or liable for any loss suffered in connection with any investment of funds made by it in accordance with **Article VII**.

(d) The Trustee shall not be accountable for the use of any Bonds authenticated and delivered hereunder. The Trustee, in its individual or any other capacity, may become the Owner or pledgee of Bonds with the same rights that it would have if it were not the Trustee. The Trustee shall not be accountable for the use or application by the City or the Fee Owner of the proceeds of any of the Bonds or of any money paid to or upon the order of the City or the Fee Owner under any provision of this Indenture.

(e) The Trustee may rely and shall be protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, affidavit, letter, telegram or other paper or document provided for under this Indenture believed by it to be genuine and correct and to have been signed, presented or sent by the proper Person or Persons. The Trustee may rely conclusively on any such document and shall not be required to make any independent investigation in connection therewith. Any action taken by the Trustee pursuant to this Indenture upon the request or authority or consent of any Person who, at the time of making such request or giving such authority or consent is an Owner, shall be conclusive and binding upon all future Owners of the same Bond and upon Bonds issued in exchange therefor or upon transfer or in place thereof.

(f) As to the existence or nonexistence of any fact or as to the sufficiency or validity of any instrument, paper or proceeding, or whenever in the administration of this Indenture the Trustee shall deem it desirable that a matter be proved or established before taking, suffering or omitting any action hereunder, the Trustee may rely upon a certificate signed by an Authorized City Representative or an Authorized Fee Owner Representative as sufficient evidence of the facts therein contained, and before the occurrence of a default of which the Trustee has been notified as provided in subsection (h) of this Section or of which by said subsection it is deemed to have notice, the Trustee shall also be at liberty to accept a similar certificate to the effect that any particular dealing, transaction or action is necessary or expedient, but may at its discretion secure such further evidence deemed necessary or advisable, but shall in no case be bound to secure the same.

(g) The permissive right of the Trustee to do things enumerated in this Indenture shall not be construed as a duty, and the Trustee shall not be answerable for other than its negligence or willful misconduct.

(h) The Trustee shall not be required to take notice or be deemed to have notice of any default hereunder except failure by the City to cause to be made any of the payments to the Trustee

required to be made in **Article VI**, unless the Trustee is specifically notified in writing of such default by the City or by the Owners of at least 25% in aggregate principal amount of all Bonds then-Outstanding.

(i) At any and all reasonable times and subject to the Fee Owner's reasonable and standard security procedures, the Trustee and its duly authorized agents, attorneys, experts, engineers, accountants and representatives may, but shall not be required to, inspect any and all of the Project, and all books, papers and records of the City pertaining to the Project and the Bonds, and to take such memoranda from and in regard thereto as may be desired. The Trustee shall treat all proprietary information of the Fee Owner as confidential.

(j) The Trustee shall not be required to give any bond or surety in respect of the execution of its trusts and powers hereunder or otherwise in respect of the Project.

(k) The Trustee may, but shall not be required to, demand, in respect of the authentication of any Bonds, the withdrawal of any cash, the release of any property or the taking of any other action whatsoever within the purview of this Indenture, any showings, certificates, opinions, appraisals or other information, or corporate action or evidence thereof, in addition to that by the terms hereof required, as a condition of such action by the Trustee deemed desirable for the purpose of establishing the right of the City to the authentication of any Bonds, the withdrawal of any cash, the release of any property or the taking of any other action by the Trustee.

(l) Notwithstanding anything in this Indenture or the Lease to the contrary, before taking any action under this Indenture other than the payments from moneys on deposit in the Project Fund or the Bond Fund, as provided herein, the Trustee may require that satisfactory indemnity be furnished to it for the payment or reimbursement of all costs and expenses (including, without limitation, attorneys' fees and expenses) to which it may be put and to protect it against all liability which it may incur in or by reason of such action, except liability which is adjudicated to have resulted from its negligence or willful misconduct by reason of any action so taken.

(m) Notwithstanding any other provision of this Indenture to the contrary, any provision relating to the conduct of, or intended to provide authority to act, right to payment of fees and expenses, protection, immunity and indemnification to, the Trustee, shall be interpreted to include any action of the Trustee, whether it is deemed to be in its capacity as Trustee, bond registrar or Paying Agent.

(n) No provision of this Indenture or any other agreement executed in connection herewith shall require the Trustee to expend or risk its own funds or otherwise incur any liability, financial or otherwise, in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers, if it has reasonable grounds for believing that repayment of such funds or indemnity satisfactory to it against such risk or liability is not assured to it.

(o) The Trustee agrees to accept and act on instructions or directions pursuant to this Indenture sent by the City or the Fee Owner, as the case may be, by unsecured e-mail, facsimile transmission or other similar unsecured electronic methods, provided, however, that the City or the Fee Owner, respectively, shall provide to the Trustee an incumbency certificate listing designated Persons with the authority to provide such instructions, which incumbency certificate shall be amended whenever a Person is to be added or deleted from the listing. If the City or the Fee Owner, as applicable, elects to give the Trustee e-mail or facsimile instructions (or instructions by a similar electronic method) and the Trustee acts upon such instructions, the Trustee's understanding of such

instructions shall be deemed controlling. The Trustee shall not be liable for any losses, costs or expenses arising directly or indirectly from the Trustee's reliance upon and compliance with such instructions notwithstanding such instructions conflict or are inconsistent with a subsequent written instruction. The City or the Fee Owner, as applicable, agrees to assume all risks arising out of the use of such electronic methods to submit instructions and directions to the Trustee, including without limitation the risk of the Trustee acting on unauthorized instructions and the risk of interception and misuse by third parties.

(p) In no event shall the Trustee be responsible or liable for any failure or delay in the performance of its obligations hereunder arising out of or caused by, directly or indirectly, forces beyond its control, including, without limitation, strikes, work stoppages, acts of war or terrorism, civil or military disturbances, nuclear or natural catastrophes or acts of God, pandemics, epidemics, recognized public emergencies, quarantine restrictions, hacking or cyber-attacks, or other use or infiltration of the Trustee's technological infrastructure exceeding authorized access, or loss or malfunctions of, or interruptions to, utilities, communications or computer (software and hardware) services unless caused by the Trustee's negligence or willful misconduct; it being understood that the Trustee shall use reasonable efforts which are consistent with accepted practices in the banking industry to resume performance as soon as practicable under the circumstances.

(q) The Trustee shall have no responsibility with respect to any information, statement or recital in any official statement, offering memorandum or other disclosure material prepared or distributed with respect to the Bonds and shall have no responsibility for compliance with any state or federal securities laws in connection with the Bonds.

Section 1002. Fees, Charges and Expenses of the Trustee. The Trustee shall be entitled to payment of and/or reimbursement for reasonable fees for its ordinary services rendered hereunder and all advances, agent and counsel fees and other ordinary expenses reasonably made or incurred by the Trustee in connection with such ordinary services. If it becomes necessary for the Trustee to perform extraordinary services, it shall be entitled to reasonable extra compensation therefor and to reimbursement for reasonable extraordinary expenses in connection therewith; provided that if such extraordinary services or extraordinary expenses are caused by the negligence or willful misconduct of the Trustee, it shall not be entitled to compensation or reimbursement therefor. The Trustee shall be entitled to payment and reimbursement for the reasonable fees and charges of the Trustee as Paying Agent for the Bonds. Pursuant to the provisions of **Section 5.2** of the Lease, the Fee Owner has agreed to pay to the Trustee all reasonable fees, charges and expenses of the Trustee under this Indenture. The Trustee agrees that the City shall have no liability for any reasonable fees, charges and expenses of the Trustee, and the Trustee agrees to look only to the Fee Owner for the payment of all reasonable fees, charges and expenses of the Trustee and the Paying Agent as provided in the Lease. Upon the occurrence of an Event of Default and during its continuance, the Trustee shall have a first lien with right of payment before payment on account of principal of or interest on any Bond, upon all moneys in its possession under any provisions hereof for the foregoing reasonable advances, fees, costs and expenses incurred. The Trustee's rights to compensation and indemnification shall survive its resignation or removal hereunder or the satisfaction and discharge of this Indenture and payment in full of the Bonds.

Section 1003. Notice to Owners if Default Occurs. If a default occurs of which the Trustee is by **Section 1001(h)** required to take notice or if notice of default is given as in said subsection (h) provided, then the Trustee shall give written notice thereof to the last known Owners of all Bonds then-Outstanding as shown by the bond registration books required by **Section 206** to be kept at the corporate trust office of the Trustee.

Section 1004. Intervention by the Trustee. In any judicial proceeding to which the City is a party and which, in the opinion of the Trustee and its counsel, has a substantial bearing on the interests of Owners, the Trustee may intervene on behalf of Owners and, subject to the provisions of **Section 1001(l)**, shall do so if requested in writing by the Owners of at least 25% of the aggregate principal amount of Bonds then-Outstanding.

Section 1005. Successor Trustee Upon Merger, Consolidation or Sale. With the prior written consent of the Fee Owner, any corporation or association into which the Trustee may be merged or converted or with or into which it may be consolidated, or to which it may sell or transfer its corporate trust business and assets as a whole or substantially as a whole, or any corporation or association resulting from any merger, conversion, sale, consolidation or transfer to which it is a party, shall be and become successor Trustee hereunder and shall be vested with all the trusts, powers, rights, obligations, duties, remedies, immunities and privileges hereunder as was its predecessor, without the execution or filing of any instrument or any further act on the part of any of the parties hereto.

Section 1006. Resignation of Trustee. The Trustee and any successor Trustee may at any time resign from the trusts hereby created by giving 30 days' written notice to the City, the Fee Owner and the Owners, and such resignation shall take effect at the end of such 30 days, or upon the earlier appointment of a successor Trustee by the Owners or by the City; provided, however, that in no event shall the resignation of the Trustee or any successor Trustee become effective until such time as a successor Trustee has been appointed and has accepted the appointment. If no successor has been appointed and accepted the appointment within 30 days after the giving of such notice of resignation, the Trustee may, at the Fee Owner's expense, petition any court of competent jurisdiction for the appointment of a successor Trustee. The Trustee's rights to indemnity and to any fees, charges or other amounts due and payable to it shall survive any such resignation.

Section 1007. Removal of Trustee. The Trustee may be removed at any time, with or without cause, by an instrument or concurrent instruments in writing (a) delivered to the Trustee, the City and the Fee Owner and signed by the Owners of a majority in aggregate principal amount of Bonds then-Outstanding, or (b) so long as no Event of Default under this Indenture or the Lease has occurred and is continuing, delivered to the Trustee, the City and the Owners and signed by the Fee Owner. The Trustee's rights to indemnity and to any fees, charges or other amounts due and payable to it shall survive any such removal.

Section 1008. Appointment of Successor Trustee. If the Trustee hereunder resigns or is removed, or otherwise becomes incapable of acting hereunder, or if it is taken under the control of any public officer or officers or of a receiver appointed by a court, a successor Trustee (a) reasonably acceptable to the City may be appointed by the Fee Owner (so long as no Event of Default has occurred and is continuing), or (b) reasonably acceptable to the City and the Fee Owner may be appointed by the Owners of a majority in aggregate principal amount of Bonds then-Outstanding, by an instrument or concurrent instruments in writing; provided, nevertheless, that in case of any vacancy, the City, by an instrument executed and signed by its City Administrator and attested by its City Clerk under its seal, may appoint a temporary Trustee to fill such vacancy until a successor Trustee shall be appointed in the manner above provided. Any such temporary Trustee so appointed by the City shall immediately and without further acts be superseded by the successor Trustee so appointed as provided above. Every such Trustee appointed pursuant to the provisions of this Section shall be a trust company or bank in good standing and qualified to accept such trusts with a corporate trust office in the State, and having, or whose obligations are guaranteed by a financial institution having, a reported capital, surplus and undivided profits of not less than $50,000,000. If no successor Trustee has been so appointed and accepted appointment in the manner herein provided, the Trustee, at the Fee Owner's expense, or any Owner may petition any court of competent

jurisdiction for the appointment of a successor Trustee, until a successor has been appointed as above provided.

Section 1009. Vesting of Trusts in Successor Trustee. Every successor Trustee appointed hereunder shall execute, acknowledge and deliver to its predecessor and also to the City and the Fee Owner an instrument in writing accepting such appointment hereunder, and thereupon such successor shall, without any further act, deed or conveyance, become fully vested with all the trusts, powers, rights, obligations, duties, remedies, immunities and privileges of its predecessor and the duties and obligations of such predecessor hereunder shall thereafter cease and terminate; but such predecessor shall, nevertheless, on the written request of the City and upon payment of its outstanding fees and expenses, execute and deliver an instrument transferring to such successor Trustee all the trusts, powers, rights, obligations, duties, remedies, immunities and privileges of such predecessor hereunder; every predecessor Trustee shall deliver all securities and moneys held by it as Trustee hereunder to its successor. Should any instrument in writing from the City be required by any predecessor or successor Trustee for more fully and certainly vesting in such successor the trusts, powers, rights, obligations, duties, remedies, immunities and privileges hereby vested in the predecessor, any and all such instruments in writing shall, on request, be executed, acknowledged and delivered by the City.

Section 1010. Right of Trustee to Pay Taxes and Other Charges. If any tax, assessment or governmental or other charge upon, or insurance premium with respect to, any part of the Project is not paid as required herein or in the Lease, the Trustee may pay such tax, assessment or governmental or other charge or insurance premium, without prejudice, however, to any rights of the Trustee or the Owners hereunder arising in consequence of such failure; any amount at any time so paid under this Section, with interest thereon from the date of payment at the rate of 10% per annum, shall become an additional obligation secured by this Indenture, and the same shall be given a preference in payment over any payment of principal of or interest on the Bonds, and shall be paid out of the proceeds of rents, revenues and receipts collected from the Project, if not otherwise caused to be paid; but the Trustee shall be under no obligation to make any such payment unless it has been requested to do so by the Owners of at least 25% of the aggregate principal amount of Bonds then-Outstanding and has been provided adequate funds for the purpose of such payment.

Section 1011. Trust Estate May be Vested in Co-Trustee.

(a) It is the purpose of this Indenture that there shall be no violation of any law of any jurisdiction (including particularly the State) denying or restricting the right of banking corporations or associations to transact business as trustee in such jurisdiction. It is recognized that in case of litigation under this Indenture or the Lease, and in particular in case of the enforcement of either this Indenture or the Lease upon the occurrence of an Event of Default or if the Trustee deems that by reason of any present or future law of any jurisdiction it cannot exercise any of the powers, rights or remedies herein granted to the Trustee, or take any other action which may be desirable or necessary in connection therewith, it may be necessary or desirable that the Trustee appoint an additional individual or institution as a co-trustee or separate trustee, and the Trustee is hereby authorized to appoint such co-trustee or separate trustee.

(b) If the Trustee appoints an additional individual or institution as a co-trustee or separate trustee (which appointment shall be subject to the approval of the Fee Owner), each and every remedy, power, right, claim, demand, cause of action, immunity, title, interest and lien expressed or intended by this Indenture to be exercised by the Trustee with respect thereto shall be exercisable by such co-trustee or separate trustee but only to the extent necessary to enable such co-trustee or separate trustee to exercise such powers, rights and remedies, and every covenant and obligation necessary to the exercise thereof by such co-trustee or separate trustee shall run to and be enforceable by either of them.

(c) Should any deed, conveyance or instrument in writing from the City be required by the co-trustee or separate trustee so appointed by the Trustee for more fully and certainly vesting in and confirming to such co-trustee or separate trustee such properties, rights, powers, trusts, duties and obligations, any and all such deeds, conveyances and instruments in writing shall, on request, be executed, acknowledged and delivered by the City.

(d) If any co-trustee or separate trustee shall die, become incapable of acting, resign or be removed, all the properties, rights, powers, trusts, duties and obligations of such co-trustee or separate trustee, so far as permitted by law, shall vest in and be exercised by the Trustee until the appointment of a successor to such co-trustee or separate trustee.

Section 1012. Accounting. The Trustee shall render an annual accounting for the period ending December 31 of each year to the City, the Fee Owner and any Owner requesting the same and, upon the request of the City, the Fee Owner or any Owner, at such Owner's expense, a monthly accounting to such party showing in reasonable detail all financial transactions relating to the Trust Estate during the accounting period and the balance in any funds or accounts created by this Indenture as of the beginning and close of such accounting period.

Section 1013. Performance of Duties Under the Lease. The Trustee hereby accepts and agrees to perform the duties and obligations expressly assigned to it under the Lease.

ARTICLE XI

SUPPLEMENTAL INDENTURES

Section 1101. Supplemental Indentures Not Requiring Consent of Owners. The City and the Trustee may from time to time, without the consent of or notice to any of the Owners, enter into such Supplemental Indenture or Supplemental Indentures as shall not be inconsistent with the terms and provisions hereof, for any one or more of the following purposes:

(a) To cure any ambiguity or formal defect or omission in this Indenture, or to make any other change which, in the judgment of the Trustee, is not to the material prejudice of the Trustee or the Owners (provided that in exercising such judgment, the Trustee may rely upon the advice or opinion of counsel);

(b) To grant to or confer upon the Trustee for the benefit of the Owners any additional rights, remedies, powers or authority that may lawfully be granted to or conferred upon the Owners or the Trustee or both of them;

(c) To more precisely identify any portion of the Project or to add additional property thereto;

(d) To conform this Indenture to amendments to the Lease made by the City and the Fee Owner; or

(e) To subject to this Indenture additional revenues, properties or collateral.

Section 1102. Supplemental Indentures Requiring Consent of Owners.

(a) Exclusive of Supplemental Indentures covered by **Section 1101** and subject to the terms and provisions contained in this Section, and not otherwise, the Owners of not less than a majority in aggregate principal amount of the Bonds then-Outstanding may, from time to time, anything contained in this Indenture to the contrary notwithstanding, consent to and approve the execution by the City and the Trustee of such other Supplemental Indenture or Supplemental Indentures as shall be deemed necessary and desirable by the City for the purpose of modifying, amending, adding to or rescinding, in any particular, any of the terms or provisions contained in this Indenture or in any Supplemental Indenture; provided, however, that without the consent of the Owners of 100% of the principal amount of the Bonds then-Outstanding, nothing in this Section contained shall permit or be construed as permitting (1) an extension of the maturity or a shortening of the redemption date of the principal of or interest, if any, on any Bond issued hereunder, or (2) a reduction in the principal amount of any Bond or the rate of interest thereon, if any, or (3) a privilege or priority of any Bond or Bonds over any other Bond or Bonds, or (4) a reduction in the aggregate principal amount of Bonds the Owners of which are required for consent to any such Supplemental Indenture.

(b) If the City requests the Trustee to enter into any such Supplemental Indenture for any of the purposes of this Section, the Trustee shall cause notice of the proposed execution of such Supplemental Indenture to be mailed to each Owner as shown on the bond registration books required by **Section 206**. Such notice shall briefly set forth the nature of the proposed Supplemental Indenture and shall state that copies thereof are on file at the corporate trust office of the Trustee for inspection by all Owners. If within 60 days or such longer period as may be prescribed by the City following the mailing of such notice, the Owners of not less than a majority in aggregate principal amount of the Bonds Outstanding at the time of the execution of any such Supplemental Indenture shall have consented to and approved the execution thereof as herein provided, no Owner shall have any right to object to any of the terms and provisions contained therein, or the operation thereof, or in any manner to question the propriety of the execution thereof, or to enjoin or restrain the Trustee or the City from executing the same or from taking any action pursuant to the provisions thereof.

Section 1103. Fee Owner's Consent to Supplemental Indentures. Anything herein to the contrary notwithstanding, a Supplemental Indenture under this Article shall not become effective unless and until the Fee Owner has consented in writing to the execution and delivery of such Supplemental Indenture. The Trustee shall cause notice of the proposed execution and delivery of any Supplemental Indenture (regardless of whether it affects the Fee Owner's rights) together with a copy of the proposed Supplemental Indenture to be mailed to the Fee Owner and each Financing Party of which the Trustee has received written notice at least 15 days before the proposed date of execution and delivery of the Supplemental Indenture.

Section 1104. Opinion of Counsel. In executing, or accepting the additional trusts created by, any Supplemental Indenture permitted by this Article or the modification thereby of the trusts created by this Indenture, the Trustee and the City shall receive, and, shall be fully protected in relying upon, an opinion of counsel addressed and delivered to the Trustee and the City stating that the execution of such Supplemental Indenture is permitted by and in compliance with this Indenture and will, upon the execution and delivery thereof, be a valid and binding obligation of the City. The Trustee may, but shall not be obligated to, enter into any such Supplemental Indenture which affects the Trustee's rights, duties or immunities under this Indenture or otherwise.

ARTICLE XII

SUPPLEMENTAL LEASES

Section 1201. Supplemental Leases Not Requiring Consent of Owners. The City and the Trustee shall, without the consent of or notice to the Owners, consent to the execution of any Supplemental Lease or Supplemental Leases by the City and the Fee Owner as may be required (a) by the provisions of the Lease and this Indenture, (b) for the purpose of curing any ambiguity or formal defect or omission in the Lease, (c) so as to more precisely identify the Project or add additional property thereto or (d) in connection with any other change therein which, in the judgment of the Trustee, does not materially and adversely affect the Trustee or security for the Owners (provided that in exercising such judgment, the Trustee may rely upon the advice or opinion of counsel).

Section 1202. Supplemental Leases Requiring Consent of Owners. Except for Supplemental Leases as provided for in **Section 1201**, neither the City nor the Trustee shall consent to the execution of any Supplemental Lease or Supplemental Leases by the City or the Fee Owner without the mailing of notice and the obtaining of the written approval or consent of the Owners of not less than a majority in aggregate principal amount of the Bonds at the time Outstanding given and obtained as provided in **Section 1102**. If at any time the City and the Fee Owner shall request the consent of the Trustee to any such proposed Supplemental Lease, the Trustee shall cause notice of such proposed Supplemental Lease to be mailed in the same manner as provided in **Section 1102** with respect to Supplemental Indentures. Such notice shall briefly set forth the nature of such proposed Supplemental Lease and shall state that copies of the same are on file in the corporate trust office of the Trustee for inspection by all Owners. If within 60 days or such longer period as may be prescribed by the City following the mailing of such notice, the Owners of not less than a majority in aggregate principal amount of the Bonds Outstanding at the time of the execution of any such Supplemental Lease shall have consented to and approved the execution thereof as herein provided, no Owner shall have any right to object to any of the terms and provisions contained therein, or the operation thereof, or in any manner to question the propriety of the execution thereof, or to enjoin or restrain the City or the Fee Owner from executing the same or from taking any action pursuant to the provisions thereof.

Section 1203. Opinion of Counsel. In executing or consenting to any Supplemental Lease permitted by this Article, the City and the Trustee shall receive, and shall be fully protected in relying upon, an opinion of counsel addressed to the Trustee and the City stating that the execution of such Supplemental Lease is authorized or permitted by the Lease and this Indenture and the applicable law and will upon the execution and delivery thereof be valid and binding obligations of the parties thereto.

ARTICLE XIII

SATISFACTION AND DISCHARGE OF INDENTURE

Section 1301. Satisfaction and Discharge of this Indenture.

(a) When the principal of and interest on all the Bonds have been paid in accordance with their terms or provision has been made for such payment, as provided in **Section 1302**, and provision also made for paying all other sums payable hereunder and under the Lease, including the reasonable fees and expenses of the Trustee, the City and the Paying Agent to the date of retirement of the Bonds, then the right, title and interest of the Trustee in respect hereof shall thereupon cease, determine and be void. Thereupon, the Trustee shall cancel, discharge and release this Indenture and shall upon the written request of the City or the Fee Owner execute, acknowledge and deliver to the City such instruments of satisfaction and

discharge or release as shall be required to evidence such release and the satisfaction and discharge of this Indenture, and shall assign and deliver to the City (subject to the City's obligations under **Section 11.2** of the Lease) any property at the time subject to this Indenture which may then be in its possession, except amounts in the Bond Fund required to be paid to the Fee Owner under **Section 602** and except funds or securities in which such funds are invested held by the Trustee for the payment of the principal of and interest on the Bonds.

(b) The City is hereby authorized to accept a certificate by the Trustee that the whole amount of the principal and interest, if any, so due and payable upon all of the Bonds then-Outstanding has been paid or such payment provided for in accordance with **Section 1302** as evidence of satisfaction of this Indenture, and upon receipt thereof shall cancel and erase the inscription of this Indenture from its records.

Section 1302. Bonds Deemed to be Paid.

(a) Bonds shall be deemed to be paid within the meaning of this Article when payment of the principal of and interest thereon to the due date thereof (whether such due date be by reason of maturity or upon redemption as provided in this Indenture, or otherwise), either (1) has been made or caused to be made in accordance with the terms thereof, or (2) has been provided for by depositing with the Trustee or other commercial bank or trust company having full trust powers and authorized to accept trusts in the State in trust and irrevocably set aside exclusively for such payment (A) moneys sufficient to make such payment or (B) Government Securities maturing as to principal and interest in such amounts and at such times as will ensure the availability of sufficient moneys to make such payment, or (3) has been provided for by surrendering the Bonds to the Trustee for cancellation. When the Bonds are deemed to be paid hereunder, as aforesaid, they shall no longer be secured by or entitled to the benefits of this Indenture, except for the purposes of such payment from such moneys or Government Securities.

(b) Notwithstanding the foregoing, in the case of Bonds which by their terms may be redeemed before the stated maturities thereof, no deposit under clause (2) of the immediately preceding paragraph shall be deemed a payment of such Bonds as aforesaid until, as to all such Bonds which are to be redeemed before their respective stated maturities, proper notice of such redemption has been given in accordance with **Article III** or irrevocable instructions have been given to the Trustee to give such notice.

(c) Notwithstanding any provision of any other section of this Indenture which may be contrary to the provisions of this Section, all moneys or Government Securities set aside and held in trust pursuant to the provisions of this Section for the payment of Bonds shall be applied to and used solely for the payment of the particular Bonds, with respect to which such moneys or Government Securities have been so set aside in trust.

ARTICLE XIV

MISCELLANEOUS PROVISIONS

Section 1401. Consents and Other Instruments by Owners.

(a) Any consent, request, direction, approval, objection or other instrument required by this Indenture to be signed and executed by the Owners may be in any number of concurrent writings of similar tenor and may be signed or executed by such Owners in person or by agent appointed in writing. Proof of the execution of any such instrument or of the writing appointing any such agent and of the ownership of Bonds (other than the assignment of ownership of a Bond) if made in the following manner, shall be

sufficient for any of the purposes of this Indenture, and shall be conclusive in favor of the Trustee with regard to any action taken, suffered or omitted under any such instrument, namely:

(1) The fact and date of the execution by any Person of any such instrument may be proved by the certificate of any officer in any jurisdiction who by law has power to take acknowledgments within such jurisdiction that the Person signing such instrument acknowledged before him the execution thereof, or by affidavit of any witness to such execution.

(2) The fact of ownership of Bonds and the amount or amounts, numbers and other identification of such Bonds, and the date of holding the same shall be proved by the registration books of the City maintained by the Trustee pursuant to **Section 206**.

(b) In determining whether the Owners of the requisite principal amount of Bonds Outstanding have given any request, demand, authorization, direction, notice, consent or waiver under this Indenture, Bonds owned by the Fee Owner shall be disregarded and deemed not to be Outstanding under this Indenture, except that, in determining whether the Trustee shall be protected in relying upon any such request, demand, authorization, direction, notice, consent or waiver, only Bonds which the Trustee knows to be so owned shall be so disregarded; provided, the foregoing provisions shall not be applicable if the Fee Owner is the only Owner of the Bonds. Notwithstanding the foregoing, Bonds so owned which have been pledged in good faith shall not be disregarded as aforesaid if the pledgee establishes to the satisfaction of the Trustee the pledgee's right so to act with respect to such Bonds and that the pledgee is not the Fee Owner or any affiliate thereof.

Section 1402. Limitation of Rights Under this Indenture. With the exception of rights herein expressly conferred, nothing expressed or mentioned in or to be implied from this Indenture or the Bonds is intended or shall be construed to give any Person other than the parties hereto, the Financing Parties, if any, and the Owners any right, remedy or claim under or in respect of this Indenture, this Indenture and all of the covenants, conditions and provisions hereof being intended to be and being for the sole and exclusive benefit of the parties hereto, the Financing Parties, if any, and the Owners, as herein provided.

Section 1403. Notices. It shall be sufficient service of any notice, request, complaint, demand or other paper required by this Indenture to be given or filed with the City, the Trustee, the Fee Owner or the Owners if the same is delivered personally or transmitted electronically (and receipt confirmed by telephone or electronic read receipt), addressed as follows:

(a) To the City:

City of Creve Coeur, Missouri
Creve Coeur City Hall
300 North New Ballas Road
Creve Coeur, Missouri 63141
Attention: Mark Perkins, City Administrator
Email: mperkins@crevecoeurmo.gov

with copies to:

Curtis, Heinz, Garrett & O'Keefe, P.C.
130 S. Bemiston, Suite 200
St. Louis, Missouri 63105
Attention: Carl Lumley, City Attorney
Email: CLumley@chgolaw.com

and:

Gilmore & Bell, P.C.
One Metropolitan Square, Suite 2000
St. Louis, Missouri 63102
Attention: Mark D. Grimm, Esq.
Email: mgrimm@gilmorebell.com

(b) To the Trustee:

UMB Bank, N.A.
2 South Broadway, Suite 600
St. Louis, Missouri 63102
Attention: Corporate Trust Department
Email: _____

(c) To the Fee Owner:

Fireside Financial LLC
90 Edwardsville Professional Park
Edwardsville, Illinois 62025
Attention: Kristie Bailey
Email: klbailey@firesidefinancial.com

with copies to:

Jack Matthews Development
3925 Blackburn Road
Edwardsville, Illinois 62025
Attention: Matthew J. Pfund
Email: matt@jackmatthewsdevelopment.com

and:

Armstrong Teasdale LLP
7700 Forsyth Boulevard, Suite 1800
St. Louis, Missouri 63105
Attention: Robert Klahr, Esq.
Email: rklahr@atllp.com

(d) To the Owners if the same is duly mailed by first-class, registered or certified mail addressed to each of the Owners of Bonds at the time Outstanding as shown by the bond registration books required by **Section 206** to be kept at the corporate trust office of the Trustee. All such notices given by mail shall be deemed fully given as of the date they are so mailed.

A duplicate copy of each notice, certificate or other communication given hereunder by either the City or the Trustee to the other shall also be given to the Fee Owner. The City, the Fee Owner and the Trustee may from time to time designate, by notice given hereunder to the others of such parties, such other address to which subsequent notices, certificates or other communications shall be sent.

Section 1404. Severability. If any provision of this Indenture is held or deemed to be invalid, inoperative or unenforceable as applied in any particular case in any jurisdiction or jurisdictions or in all jurisdictions, or in all cases because it conflicts with any other provision or provisions hereof or any constitution or statute or rule of public policy, or for any other reason, such circumstances shall not have the effect of rendering the provision in question inoperative or unenforceable in any other case or circumstance, or of rendering any other provision or provisions herein contained invalid, inoperative or unenforceable to any extent whatsoever.

Section 1405. Execution in Counterparts. This Indenture may be executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

Section 1406. Governing Law. This Indenture shall be governed exclusively by and construed in accordance with the applicable laws of the State.

Section 1407. Electronic Transaction.

(a) The parties agree that the transaction described herein may be conducted and related documents may be sent, received or stored by electronic means. Copies, telecopies, facsimiles, electronic files and other reproductions of original executed documents shall be deemed to be authentic and valid counterparts of such original documents for all purposes, including the filing of any claim, action or suit in the appropriate court of law.

(b) The counterparts of this Indenture may be executed and delivered by facsimile or electronic signature (including portable document format) by either of the parties hereto, and the receiving party may rely on the receipt of any counterpart so executed and delivered electronically or by facsimile as if the original had been received. Each party may sign and transmit an electronic signature on this Indenture, which signature shall be binding on the party whose name is contained thereon. The intentional action in electronically signing this Indenture shall be evidence of consent to be legally bound by this Indenture. Each party agrees to not contest the admissibility or enforceability of the electronically signed copy of this Indenture in any proceeding arising out of the terms and conditions of this Indenture.

Section 1408. City Consent and Approvals. Pursuant to the Ordinance, the City Administrator is authorized to execute all documents on behalf of the City (including documents pertaining to the

financing or refinancing of the Project by the Fee Owner) as may be required to carry out and comply with the intent of the Ordinance, this Indenture and the Lease. The City Administrator is also authorized, unless expressly prohibited herein, to grant on behalf of the City such consents, estoppels and waivers relating to the Bonds, this Indenture or the Lease as may be requested by the Fee Owner during the term hereof; provided, such consents, estoppels and/or waivers shall not increase the principal amount of the Bonds, increase the term of the Lease or the economic incentives provided therein, waive an Event of Default or materially change the nature of the transaction unless approved by ordinance of the City Council.

Section 1409. Anti-Discrimination Against Israel Act. Pursuant to Section 34.600 of the Revised Statutes of Missouri, the Trustee certifies it is not currently engaged in and will not, for the duration of this Indenture, engage in a boycott of goods or services from (a) the State of Israel, (b) companies doing business in or with the State of Israel or authorized by, licensed by, or organized under the laws of the State of Israel, or (c) persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the City of Creve Coeur, Missouri, has caused this Indenture to be signed in its name and behalf by its City Administrator and the seal of the City to be hereunto affixed and attested by its City Clerk, and to evidence its acceptance of the trusts hereby created, UMB Bank, N.A. has caused this Indenture to be signed in its name and behalf by a duly authorized officer, all as of the date first above written.

CITY OF CREVE COEUR, MISSOURI

By: _____
Mark Perkins, City Administrator

[SEAL]

ATTEST:

By: _____
Kellie Henke, City Clerk

UMB BANK, N.A., as Trustee

By: _____
Name: _____
Title: _____

EXHIBIT A

PROJECT SITE

A TRACT OF LAND BEING PART OF LOTS 9, 10, 11 AND 12 OF MAJOR THOMAS SUBDIVISION, SITUATED IN THE SOUTHWEST QUARTER AND NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 45 NORTH, RANGE 5 EAST, ST. LOUIS COUNTY, MISSOURI, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE WEST RIGHT OF WAY LINE OF STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH-PUBLIC RIGHT OF WAY) BOULEVARD WITH THE NORTH LINE OF LAND NOW OR FORMERLY OF VANTAGE CREDIT UNION, AS RECORDED BY DEED IN BOOK 23850, PAGE 141 OF THE ST. LOUIS COUNTY, MISSOURI RECORDER'S OFFICE;

THENCE ALONG SAID NORTH LINE AND THE NORTH LINE OF SUNSWEPT PLAT 3, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 4 AND SUNSWEPT PLAT 2, A SUBDIVISION AS RECORDED IN PLAT BOOK 87 PAGE 23, ALL OF SAID RECORDER'S OFFICE, NORTH 89 DEGREES 11 MINUTES 17 SECONDS WEST, A DISTANCE OF 1352.62 FEET TO THE EAST LINE OF LAND NOW OR FORMERLY OF DONALD J AND MARGRETTA CASSMEYER, ETAL, AS RECORDED BY DEED IN BOOK 11070, PAGE 767 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF LAND NOW OR FORMERLY OF JAVED MUHAMMAD ALI AND ALZUBEIDI DUHA, AS RECORDED BY DEED IN BOOK 23726, PAGE 3547; TIMOTHY C TOWNSEND, ETAL, AS RECORDED BY DEED IN BOOK 23562, PAGE 160, ALL OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 12 MINUTES 14 SECONDS EAST, A DISTANCE OF 500.19 FEET TO THE EAST LINE OF SPOEDE HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 54, PAGE 26 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF SPOEDE WOODS, A SUBDIVISION FORMERLY KNOWN AS GAS LIGHT SQUARE, AS RECORDED IN PLAT BOOK 104, PAGE 18 OF SAID RECORDER'S OFFICE, NORTH 01 DEGREES 08 MINUTES 11 SECONDS EAST, A DISTANCE OF 831.21 FEET TO THE NORTH LINE OF SAID SPOEDE WOODS; THENCE ALONG SAID NORTH LINE, NORTH 88 DEGREES 51 MINUTES 14 SECONDS WEST, A DISTANCE OF 826.36 FEET TO THE EAST LINE OF MISSION HILLS, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 36 OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE AND THE EAST LINE OF RAMBLEWOOD, A SUBDIVISION AS RECORDED IN PLAT BOOK 59, PAGE 58 AND THE EAST LINE OF LAND NOW OR FORMERLY OF MDC COAST 22 LLC, AS RECORDED BY DEED IN BOOK 25302, PAGE 4186, ALL OF SAID RECORDER'S OFFICE;

THENCE ALONG SAID EAST LINE, THE FOLLOWING COURSES AND DISTANCES: NORTH 01 DEGREES 12 MINUTES 15 SECONDS EAST, A DISTANCE OF 466.53 FEET; NORTH 88 DEGREES 57 MINUTES 33 SECONDS WEST, A DISTANCE OF 51.85 FEET AND NORTH 04 DEGREES 53 MINUTES 33 SECONDS WEST, A DISTANCE OF 682.38 FEET TO

THE SOUTH RIGHT OF WAY LINE OF MISSOURI STATE HIGHWAY 340, A.K.A. OLIVE (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTH RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: ALONG A NON- TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 11,358.19 FEET, WITH A CENTRAL ANGLE OF 00 DEGREES 49 MINUTES 02 SECONDS, WHICH CHORD BEARS SOUTH 89 DEGREES 27 MINUTES 38 SECONDS EAST, A CHORD DISTANCE OF 162.03 FEET, THROUGH AN ARC LENGTH OF 162.03 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 427.12 FEET; NORTH 01 DEGREES 00 MINUTES 53 SECONDS EAST, A DISTANCE OF 20.00 FEET; SOUTH 89 DEGREES 03 MINUTES 07 SECONDS EAST, A DISTANCE OF 723.00 FEET AND SOUTH 86 DEGREES 13 MINUTES 52 SECONDS EAST, A DISTANCE OF 200.26 FEET TO THE SOUTHWEST RIGHT OF WAY TRANSITION BETWEEN STATE HIGHWAY 340 AND STATE HIGHWAY 67, A.K.A. LINDBERGH (VARIABLE WIDTH - PUBLIC RIGHT OF WAY) BOULEVARD;

THENCE ALONG SAID SOUTHWEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 65 DEGREES 03 MINUTES 50 SECONDS EAST, A DISTANCE OF 328.98 FEET; SOUTH 43 DEGREES 48 MINUTES 52 SECONDS EAST, A DISTANCE OF 413.64 FEET; SOUTH 32 DEGREES 46 MINUTES 12 SECONDS EAST, A DISTANCE OF 248.25 FEET AND SOUTH 11 DEGREES 42 MINUTES 30 SECONDS EAST, A DISTANCE OF 250.82 FEET TO THE WEST RIGHT OF WAY LINE OF THE AFOREMENTIONED LINDBERGH BOULEVARD;

THENCE ALONG SAID WEST RIGHT OF WAY LINE, THE FOLLOWING COURSES AND DISTANCES: SOUTH 01 DEGREES 00 MINUTES 47 SECONDS EAST, A DISTANCE OF 256.89 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 105.09 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 10.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; NORTH 88 DEGREES 06 MINUTES 17 SECONDS WEST, A DISTANCE OF 30.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 50.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 40.00 FEET; SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 300.00 FEET; SOUTH 88 DEGREES 06 MINUTES 17 SECONDS EAST, A DISTANCE OF 10.00 FEET AND SOUTH 01 DEGREES 53 MINUTES 43 SECONDS WEST, A DISTANCE OF 847.31 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED TRACT OF LAND CONTAINING 4,171,444 SQUARE FEET OR 95.763 ACRES IS BASED UPON AN ACTUAL URBAN CLASS BOUNDARY SURVEY DONE IN ACCORDANCE WITH THE CURRENT MISSOURI STANDARDS FOR PROPERTY BOUNDARY SURVEYS, SUBJECT TO ALL EASEMENTS, RESTRICTIONS, RESERVATIONS, CONDITIONS OF RECORD AND NOT OF RECORD, IF ANY.

EXHIBIT B

FORM OF BONDS

THIS BOND OR ANY PORTION HEREOF MAY BE TRANSFERRED, ASSIGNED OR NEGOTIATED ONLY AS PROVIDED IN THE HEREIN-DESCRIBED INDENTURE.

No. 1 **Not to Exceed $135,000,000**

UNITED STATES OF AMERICA
STATE OF MISSOURI

CITY OF CREVE COEUR, MISSOURI
TAXABLE INDUSTRIAL REVENUE BOND
(OLIA VILLAGE PROJECT)
SERIES 2024

Interest Rate	Maturity Date	Dated Date
5.0%	Completion Date[1]	_____, 2024

OWNER: _____

MAXIMUM PRINCIPAL AMOUNT: **ONE HUNDRED THIRTY-FIVE MILLION DOLLARS**

The **CITY OF CREVE COEUR, MISSOURI,** a home rule charter city organized and existing under the laws of the State of Missouri (the "City"), for value received, promises to pay, but solely from the source hereinafter referred to, to the Owner named above, or registered assigns thereof, on the Maturity Date shown above, the principal amount shown above, or such lesser amount as may be outstanding hereunder as reflected on **Schedule I** hereto held by the Trustee as provided in the hereinafter referred to Indenture. The City agrees to pay such principal amount to the Owner in any coin or currency of the United States of America which on the date of payment thereof is legal tender for the payment of public and private debts, and in like manner to pay to the Owner hereof, either by check or draft mailed to the Owner at a stated address as it appears on the bond registration books of the City kept by the Trustee under the within mentioned Indenture or, in certain situations authorized in the Indenture, by internal bank transfer or by wire transfer to an account in a commercial bank or savings institution located in the continental United States. Interest on the Cumulative Outstanding Principal Amount (as hereinafter defined) at the per annum Interest Rate stated above shall be payable in arrears on each December 1, commencing on December 1, 2024, and continuing thereafter until the earlier of the date on which said Cumulative Outstanding Principal Amount is paid in full or the Maturity Date. Interest on each advancement of the principal amount of this

[1] "Completion Date" means the date of execution of the certificate required by **Section 4.5** of the herein-defined Lease and **Section 504** of the herein-defined Indenture, which shall be deemed executed and filed on March 31, 2026 if not actually filed with the City by such date, except as otherwise provided in **Section 4.5** of the Lease, including an extension to December 31, 2026 in the event of an Excusable Delay (as defined in the Lease).

Bond shall accrue from the date that such advancement is made, computed on the basis of a year of 360 days consisting of 12 months of 30 days each.

As used herein, the term "Cumulative Outstanding Principal Amount" means all Bonds outstanding under the terms of the hereinafter-defined Indenture, as reflected on **Schedule I** hereto maintained by the Trustee.

THIS BOND is one of a duly authorized series of Bonds of the City designated the "City of Creve Coeur, Missouri, Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024," issued in the maximum aggregate principal amount of $135,000,000 (the "Bonds") for the purpose of acquiring a leasehold interest in approximately 96 acres of real property located at 10300 Olive Boulevard and completing site infrastructure improvements, including, without limitation, demolishing a portion of the existing improvements, site clearing and grading, constructing roadways, streets, basins and utilities, and completing associated offsite work, under the terms of a Lease Agreement dated as of _____ 1, 2024 (said Lease Agreement, as amended and supplemented from time to time in accordance with the provisions thereof, being herein called the "Lease"), between the City and 10300 Olive LLC, a Missouri limited liability company (the "Fee Owner"), all pursuant to the authority of and in full compliance with the provisions, restrictions and limitations of the Constitution, the statutes of the State of Missouri, including particularly the Act, and the charter of the City and pursuant to proceedings duly had by the governing body of the City.

THE BONDS are issued under and are equally and ratably secured and entitled to the protection given by a Trust Indenture dated as of _____ 1, 2024 (said Trust Indenture, as amended and supplemented from time to time in accordance with the provisions thereof, being herein called the "Indenture"), between the City and UMB Bank, N.A., St. Louis, Missouri, as trustee (the "Trustee"). *Capitalized terms not defined herein shall have the meanings set forth in the Indenture.*

Reference is hereby made to the Indenture for a description of the provisions, among others, with respect to the nature and extent of the security for the Bonds, the rights, duties and obligations of the City, the Trustee and the Owners, and the terms upon which the Bonds are issued and secured.

THE BONDS are subject to redemption and payment at any time before the stated maturity thereof, at the option of the City, upon written instructions from the Fee Owner, (1) in whole, if the Fee Owner exercises its option to purchase the Project and deposits an amount sufficient to effect such purchase pursuant to the Lease on the applicable redemption date, or (2) in part, if the Fee Owner prepays additional Basic Rent pursuant to the Lease; provided, however, if only a portion of the Bonds are to be redeemed, Bonds aggregating at least 10% of the maximum principal amount of Bonds authorized under the Indenture shall not be subject to redemption and payment before the stated maturity thereof. Any redemption of Bonds pursuant to this paragraph shall be at a redemption price equal to the par value thereof being redeemed, plus accrued interest thereon, without premium or penalty, to the redemption date.

THE BONDS are subject to mandatory redemption, in whole or in part, to the extent of amounts deposited in the Bond Fund pursuant to **Section 9.1(f)** or **9.2(c)** of the Lease, in the event of substantial damage to or destruction or condemnation of substantially all of the Project. Bonds to be redeemed pursuant to this paragraph shall be called for redemption by the Trustee on the earliest practicable date for which timely notice of redemption may be given as provided in the Indenture. Any redemption of Bonds pursuant to this paragraph shall be at a redemption price equal to the par value thereof being redeemed, plus accrued interest thereon, without premium or penalty, to the redemption date. Before giving notice of redemption

to the Owners pursuant to this paragraph, money in an amount equal to the redemption price shall have been deposited in the Bond Fund.

If the Bonds are to be called for optional redemption, the Fee Owner shall deliver written notice to the City and the Trustee that it has elected to redeem all or a portion of the Bonds at least 40 days (10 days if there is one Owner) before the scheduled redemption date. The Trustee shall then deliver written notice to the Owners at least 30 days (five days if there is one Owner) before the scheduled redemption date by first-class mail (or facsimile or other electronic communication, if there is one Owner) stating the date upon which the Bonds will be redeemed and paid.

THE BONDS, including the interest thereon, are special obligations of the City and are payable solely out of the rents, revenues and receipts derived by the City from the Project and the Lease and not from any other fund or source of the City, and are secured by a pledge and assignment of the Project and of such rents, revenues and receipts, including all rentals and other amounts to be received by the City under and pursuant to the Lease, all as provided in the Indenture. The Bonds do not constitute a general obligation of the City or the State of Missouri, and neither the City nor the State of Missouri shall be liable thereon, and the Bonds shall not constitute an indebtedness within the meaning of any constitutional, charter or statutory debt limitation or restriction and are not payable in any manner by taxation. Pursuant to the provisions of the Lease, rental payments sufficient for the prompt payment when due of the principal of and interest on the Bonds are to be paid by the Fee Owner directly to the Trustee for the account of the City and deposited in a special fund created by the City and designated the "City of Creve Coeur, Missouri, Bond Fund -- Olia Village Project."

THE OWNER of this Bond shall have no right to enforce the provisions of the Indenture or to institute action to enforce the covenants therein, or to take any action with respect to any Event of Default under the Indenture, or to institute, appear in or defend any suit or other proceedings with respect thereto, except as provided in the Indenture. In certain events, on the conditions, in the manner and with the effect set forth in the Indenture, the principal of all the Bonds issued under the Indenture and then-Outstanding may become or may be declared due and payable before the stated maturity thereof, together with interest accrued thereon. Modifications or alterations of this Bond or the Indenture may be made only to the extent and in the circumstances permitted by the Indenture.

THIS BOND is transferable, as provided in the Indenture, only upon the books of the City kept for that purpose at the above-mentioned office of the Trustee by the Owner hereof in person or by such Person's duly authorized attorney, upon surrender of this Bond together with a written instrument of transfer reasonably satisfactory to the Trustee duly executed by the Owner or such Person's duly authorized attorney, and thereupon a new fully-registered Bond or Bonds, in an aggregate principal amount equal to the Outstanding principal amount of this Bond, shall be issued to the transferee in exchange therefor as provided in the Indenture, and upon payment of the charges therein prescribed. The City, the Trustee and the Paying Agent may deem and treat the Person in whose name this Bond is registered as the absolute owner hereof for the purpose of receiving payment of, or on account of, the principal or redemption price hereof and interest due hereon and for all other purposes.

THE BONDS are issuable in the form of one fully-registered Bond in the maximum principal amount of $135,000,000.

THIS BOND shall not be valid or become obligatory for any purposes or be entitled to any security or benefit under the Indenture until the Certificate of Authentication hereon has been executed by the Trustee.

IT IS HEREBY CERTIFIED AND DECLARED that all acts, conditions and things required to exist, happen and be performed precedent to and in the execution and delivery of the Indenture and the issuance of this Bond do exist, have happened and have been performed in due time, form and manner as required by the Constitution and laws of the State of Missouri.

IN WITNESS WHEREOF, the City of Creve Coeur, Missouri, has caused this Bond to be executed in its name by the manual or facsimile signature of its City Administrator, attested by the manual or facsimile signature of its City Clerk and its corporate seal to be affixed hereto or imprinted hereon.

CITY OF CREVE COEUR, MISSOURI

By: _____
Mark Perkins, City Administrator

[SEAL]

ATTEST:

By: _____
Kellie Henke, City Clerk

CERTIFICATE OF AUTHENTICATION

This Bond is the Taxable Industrial Revenue Bond (Olia Village Project), Series 2024, described in the Indenture. The effective date of registration of this Bond is set forth below.

UMB BANK, N.A., as Trustee

_____
Date

By: _____
Authorized Signatory

SCHEDULE I

TABLE OF CUMULATIVE OUTSTANDING PRINCIPAL AMOUNT

CITY OF CREVE COEUR, MISSOURI
TAXABLE INDUSTRIAL REVENUE BOND
(OLIA VILLAGE PROJECT)
SERIES 2024

Bond No. 1

Date	Principal Amount Advanced	Principal Amount Redeemed	Cumulative Outstanding Principal Amount	Notation Made By

FORM OF ASSIGNMENT

(NOTE RESTRICTIONS ON TRANSFERS)

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto

_____

Print or Typewrite Name, Address and Social Security or
other Taxpayer Identification Number of Transferee

the within Bond and all rights thereunder, and hereby irrevocably constitutes and appoints _____ attorney to transfer the within Bond on the books kept by the Trustee for the registration and transfer of Bonds, with full power of substitution in the premises.

Dated: _____.

_____

NOTICE: The signature to this assignment must correspond with the name of the Owner as it appears upon the face of the within Bond in every particular.

Medallion Signature Guarantee:

EXHIBIT C

FORM OF REPRESENTATION LETTER

City of Creve Coeur, Missouri
300 North New Ballas Road
Creve Coeur, Missouri 63141
ATTN: City Administrator

UMB Bank, N.A.
2 South Broadway, Suite 600
St. Louis, Missouri 63102
ATTN: Corporate Trust Department

Re: $135,000,000 Maximum Principal Amount of Taxable Industrial Revenue Bonds (Olia Village Project), Series 2024 of the City of Creve Coeur, Missouri

Ladies and Gentlemen:

In connection with the purchase of the above-referenced bonds (the "Bonds"), the undersigned purchaser of the Bonds hereby represents, warrants and agrees as follows:

1. The undersigned understands that (a) the Bonds have been issued under and pursuant to a Trust Indenture dated as of _____ 1, 2024 (the "Indenture"), between the City of Creve Coeur, Missouri (the "City"), and UMB Bank, N.A., as trustee (the "Trustee"), and (b) the Bonds are payable solely out of certain rents, revenues and receipts to be derived from the leasing or sale of the Project (as defined in the Indenture) to 10300 Olive LLC, a Missouri limited liability company (the "Fee Owner"), under a Lease Agreement dated as of _____ 1, 2024 (the "Lease"), between the City and the Fee Owner, with certain of such rents, revenues and receipts being pledged and assigned by the City to the Trustee under the Indenture to secure the payment of the principal of and interest on the Bonds. *Capitalized terms not defined herein shall have the meanings set forth in the Indenture.*

2. The undersigned understands that (a) the Bonds and the interest thereon are special obligations of the City payable solely out of the rents, revenues and receipts derived by the City from the Project and the Lease, and not from any other fund or source of the City, (b) the Bonds are secured by a pledge and assignment of the Trust Estate to the Trustee in favor of the Owners, as provided in the Indenture, (c) the Bonds and the interest thereon shall not constitute general obligations of the City, the State or any political subdivision thereof, and none of the City, the State or any political subdivision thereof shall be liable thereon, and (d) the Bonds do not constitute an indebtedness within the meaning of any constitutional, charter or statutory debt limitation or restriction and are not payable in any manner by taxation.

3. The undersigned understands that the Bonds are transferable only in the manner provided for in the Indenture and discussed below and warrants that it is acquiring the Bonds for its own account with the intent of holding the Bonds as an investment, and the acquisition of the Bonds is not made with a view toward their distribution or for the purpose of offering, selling or otherwise participating in a distribution of the Bonds.

4. The undersigned is an Approved Investor.

5. The undersigned agrees not to attempt to offer, sell, hypothecate or otherwise distribute the Bonds to others unless authorized by the terms of the Indenture and, if requested by the City, upon receipt of an opinion of counsel reasonably acceptable to the City, the Fee Owner and the purchaser that all registration and disclosure requirements of the Securities and Exchange Commission and all other appropriate federal and Missouri securities laws and the securities law of any other applicable state are complied with.

6. The Fee Owner has (a) furnished to the undersigned such information about itself as the undersigned deems necessary in order for it to make an informed investment decision with respect to the purchase of the Bonds, (b) made available to the undersigned, during the course of this transaction, ample opportunity to ask questions of, and to receive answers from, appropriate officers of the City and the terms and conditions of the offering of the Bonds, and (c) provided to the undersigned all additional information which it has requested. [*Delete this paragraph if the Fee Owner is the Purchaser of the Bonds.*]

7. The undersigned is now, and was when it agreed to purchase the Bonds, familiar with the operations of the Fee Owner and fully aware of the terms and risks of the Bonds. [*Delete previous sentence if the Fee Owner is the Purchaser of the Bonds.*] The undersigned believes that the Bonds which it is acquiring is a security of the kind that it wishes to purchase and hold for investment and that the nature and amount thereof are consistent with its investment program.

8. The undersigned is fully aware of and satisfied with (a) the current status of the title to the Project and any issues related thereto and (b) the terms, amounts and providers of the insurance maintained pursuant to **Article VII** of the Lease, and the undersigned is purchasing the Bonds with full knowledge of such matters.

9. The undersigned understands and agrees that the interest on the Bonds *is* subject to federal and state income taxation.

10. The undersigned hereby directs the Trustee to hold the Bonds in trust pursuant to **Section 204(c)** of the Indenture.

Dated: _____, 20___

[PURCHASER OF BONDS]

By: _____
Name: _____
Title: _____

$135,000,000
(AGGREGATE MAXIMUM PRINCIPAL AMOUNT)
CITY OF CREVE COEUR, MISSOURI
TAXABLE INDUSTRIAL REVENUE BONDS
(OLIA VILLAGE PROJECT)
SERIES 2024

Dated as of _____ 1, 2024

BOND PURCHASE AGREEMENT

Honorable Mayor and City Council
City of Creve Coeur, Missouri

On the basis of the representations and covenants and upon the terms and conditions contained in this Bond Purchase Agreement, 10300 Olive LLC, a Missouri limited liability company (the "Purchaser"), offers to purchase from the City of Creve Coeur, Missouri (the "City"), the above-referenced bonds (the "Bonds"), to be issued by the City under and pursuant to Ordinance No. _____, adopted by the City Council on _____, 2024 (the "Ordinance") and a Trust Indenture dated as of _____ 1, 2024, pursuant to which the Bonds are issued (the "Indenture"), by and between the City and UMB Bank, N.A., as trustee (the "Trustee"). *Capitalized terms not otherwise defined herein shall have the meanings set forth in the Indenture.*

SECTION 1. REPRESENTATIONS AND AGREEMENTS

(a) By the City's acceptance hereof, the City hereby represents to the Purchaser that:

(1) The City is a home rule charter city duly organized and validly existing under the laws of the State of Missouri. The City is authorized pursuant to the Constitution and laws of the State of Missouri, its charter and the ordinances, orders and resolutions of the City, and all necessary action has been taken, to authorize, issue and deliver the Bonds and to consummate all transactions contemplated by the Ordinance, this Bond Purchase Agreement, the Indenture, the Base Lease dated as of _____ 1, 2024 by and between the Purchaser and the City (the "Base Lease"), the Lease Agreement dated as of _____ 1, 2024 by and between the City and the Purchaser (the "Lease"), the Master Redevelopment Agreement dated as of _____, 2024 by and among the City, the Purchaser and Olia Village Redevelopment Corporation (the "Redevelopment Agreement"), and any and all other agreements relating thereto. The proceeds of the Bonds shall be used for the purpose of acquiring, constructing and improving the Project and paying the costs incurred in connection with the issuance of the Bonds.

(2) There is no controversy, suit or other proceeding of any kind pending or, to the City's knowledge, threatened wherein or whereby any question is raised, or may be raised, questioning, disputing or affecting in any way the legal organization of the City or its boundaries, or the right or title of any of its officers to their respective offices, or the legality of any official act leading up to the issuance of the Bonds, or the constitutionality or validity of the obligations

represented by the Bonds or the validity of the Bonds, the Ordinance, the Base Lease, the Lease, the Indenture, the Redevelopment Agreement or this Bond Purchase Agreement.

(b) The Purchaser represents as follows:

(1) *Organization*. The Purchaser is a limited liability company duly organized, validly existing and in good standing under the laws of the State of Missouri.

(2) *No Conflict or Breach*. The execution, delivery and performance of this Bond Purchase Agreement by the Purchaser have been duly authorized by all necessary action of the Purchaser and do not and will not conflict with or result in the breach of any of the terms, conditions or provisions of, or constitute a default under, its organizational documents, any law, court or administrative regulation, decree or order applicable to or binding upon the Purchaser, or, to the best of its knowledge, any agreement, indenture, mortgage, lease or instrument to which the Purchaser is a party or by which it is bound.

(3) *Document Legal, Valid and Binding*. When executed and delivered by the Purchaser, this Bond Purchase Agreement will be, and is, a legal, valid and binding obligation, enforceable in accordance with its terms, subject, as to enforcement, to any applicable bankruptcy, reorganization, insolvency, moratorium or other laws affecting the enforcement of creditors' rights generally and further subject to the availability of equitable remedies.

(4) *Purchaser's Certificates*. Any certificate signed by an authorized officer or agent of the Purchaser and delivered to the City shall be deemed a representation and warranty by the Purchaser to the City as to the statements made therein.

SECTION 2. PURCHASE, SALE AND DELIVERY OF THE BONDS

On the basis of the representations and covenants contained herein and in the other agreements referred to herein, and subject to the terms and conditions set forth herein and in the Indenture, the Purchaser agrees to purchase from the City and the City agrees to sell to the Purchaser the Bonds on the terms and conditions set forth herein.

The Bonds shall be sold to the Purchaser by the City on the Closing Date (hereinafter defined) upon payment of an amount equal to the Closing Price (hereinafter defined), which amount shall be applied as provided in the Indenture and the Lease. From time to time after the Closing Date, the Purchaser shall make additional payments with respect to the Bonds ("Additional Payments") to the Trustee under the Indenture, which Additional Payments shall be applied to the payment of Project Costs or as provided in the Indenture and the Lease; provided that the sum of the Closing Price and all such Additional Payments shall not, in the aggregate, exceed $135,000,000 plus the costs of issuance of the Bonds (if such costs of issuance are not paid with Bond proceeds).

As used herein, the term "Closing Date" shall mean _____, 2024, or such other date as shall be mutually agreed upon by the City and the Purchaser; the term "Closing Price" shall mean the amount specified in writing by the Purchaser and agreed to by the City as the amount required to pay for the initial issuance of the Bonds on the Closing Date, which amount shall be equal to any Project Costs paid by the Purchaser from its own funds on or before the Closing Date, and, at the Purchaser's option, the costs of issuance of the Bonds if such costs are not paid for from Bond proceeds.

The Bonds shall be issued under and secured as provided in the Ordinance and the Indenture and the Lease authorized thereby, and the Bonds shall mature, accrue interest and be subject to redemption as set forth therein. The delivery of the Bonds shall be made in definitive form as a fully-registered bond in the maximum aggregate principal denomination of $135,000,000; provided, that the principal amount of the Bonds outstanding at any time shall be that amount recorded in the records of the Trustee and further provided that interest shall be payable only on the outstanding principal amount of the Bonds, as more fully provided in the Indenture.

The City will not enter into any bond purchase agreements or other agreements to issue, sell or otherwise transfer the Bonds to any party under the Indenture or otherwise except pursuant to this Bond Purchase Agreement.

SECTION 3. CONDITIONS TO THE OBLIGATIONS

The obligations hereunder shall be subject to the due performance by the parties of the obligations and agreements to be performed hereunder on or prior to the Closing Date and to the accuracy of and compliance with the representations contained herein, as of the date hereof and as of the Closing Date, and are also subject to the following conditions:

(a) There shall be delivered to the Purchaser on or prior to the Closing Date a duly certified (and recorded, as applicable) copy of the Ordinance, the Indenture, the Base Lease, the Lease, the Redevelopment Agreement, this Bond Purchase Agreement and any other instrument contemplated thereby or hereby, and such documents shall be in full force and effect and shall not have been modified or changed except as may have been agreed to in writing by the Purchaser.

(b) The City shall confirm on the Closing Date by a certificate that at and as of the Closing Date the City has taken all action necessary to issue the Bonds and that there is no controversy, suit or other proceeding of any kind pending or, to its knowledge, threatened against the City wherein any question is raised affecting in any way the legal organization of the City, or the legality of any official act shown to have been done in the transcript of proceedings leading up to the issuance of the Bonds, or the constitutionality or validity of the obligations represented by the Bonds or the validity of the Bonds or any proceedings in relation to the issuance or sale thereof.

(c) The Purchaser shall execute a certificate, dated the Closing Date, to the effect that (1) no litigation, proceeding or investigation is pending against the Purchaser or its affiliates or, to the knowledge of the Purchaser, threatened which would (A) contest, affect, restrain or enjoin the issuance, validity, execution, delivery or performance of the Bonds, or (B) in any way contest the existence or powers of the Purchaser, (2) no litigation, proceeding or investigation is pending or, to the knowledge of the Purchaser, threatened against the Purchaser that could reasonably be expected to adversely affect its ability to perform its obligations hereunder or under the Base Lease, the Lease or the Redevelopment Agreement, (3) the representations and warranties of the Purchaser herein were and are true and correct in all material respects and not misleading as of the date made and as of the Closing Date, and (4) such other matters as are reasonably requested by the other parties in connection with the issuance of the Bonds.

SECTION 4. THE PURCHASER'S RIGHT TO CANCEL

The Purchaser may cancel its obligation hereunder to purchase the Bonds by notifying the City in writing at or before the Closing Date.

SECTION 5. CONDITIONS OF OBLIGATIONS

The obligations of the parties hereto are subject to the receipt of the approving opinion of Gilmore & Bell, P.C., Bond Counsel (if one is requested), with respect to the validity of the authorization and issuance of the Bonds.

SECTION 6. REPRESENTATIONS AND AGREEMENTS TO SURVIVE DELIVERY

All of the representations and agreements by either party shall remain operative and in full force and effect and shall survive delivery of the Bonds to the Purchaser.

SECTION 7. NOTICE

Any notice or other communication to be given under this Bond Purchase Agreement may be given in writing by mailing or delivering the same as follows:

(a) To the City:

City of Creve Coeur, Missouri
Creve Coeur City Hall
300 North New Ballas Road
Creve Coeur, Missouri 63141
Attention: Mark Perkins, City Administrator
Email: mperkins@crevecoeurmo.gov

with copies to:

Curtis, Heinz, Garrett & O'Keefe, P.C.
130 S. Bemiston, Suite 200
St. Louis, Missouri 63105
Attention: Carl Lumley, City Attorney
Email: CLumley@chgolaw.com

and

Gilmore & Bell, P.C.
One Metropolitan Square, Suite 2000
St. Louis, Missouri 63102
Attention: Mark D. Grimm, Esq.
Email: mgrimm@gilmorebell.com

(b) To the Trustee:

UMB Bank, N.A.
2 South Broadway, Suite 600
St. Louis, Missouri 63102
Attention: Corporate Trust Department
Email: _____

(c) To the Purchaser:

Fireside Financial LLC
90 Edwardsville Professional Park
Edwardsville, Illinois 62025
Attention: Kristie Bailey
Email: klbailey@firesidefinancial.com

with copies to:

Jack Matthews Development
3925 Blackburn Road
Edwardsville, Illinois 62025
Attention: Matthew J. Pfund
Email: matt@jackmatthewsdevelopment.com

and:

Armstrong Teasdale LLP
7700 Forsyth Boulevard, Suite 1800
St. Louis, Missouri 63105
Attention: Robert Klahr, Esq.
Email: rklahr@atllp.com

SECTION 8. APPLICABLE LAW; ASSIGNABILITY

This Bond Purchase Agreement shall be governed by the laws of the State of Missouri. This Bond Purchase Agreement may be assigned by the Purchaser to any Person that expressly assumes in writing all of the obligations of the Purchaser contained in the Base Lease and the Lease; provided that the consent of the City for the assignment of this Bond Purchase Agreement shall not be required if the consent of the City is not required for such Person's assumption of the Lease under the provisions of **Article XIII** thereof. Any such assignee shall agree to be bound by the terms of this Bond Purchase Agreement. This Bond Purchase Agreement may be assigned and the Bonds may be pledged, without approval of but with notice to the City, by the Purchaser to any lender of the Purchaser as collateral for a loan secured by a deed of trust or mortgage of the Project.

SECTION 9. EXECUTION IN COUNTERPARTS; ELECTRONIC SIGNATURE

(a) This Bond Purchase Agreement may be executed in several counterparts, each of which shall be regarded as an original and all of which shall constitute one and the same document.

(b) The counterparts of this Bond Purchase Agreement may be executed and delivered by facsimile or electronic signature (including portable document format) by either of the parties hereto, and the receiving party may rely on the receipt of any counterpart so executed and delivered electronically or by facsimile as if the original had been received. Each party may sign and transmit an electronic signature on this Bond Purchase Agreement, which signature shall be binding on the party whose name is contained thereon. The intentional action in electronically signing this Bond Purchase Agreement shall be evidence of consent to be legally bound by this Bond Purchase Agreement. Each party agrees to not contest the admissibility or enforceability of the electronically signed copy of this Bond Purchase Agreement in any proceeding arising out of the terms and conditions of this Bond Purchase Agreement.

SECTION 10. ANTI-DISCRIMINATION AGAINST ISRAEL ACT

Pursuant to Section 34.600 of the Revised Statutes of Missouri, the Purchaser certifies it is not currently engaged in and shall not, for the duration of this Bond Purchase Agreement, engage in a boycott of goods or services from (a) the State of Israel, (b) companies doing business in or with the State of Israel or authorized by, licensed by, or organized under the laws of the State of Israel, or (c) persons or entities doing business in the State of Israel.

[Remainder of Page Intentionally Left Blank]

Very truly yours,

10300 OLIVE LLC,
a Missouri limited liability company

By: _____
Name: _____
Title: _____

DATE OF EXECUTION: _____, 2024

Accepted and Agreed to this _____ day of _____, 2024.

CITY OF CREVE COEUR, MISSOURI

By: _____
Mark Perkins, City Administrator

[SEAL]

ATTEST:

By: _____
Kellie Henke, City Clerk

BILL NO. __6115_____ **ORD NO. _____**

AN ORDINANCE MAKING AMENDMENTS TO CHAPTER 125, BOARDS, COMMISSIONS AND COMMITTEES.

WHEREAS, staff recommends changing the term expiration of the Audit Committee to align with the other current boards, commissions and committees; and

WHEREAS, on March 1, 2024 the Employee Pension Board of Trustees was dissolved;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOURI, AS FOLLOWS:

Section 1: Section 125.010(J) of the City Code of Ordinances is hereby be amended to read as follows:

(J) 1. The Finance Committee was established by the City Charter and its duties and responsibilities are outlined in Sections 9.5 and 9.6 of the Charter.

2. Additional duties include advising the City Council on other financial matters impacting the City as requested by the City Council or staff.

3.The Finance Committee shall select two of its members to serve on the City Audit Committee.

Section 2: Section 125.020(F) of the City Code of Ordinances is hereby amended to read as follows:

(F) Terms of all appointees to boards, commissions or committees shall expire on June 30 of the applicable year.

Section 3: This Ordinance shall become effective pursuant to the provisions of Section 3.11(g) of the City Charter.

ADOPTED THIS ____ DAY OF _____, 2024.

_____
NICOLE GREER, PRESIDENT OF CITY COUNCIL

APPROVED THIS ____ DAY OF _____, 2024.

_____
DR. ROBERT HOFFMAN, MAYOR

ATTEST:

_____
KELLIE HENKE, CITY CLERK

CITY OF CREVE COEUR

Date: March 25, 2024
To: Mark Perkins, City Administrator
From: Kellie Henke, City Clerk
Subject: Recommendation for Amendments to Chapter 125

Staff recommends changing the terms of all appointees to the Audit Committee to expire on June 30 of the applicable year so that the committee aligns with the other current boards, commissions and committees. Changing the term would allow all appointments and reappointments to be made in June rather than at different times of the year. Pre-audit discussions and planning typically occur in the fall each year, so changing the term would give committee members the opportunity to be a part of the entire process from start to the finish, rather than only until December 31 of each year. Amendments have also been made due to the dissolution of the Employee Pension Board of Trustees on March 1, 2024.

BILL NO. 6116 **ORDINANCE NO. _____**

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOURI AUTHORIZING THE EXECUTION OF A TRANSPORTATION ALTERNATIVES PROGRAM (TAP) PROGRAM AGREEMENT WITH THE MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION TO ENABLE THE CITY TO CONSTRUCT THE FERNVIEW SIDEWALK IMPROVEMENTS PROJECT – PHASE 1.

WHEREAS, the City of Creve Coeur strives to provide safe and accessible infrastructure for its residents and visitors; and

WHEREAS, the City has developed a project to construct an accessible sidewalk on the east side of Fernview Drive between Olive Boulevard and Gallagher Road and the connecting side streets, and

WHEREAS, the City has been awarded grant funding under the federal Transportation Alternatives Program (TAP) to assist with the cost to construct this sidewalk project; and

WHEREAS, the attached "Exhibit One" is an agreement between the City and the Missouri Highways and Transportation Commission regarding the responsibilities and requirements of the TAP Grant Program.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, AS FOLLOWS:

SECTION 1. The TAP Program Agreement, between the Missouri Highways and Transportation Commission and the City, regarding the construction of new sidewalks on Fernview Drive, attached hereto and referred to herein as the "Program Agreement," is hereby approved and the City Administrator is authorized to execute same on behalf of the City and the City Clerk is authorized and directed to attest thereto. The Agreement as executed shall be substantially in the form of the Program Agreement, with such changes therein as shall be approved by the officers of the City executing same, consistent with the provisions and intent of this Ordinance. The City Administrator and his designated representatives are hereby authorized and directed to take any and all actions necessary, desirable, convenient or proper in order to carry out the intent of this Ordinance, the matters herein authorized, and the rights and duties of the City under the Program Agreement.

SECTION 2. This ordinance shall become effective in accordance with Section 3.11 (g) of the City Charter.

ADOPTED THIS ___ DAY OF _____ 2024.

_____
NICOLE GREER
PRESIDENT OF CITY COUNCIL

APPROVED THIS ___ DAY OF _____ 2024.

_____
ROBERT HOFFMAN
MAYOR

ATTEST:

_____
KELLIE HENKE
CITY CLERK

EXHIBIT ONE

CCO Form: FS25
Approved: 04/95 (MGB)
Revised: 10/22 (MWH)
Modified:

CFDA Number: 20.205
CFDA Title: Highway Planning and Construction
Award name/number: TAP-4900(646)
Award Year: 2025
Federal Agency: Federal Highway Administration, Department of Transportation

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
TRANSPORTATION ENHANCEMENTS FUNDS
PROGRAM AGREEMENT

THIS AGREEMENT is entered into by the Missouri Highways and Transportation Commission (hereinafter, "Commission") and City of Creve Coeur (hereinafter, “City”).

WITNESSETH:

NOW, THEREFORE, in consideration of the mutual covenants, promises and representations in this Agreement, the parties agree as follows:

(1) PURPOSE: The United States Congress has authorized, in Infrastructure Investment and Jobs Act (IIJA); 23 U.S.C. §101, §106 §133; and §208 funds to be used for transportation enhancements activities. The purpose of this Agreement is to grant the use of such transportation enhancement funds to the City.

(2) LOCATION: The transportation enhancements funds which are the subject of this Agreement are for the project at the following location: construct sidewalks, add tree lawn, add curb ramps and stripe crosswalks on Fernview Drive from Olive Boulevard (MO 340) to Gallagher Road and construct sidewalks on side streets to connect current sidewalks to new sidewalk on Fernview Drive.

The general location of the project is shown on attachment marked "Exhibit A" and incorporated herein by reference.

(3) REASONABLE PROGRESS POLICY: The project as described in this agreement is subject to the reasonable progress policy set forth in the Local Public Agency (LPA) Manual and the final deadline specified in Exhibit B attached hereto and incorporated herein by reference. In the event, the LPA Manual and the final deadline within Exhibit B conflict, the final deadline within Exhibit B controls. If the project is within a Transportation Management Area that has a reasonable progress policy in place, the project is subject to that policy. If the project is withdrawn for not meeting reasonable

progress, the City agrees to repay the Commission for any progress payments made to the City for the project and agrees that the Commission may deduct progress payments made to the City from future payments to the City. The City may not be eligible for future Transportation Enhancements Funds if the City does not meet the reasonable progress policy.

(4) INDEMNIFICATION:

(A) To the extent allowed or imposed by law, the City shall defend, indemnify and hold harmless the Commission, including its members and the Missouri Department of Transportation (MoDOT or Department) employees, from any claim or liability whether based on a claim for damages to real or personal property or to a person for any matter relating to or arising out of the City's wrongful or negligent performance of its obligations under this Agreement.

(B) The City will require any contractor procured by the City to work under this Agreement:

1. To obtain a no cost permit from the Commission's district engineer prior to working on the Commission's right-of-way, which shall be signed by an authorized contractor representative (a permit from the Commission's district engineer will not be required for work outside of the Commission's right-of-way); and

2. To carry commercial general liability insurance and commercial automobile liability insurance from a company authorized to issue insurance in Missouri, and to name the Commission, and MoDOT and its employees, as additional named insureds in amounts sufficient to cover the sovereign immunity limits for Missouri public entities as calculated by the Missouri Department of Insurance, Financial Institutions and Professional Registration, and published annually in the Missouri Register pursuant to Section 537.610, RSMo. The City shall cause insurer to increase the insurance amounts in accordance with those published annually in the Missouri Register pursuant to Section 537.610, RSMo.

(C) In no event shall the language of this Agreement constitute or be construed as a waiver or limitation for either party's rights or defenses with regard to each party's applicable sovereign, governmental, or official immunities and protections as provided by federal and state constitution or law.

(5) AMENDMENTS: Any change in this Agreement, whether by modification or supplementation, must be accomplished by a formal contract amendment signed and approved by the duly authorized representatives of the City and the Commission.

(6) COMMISSION REPRESENTATIVE: The Commission's St. Louis District Engineer is designated as the Commission's representative for the purpose of administering the provisions of this Agreement. The Commission's representative may

designate by written notice other persons having the authority to act on behalf of the Commission in furtherance of the performance of this Agreement.

(7) NONDISCRIMINATION ASSURANCE: With regard to work under this Agreement, the City agrees as follows:

(A) Civil Rights Statutes: The City shall comply with all state and federal statutes relating to nondiscrimination, including but not limited to Title VI and Title VII of the Civil Rights Act of 1964, as amended (42 U.S.C. §2000d and §2000e, *et seq*.), as well as any applicable titles of the "Americans with Disabilities Act" (42 U.S.C. §12101, *et seq*.). In addition, if the City is providing services or operating programs on behalf of the Department or the Commission, it shall comply with all applicable provisions of Title II of the "Americans with Disabilities Act".

(B) Administrative Rules: The City shall comply with the administrative rules of the United States Department of Transportation relative to nondiscrimination in federally-assisted programs of the United States Department of Transportation (49 C.F.R. Part 21) which are herein incorporated by reference and made part of this Agreement.

(C) Nondiscrimination: The City shall not discriminate on grounds of the race, color, religion, creed, sex, disability, national origin, age or ancestry of any individual in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The City shall not participate either directly or indirectly in the discrimination prohibited by 49 C.F.R. §21.5, including employment practices.

(D) Solicitations for Subcontracts, Including Procurements of Material and Equipment: These assurances concerning nondiscrimination also apply to subcontractors and suppliers of the City. These apply to all solicitations either by competitive bidding or negotiation made by the City for work to be performed under a subcontract including procurement of materials or equipment. Each potential subcontractor or supplier shall be notified by the City of the requirements of this Agreement relative to nondiscrimination on grounds of the race, color, religion, creed, sex, disability or national origin, age or ancestry of any individual.

(E) Information and Reports: The City shall provide all information and reports required by this Agreement, or orders and instructions issued pursuant thereto, and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Commission or the United States Department of Transportation to be necessary to ascertain compliance with other contracts, orders and instructions. Where any information required of the City is in the exclusive possession of another who fails or refuses to furnish this information, the City shall so certify to the Commission or the United States Department of Transportation as appropriate and shall set forth what efforts it has made to obtain the information.

(F) Sanctions for Noncompliance: In the event the City fails to comply with the nondiscrimination provisions of this Agreement, the Commission shall impose

such contract sanctions as it or the United States Department of Transportation may determine to be appropriate, including but not limited to:

1. Withholding of payments under this Agreement until the City complies; and/or

2. Cancellation, termination or suspension of this Agreement, in whole or in part, or both.

(G) Incorporation of Provisions: The City shall include the provisions of paragraph (7) of this Agreement in every subcontract, including procurements of materials and leases of equipment, unless exempted by the statutes, executive order, administrative rules or instructions issued by the Commission or the United States Department of Transportation. The City will take such action with respect to any subcontract or procurement as the Commission or the United States Department of Transportation may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided that in the event the City becomes involved or is threatened with litigation with a subcontractor or supplier as a result of such direction, the City may request the United States to enter into such litigation to protect the interests of the United States.

(8) ASSIGNMENT: The City shall not assign, transfer or delegate any interest in this Agreement without the prior written consent of the Commission.

(9) LAW OF MISSOURI TO GOVERN: This Agreement shall be construed according to the laws of the State of Missouri. The City shall comply with all local, state and federal laws and regulations relating to the performance of this Agreement.

(10) CANCELLATION: The Commission may cancel this Agreement at any time for a material breach of contractual obligations by providing the City with written notice of cancellation. Should the Commission exercise its right to cancel this Agreement for such reasons, cancellation will become effective upon the date specified in the notice of cancellation sent to the City.

(11) ACCESS TO RECORDS: The City and its contractors must maintain all records relating to this Agreement, including but not limited to invoices, payrolls, etc. These records must be available at no charge to the Federal Highway Administration (FHWA) and the Commission and/or their designees or representatives during the period of this Agreement and any extension, and for a period of three (3) years after the date on which the City receives reimbursement of their final invoice from the Commission.

(12) FEDERAL-AID PROVISIONS: Because responsibility for the performance of all functions or work contemplated as part of this project is assumed by the City, and the City may elect to construct part of the improvement contemplated by this Agreement with its own forces, a copy of Section II and Section III, as contained in the United States Department of Transportation Form Federal Highway Administration (FHWA) 1273

"Required Contract Provisions, Federal-Aid Construction Contracts," is attached and made a part of this Agreement as Exhibit C. Wherever the term "the contractor" or words of similar import appear in these sections, the term “the City” is to be substituted. The City agrees to abide by and carry out the condition and obligations of "the contractor" as stated in Section II, Equal Opportunity, and Section III, Nonsegregated Facilities, as set out in Form FHWA 1273.

(13) ACQUISITION OF RIGHT OF WAY: With respect to the acquisition of right of way necessary for the completion of the project, City shall acquire any additional necessary right of way required for this project and in doing so agrees that it will comply with all applicable federal laws, rules and regulations, including 42 U.S.C. 4601-4655, the Uniform Relocation Assistance and Real Property Acquisition Act, as amended and any regulations promulgated in connection with the Act. However, upon written request by the City and written acceptance by the Commission, the Commission shall acquire right of way for the City. Upon approval of all agreements, plans and specifications by the Commission and by the FHWA, the Commission will file copies of said plans in the office of the County clerk: and proceed to acquire by negotiation and purchase or by condemnation any necessary right of way required for the construction of the improvement contemplated herein. All right of way acquired by negotiation and purchase will be acquired in the name of City, and the City will pay to grantors thereof the agreed upon purchase prices. All right of way acquired through condemnation proceedings will be acquired in the name of the State of Missouri and subsequently released to the City. The City shall pay into court all awards and final judgments in favor of any such condemnees. The City shall also reimburse the Commission for any expense incurred by the Commission in acquiring said right of way, including but not limited to the costs of surveying, appraisal, negotiation, condemnation, and relocation assistance benefits. Unless otherwise agreed to in writing the Commission shall have the final decision regarding the settlement amount in condemnation.

(14) MAINTENANCE OF DEVELOPMENT: The City shall maintain the herein contemplated improvements without any cost or expense to the Commission. All maintenance by the City shall be done for the safety of the general public and the esthetics of the area. In addition, if any sidewalk or bike trails are constructed on the Commission's right-of-way pursuant to this Agreement, the City shall inspect and maintain the sidewalk or bike trails constructed by this project in a condition reasonably safe to the public and, to the extent allowed by law, shall indemnify and hold the Commission harmless from any claims arising from the construction and maintenance of said sidewalk or bike trails. If the City fails to maintain the herein contemplated improvements, the Commission or its representatives, at the Commission's sole discretion shall notify the City in writing of the City’s failure to maintain the improvement. If the City continues to fail in maintaining the improvement, the Commission may remove the herein contemplated improvement whether or not the improvement is located on the Commission's right of way. Any removal by the Commission shall be at the sole cost and expense of the City. Maintenance includes but is not limited to mowing and trimming between shrubs and other plantings that are part of the improvement.

(15) PLANS: The City shall prepare preliminary and final plans and specifications for the herein improvements. The plans and specifications shall be submitted to the Commission for the Commission's review and approval. The Commission has the discretion to require changes to any plans and specification prior to any approval by the Commission.

(16) REIMBURSEMENT: The cost of the contemplated improvements will be borne by the United States Government and by the City as follows:

(A) Any federal funds for project activities shall only be available for reimbursement of eligible costs which have been incurred by City. Any costs incurred by City prior to authorization from FHWA and notification to proceed from the Commission are **not** reimbursable costs. The federal share for this project will be 80 percent not to exceed $700,000. The calculated federal share for seeking federal reimbursement of participating costs for the herein improvements will be determined by dividing the total federal funds applied to the project by the total participating costs. Any costs for the herein improvements which exceed any federal reimbursement or are not eligible for federal reimbursement shall be the sole responsibility of City. The Commission shall not be responsible for any costs associated with the herein improvement unless specifically identified in this Agreement or subsequent written amendments.

(17) PROGRESS PAYMENTS: The City may request progress payments be made for the herein improvements as work progresses but not more than once every two weeks. Progress payments must be submitted monthly. The City shall repay any progress payments which involve ineligible costs.

(18) PROMPT PAYMENTS: Progress invoices submitted to MoDOT for reimbursement more than thirty (30) calendar days after the date of the vendor invoice shall also include documentation that the vendor was paid in full for the work identified in the progress invoice. Examples of proof of payment may include a letter or e-mail from the vendor, lien waiver or copies of cancelled checks. Reimbursement will not be made on these submittals until proof of payment is provided. Progress invoices submitted to MoDOT for reimbursement within thirty (30) calendar days of the date on the vendor invoice will be processed for reimbursement without proof of payment to the vendor. If the City has not paid the vendor prior to receiving reimbursement, the City must pay the vendor within two (2) business days of receipt of funds from MoDOT.

(19) PERMITS: The City shall secure any necessary approvals or permits from any federal or state agency as required for the completion of the herein improvements. If this improvement is on the right of way of the Commission, the City must secure a permit from the Commission prior to the start of any work on the right of way. The permits which may be required include, but are not limited to, environmental, architectural, historical or cultural requirements of federal or state law or regulation.

(20) INSPECTION OF IMPROVEMENTS AND RECORDS: The City shall assure that representatives of the Commission and FHWA shall have the privilege of

inspecting and reviewing the work being done by the City's contractor and subcontractor on the herein project. The City shall also assure that its contractor, and all subcontractors, if any, maintain all books, documents, papers and other evidence pertaining to costs incurred in connection with the Transportation Enhancement Program Agreement, and make such materials available at such contractor's office at all reasonable times at no charge during this Agreement period, and for three (3) years from the date of final payment under this Agreement, for inspection by the Commission, FHWA or any authorized representatives of the Federal Government and the State of Missouri, and copies shall be furnished, upon request, to authorized representatives of the Commission, State, FHWA, or other Federal agencies.

(21) CREDIT FOR DONATIONS OF FUNDS, MATERIALS, OR SERVICES: A person may offer to donate funds, materials or services in connection with this project. Any donated funds, or the fair market value of any donated materials or services that are accepted and incorporated into this project shall be credited according to 23 U.S.C. §323.

(22) DISADVANTAGED BUSINESS ENTERPRISES (DBE): The Commission will advise the City of any required goals for participation by disadvantaged business enterprises (DBEs) to be included in the City's proposal for the work to be performed. The City shall submit for Commission approval a DBE goal or plan. The City shall comply with the plan or goal that is approved by the Commission and all requirements of 49 C.F.R. Part 26, as amended.

(23) VENUE: It is agreed by the parties that any action at law, suit in equity, or other judicial proceeding to enforce or construe this Agreement, or regarding its alleged breach, shall be instituted only in the Circuit Court of Cole County, Missouri.

(24) NOTICE TO BIDDERS: The City shall notify the prospective bidders that disadvantaged business enterprises shall be afforded full and affirmative opportunity to submit bids in response to the invitation and will not be discriminated against on grounds of race, color, sex, or national origin in consideration for an award.

(25) FINAL AUDIT: The Commission may, in its sole discretion, perform a final audit of project costs. The United States Government shall reimburse the City, through the Commission, any monies due. The City shall refund any overpayments as determined by the final audit.

(26) AUDIT REQUIREMENTS: If the City expend(s) seven hundred fifty thousand dollars ($750,000) or more in a year in federal financial assistance it is required to have an independent annual audit conducted in accordance with 2 CFR Part 200. A copy of the audit report shall be submitted to MoDOT within the earlier of thirty (30) days after receipt of the auditor's report(s), or nine (9) months after the end of the audit period. Subject to the requirements of 2 CFR Part 200, if the City expend(s) less than seven hundred fifty thousand dollars ($750,000) a year, the City may be exempt from auditing requirements for that year but records must be available for review or audit by applicable state and federal authorities.

(27) FEDERAL FUNDING ACCOUNTABILITY AND TRANSPARENCY ACT OF 2006: The City shall comply with all reporting requirements of the Federal Funding Accountability and Transparency Act (FFATA) of 2006, as amended. This Agreement is subject to the award terms within 2 C.F.R. Part 170.

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IN WITNESS WHEREOF, the parties have entered into this Agreement on the date last written below.

Executed by the City this _____ (date).

Executed by the Commission this _____ (date).

MISSOURI HIGHWAYS AND
TRANSPORTATION COMMISSION

_____

Title _____

ATTEST:

_____
Secretary to the Commission

Approved as to Form:

_____
Commission Counsel

CITY OF CREVE COEUR

By _____

Title _____

ATTEST:

By _____

Title _____

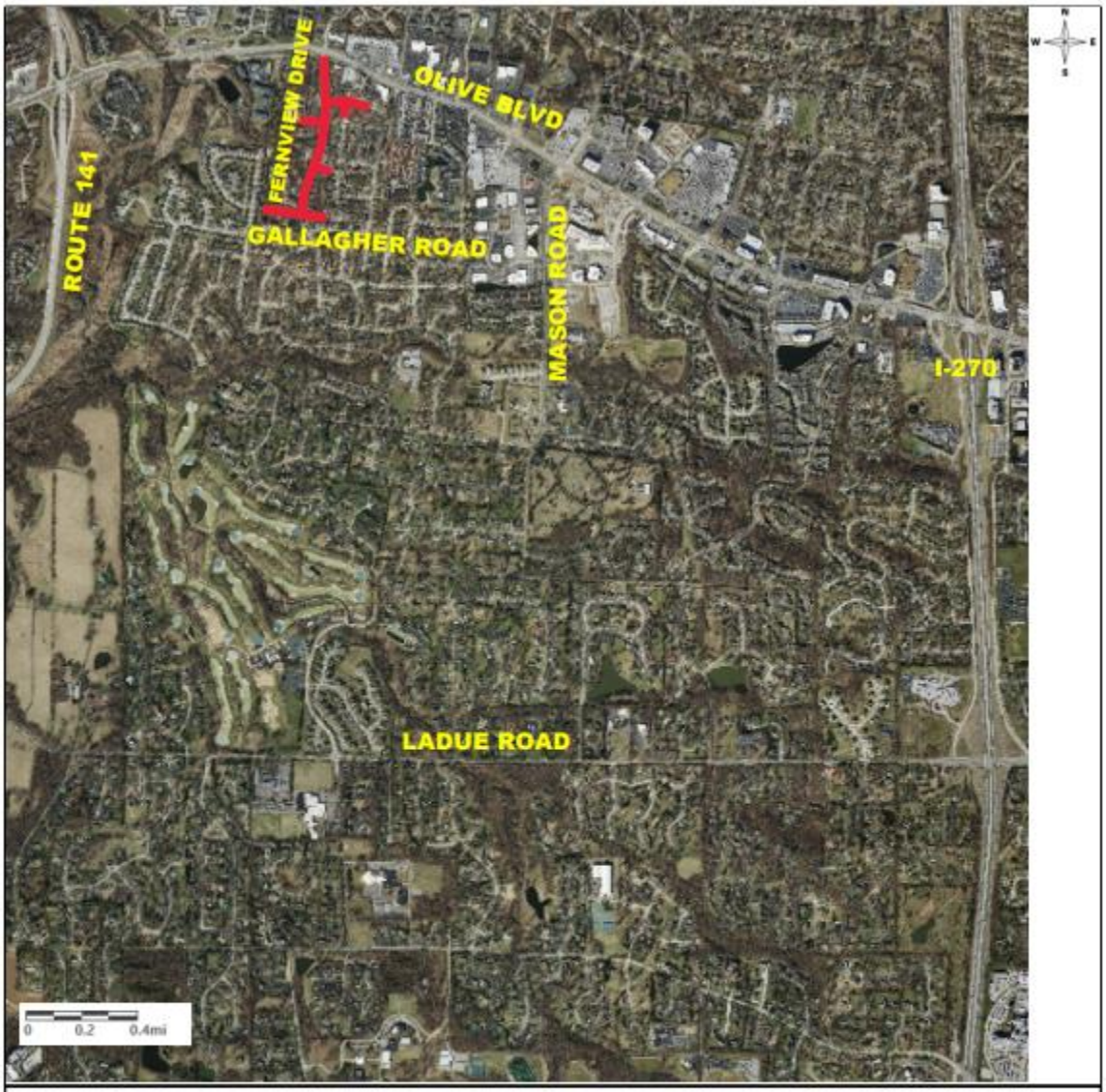
Approved as to Form:

_____

Title _____

Ordinance No _____

Exhibit A - Location of Project



FERNVIEW DRIVE SIDEWALK PROJECT

ATTACHMENT A - PROJECT LOCATION MAP

CITY OF CREVE COEUR, MO • 1949 •

PROPOSED PROJECT LOCATION

Exhibit B – Project Schedule

Project Description: TAP-4900(646) Fernview Drive

PROJECT DEVELOPMENT SCHEDULE **Note**: *many stages can occur concurrently.*			
Activity Description	**Start Date (MM/YYYY)**	**Finish Date (MM/YYYY)**	**Time Frame (Months)**
Receive notification letter	02/2024	02/2024	1
Execute agreement (project sponsor and DOT)	03/2024	04/2024	2
Engineering services contract submitted and approved*			
Obtain environmental clearances (106, CE2, T&E, etc.)	03/2024	05/2024	3
Public meeting/hearing	10/2024	10/2024	1
Develop and submit preliminary plans	03/0224	06/2024	4
Preliminary plans approved	07/2024	07/2024	1
Develop and submit right-of-way plans	06/2024	08/2024	3
Review and approval of right-of-way plans	09/2024	09/2024	1
Submit and receive approval for notice to proceed for right-of-way acquisition (A-Date)*	10/2024	11/2024	2
Right-of-way acquisition	12/2024	05/2025	6
Utility coordination	02/2024	07/2025	18
Develop and submit PS&E	12/2024	06/2025	7
District approval of PS&E/advertise for bids*	07/2025	09/2025	3
Submit and receive bids for review and approval	11/2025	01/2026	3
Project implementation/construction	03/2026	07/2026	5
* Finish date must match fiscal year for each milestone shown in **bold** text.			

*Note: the dates established in the schedule above will be used in the applicable ESC between the sponsor agency and consultant firm.

**Schedule dates are approximate as the project schedule will be actively managed and issues mitigated through the project delivery process. The Award Date or Planning Study Date deliverable is not approximate and a Supplemental Agreement is required to modify this date.

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Non-segregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
XI. Certification Regarding Use of Contract Funds for Lobbying
XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to *DBAconformance@dol.gov*. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

* * * * *

3. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)
This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

DEPARTMENT OF PUBLIC WORKS
STAFF MEMORANDUM

DATE: March 15, 2024

TO: Mark Perkins, City Administrator

CC: Jim Heines, Director of Public Works
Steve Berecz, P.E., City Engineer/Assistant Director of Public Works

FROM: Kevin Mulligan, P.E., Civil Engineer

SUBJECT: Recommendation to Enter into Program Agreement
Fernview Sidewalk Project – Phase 1

The City of Creve Coeur has been awarded a federal Transportation Alternatives Program (TAP) grant to help fund the construction of a sidewalk along the east side of Fernview Drive and its side streets, between Olive Boulevard and Gallagher Road. The TAP grant program is administered by the Missouri Transportation and Highways Commission (MoDOT), and the City is required to enter into a program agreement with MoDOT in order to use the TAP grant to fund the sidewalk project.

Project Scope and Background

The purpose of this project is to build a new sidewalk along the east side of Fernview Drive from Olive Boulevard to Gallagher Road. The project will also build new sidewalks to connect to existing sidewalk on the side streets of Fernway Lane, Ferntrails Lane, Ferntop Lane, and Gallagher Road.

Fernview Drive is a minor collector roadway that extends south from Olive Boulevard near the western City limits. Fernview Drive eventually becomes Bellerive Estates Drive, and the route that is Fernview Drive, Bellerive Estates Drive, and Mason Manor Road serves as the principal route for much of the residential portion of Ward 4.

Many of the subdivisions to the east and west of Fernview Drive were constructed with sidewalks, but Fernview Drive itself has no sidewalks along it. Even though Fernview has shoulders, Fernview acts as a north-south barrier for pedestrians, and constructing a new sidewalk will connect several neighborhoods.

These improvements are illustrated in the attached exhibit.

Project Cost and Grant Summary

The City has been awarded a TAP grant to fund up to 80% of the costs for the acquisition of right of way and/or easements for the project and for construction of the project, up to a maximum reimbursement of $700,000.

The City began this project several years ago with preliminary concept plans. The costs associated with these preliminary stages are not reimbursable through the TAP grant.

Project Phase	Total Cost	Grant Funding	City Funding	Year
Preliminary Work	$ 65,575	$ 0	$ 65,575	Complete
Design	$ 117,000	$ 0	$ 117,000	FY2024-2025
Right of Way	$ 230,000	$ 184,000	$ 46,000	FY2025
Construction	$ 645,000	$ 516,000	$ 129,000	FY2026
Totals	**$1,057,575**	**$ 700,000**	**$ 357,575**	
		66%	34%	

While the TAP grant will reimburse up to 80% of the acquisition and construction phases of the project, the grant will fund about 66% of the entire project cost, meaning that the City's share of the entire project will be about 34%.

Funding for this project has been allocated from the Capital Fund in the Capital Improvement Program.

Project Schedule

Milestones for the project include the following:

Preliminary design approval	August 2024
Acquisition (if necessary)	September 2024 through May 2025
Final design approval	September 2025
Bidding	November 2025 – January 2026
Construction	March 2026 – July 2026

Recommendation

City staff recommends that the City Council authorize the program agreement with MoDOT for the TAP grant for phase 1 of the Fernview Drive sidewalk project. This grant will fund the majority of the cost to build a new sidewalk along Fernview Drive, which will be a significant benefit for pedestrians.

Fernview Sidewalk Project - Phase 1

OLIVE BOULEVARD

FERNVIEW DRIVE

FERNWAY LANE

FERNTRAILS DRIVE

FERNTOP LANE

FERNCREST LANE

GALLAGHER ROAD

GALLAGHER ROAD

LEGEND

- City Limits
- Existing City sidewalks
- New sidewalk construction

752 0 376 752

Feet

March 18, 2024

CITY OF CREVE COEUR, MO • 1949 •

BILL NO. __6117__ ORDINANCE NO. _____

AN ORDINANCE AMENDING THE ADOPTED 2024 ENTERPRISE FUND, PARKS & STORMWATER FUND, CAPITAL FUND, SEWER LATERAL FUND, PUBLIC SAFETY FUND, GENERAL FUND AND CITY EMPLOYEES RETIREMENT FUND BUDGETS OF THE CITY OF CREVE COEUR BY AUTHORIZING ADDITIONAL APPROPRIATIONS TO EACH OF THESE FUND BUDGETS.

WHEREAS, REVENUES WERE ESTIMATED AND APPROPRIATIONS WERE AUTHORIZED IN THE ANNUAL CITY BUDGET ADOPTED ON JUNE 26, 2023 BY ORDINANCE NO. 5842; AND

WHEREAS, IT IS IN THE INTEREST OF THE CITY OF CREVE COEUR TO AUTHORIZE AN ADDITIONAL APPROPRIATION TO THE ENTERPRISE, PARKS & STORMWATER, CAPITAL, SEWER LATERAL, PUBLIC SAFETY AND GENERAL FUNDS, TOTALING $2.4M, IN ORDER TO PROVIDE A COST OF LIVING ADJUSTMENT (COLA) TO THE LEGACY PENSION PLAN DOCUMENT BEFORE MOVING THE PLAN ADMINISTRATION TO MISSOURI LOCAL GOVERNMENT EMPLOYEES RETIREMENT SYSTEM (LAGERS); AND

WHEREAS, IT IS IN THE INTEREST OF THE CITY OF CREVE COEUR TO AUTHORIZE AN ADDITIONAL APPROPRIATION TO THE CITY EMPLOYEES RETIREMENT FUND, TOTALING $30,074,035, IN ORDER TO MOVE THE ADMINISTRATION OF THIS PENSION PLAN TO LAGERS AND TO CLOSE OUT THIS FUND; AND

NOW, THEREFORE, **BE IT ORDAINED** BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR AS FOLLOWS:

SECTION 1. THAT THE ANNUAL OPERATING BUDGET FOR THE ENTERPRISE FUND FOR THE FISCAL YEAR 2024 AS ADOPTED, IS HEREBY AMENDED BY AUTHORIZING AN ADDITIONAL APPROPRIATION TO PROVIDE A COLA TO THE LEGACY PENSION PLAN DOCUMENT BEFORE MOVING THE PLAN ADMINISTRATION TO LAGERS.

ENTERPRISE FUND		
PENISON CONTRIBUTION (06-14-31-5241)		12,900
PENISON CONTRIBUTION (06-14-32-5241)		9,300
TOTAL ENTERPRISE FUND	**$**	**22,200**

SECTION 2. THAT THE ANNUAL OPERATING BUDGET FOR THE PARKS & STORMWATER FUND FOR THE FISCAL YEAR 2024 AS ADOPTED, IS HEREBY AMENDED BY AUTHORIZING AN ADDITIONAL APPROPRIATION TO PROVIDE A COLA TO THE LEGACY PENSION PLAN DOCUMENT BEFORE MOVING THE PLAN ADMINISTRATION TO LAGERS.

PARKS & STORMWATER FUND		
PENISON CONTRIBUTION (05-61-71-5241)		9,700
TOTAL PARKS & STORMWATER FUND	**$**	**9,700**

SECTION 3. THAT THE ANNUAL OPERATING BUDGET FOR THE CAPITAL FUND FOR THE FISCAL YEAR 2024 AS ADOPTED, IS HEREBY AMENDED BY AUTHORIZING AN ADDITIONAL APPROPRIATION TO PROVIDE A COLA TO THE LEGACY PENSION PLAN DOCUMENT BEFORE MOVING THE PLAN ADMINISTRATION TO LAGERS.

CAPITAL FUND		
PENISON CONTRIBUTION (02-61-71-5241)		10,000
TOTAL CAPITAL FUND	**$**	**10,000**

SECTION 4. THAT THE ANNUAL OPERATING BUDGET FOR THE SEWER LATERAL FUND FOR THE FISCAL YEAR 2024 AS ADOPTED, IS HEREBY AMENDED BY AUTHORIZING AN ADDITIONAL APPROPRIATION TO PROVIDE A COLA TO THE LEGACY PENSION PLAN DOCUMENT BEFORE MOVING THE PLAN ADMINISTRATION TO LAGERS.

SEWER LATERAL FUND		
PENSION CONTRIBUTION (11-61-93-5241)		2,000
TOTAL SEWER LATERAL FUND	**$**	**2,000**

SECTION 5. THAT THE ANNUAL OPERATING BUDGET FOR THE PUBLIC SAFETY FUND FOR THE FISCAL YEAR 2024 AS ADOPTED, IS HEREBY AMENDED BY AUTHORIZING AN ADDITIONAL APPROPRIATION TO PROVIDE A COLA TO THE LEGACY PENSION

PLAN DOCUMENT BEFORE MOVING THE PLAN ADMINISTRATION TO LAGERS.

PUBLIC SAFETY FUND	
PENSION CONTRIBUTION (19-21-23-5241)	1,530,200
TOTAL PUBLIC SAFETY FUND	**$ 1,530,200**

SECTION 6. THAT THE ANNUAL OPERATING BUDGET FOR THE GENERAL FUND FOR THE FISCAL YEAR 2024 AS ADOPTED, IS HEREBY AMENDED BY AUTHORIZING AN ADDITIONAL APPROPRIATION TO PROVIDE A COLA TO THE LEGACY PENSION PLAN DOCUMENT BEFORE MOVING THE PLAN ADMINISTRATION TO LAGERS.

GENERAL FUND	
PENSION CONTRIBUTION (01-11-13-5241)	4,300
PENSION CONTRIBUTION (01-12-11-5241)	43,900
PENSION CONTRIBUTION (01-12-14-5241)	14,000
PENSION CONTRIBUTION (01-13-11-5241)	18,300
PENSION CONTRIBUTION (01-13-15-5241)	95,800
PENSION CONTRIBUTION (01-13-51-5241)	4,700
PENSION CONTRIBUTION (01-14-11-5241)	6,600
PENSION CONTRIBUTION (01-16-11-5241)	3,500
PENSION CONTRIBUTION (01-21-11-5241)	120,200
PENSION CONTRIBUTION (01-21-21-5241)	91,900
PENSION CONTRIBUTION (01-22-11-5241)	320,200
PENSION CONTRIBUTION (01-31-41-5241)	29,200
PENSION CONTRIBUTION (01-31-43-5241)	14,000
PENSION CONTRIBUTION (01-32-11-5241)	16,300
PENSION CONTRIBUTION (01-32-61-5241)	43,000
TOTAL GENERAL FUND	**$ 825,900**

SECTION 7. THAT THE ANNUAL OPERATING BUDGET FOR THE CITY EMPLOYEES RETIREMENT FUND FOR THE FISCAL YEAR 2024 AS ADOPTED, IS HEREBY AMENDED BY AUTHORIZING AN ADDITIONAL APPROPRIATION TO MOVE THE ADMINISTRATION OF THE PENSION PLAN TO LAGERS AND TO CLOSE OUT THIS FUND.

CITY EMPLOYEES RETIREMENT FUND	
PROFESSIONAL SERVICES (03-91-11-6203)	30,074,035
TOTAL CITY EMPLOYEES RETIREMENT FUND	**$ 30,074,035**

SECTION 8. This Ordinance shall become effective pursuuant to Section 3.11(g) of the City Charter.

ADOPTED THIS ____ DAY OF _____ 2024

NICOLE GREER
PRESIDENT OF THE CITY COUNCIL

APPROVED THIS _____ DAY OF _____2024.

DR. ROBERT HOFFMAN
MAYOR

ATTEST:

KELLIE HENKE
CITY CLERK

MEMORANDUM

DATE: March 19, 2024

TO: Mark Perkins, City Administrator

FROM: Lori Obermoeller, Director of Finance

SUBJECT: Budget Amendment #3 – FY 2024

Attached is an ordinance to amend the FY 2024 Enterprise, Parks & Stormwater, Capital, Sewer Lateral, Public Safety and General Fund Budgets to authorize an additional $2.4M appropriation in order to provide a cost of living adjustment (COLA) to the Legacy Pension Plan Document before moving the plan administration to Missouri Local Government Employees Retirement System (LAGERS).

The dollar amount for this amendment is exactly what we expected when we discussed adding the COLA to the Legacy Pension Plan document. This provided a COLA of 0.75% to existing retirees for each full year from the later of the retiree's date of retirement and January 1, 2002 through August 31, 2023. This also provides an ongoing 0.50% to all retirees for every year beginning October 1, 2024.

The last portion of this Ordinance adjustment is to amend the City Employees Retirement Fund budget to account for the payment to LAGERS ($30,074,035), which will then allow us to close out this Fund.

I'd be happy to answer any questions.

BILL NO. 6118 **ORDINANCE NO. _____**

AN ORDINANCE AUTHORIZING A NEW CONDITIONAL USE PERMIT FOR EQUIPMENTSHARE AT 1121 N. WARSON ROAD WITHIN THE NORTH WARSON BUSINESS CENTER, ZONED LI-LIGHT INDUSTRIAL DISTRICT

WHEREAS, Jeffrey Williams, of EquipmentShare,com, LLC, has submitted an application for a general rental center use at 1121 N. Warson Road, Creve Coeur, MO, 63141, within the North Warson Business Center, zoned LI-Light Industrial District; and

WHEREAS, Section 405.380(C), NAICS 532310 General Rental Centers, requires the issuance of a conditional use permit as provided in Section 405.1070, Conditional Use Permits; and

WHEREAS, a public hearing was held by the Creve Coeur Planning and Zoning Commission on Monday, April 1, 2024, beginning at 6:00 p.m. or immediately following the close of the previous public hearing, on said application for the conditional use permit as provided by Section 405.1070(D)(2); and

WHEREAS, notice of publication for said public hearing had been previously published at least 15 days prior to the hearing, in the St. Louis Countian, a newspaper of general circulation in the City of Creve Coeur; and

WHEREAS, the Planning and Zoning Commission reviewed and, by a 6-0 vote, recommended approval of the request, subject to the conditions contained herein, at its meeting on April 1, 2024; and

WHEREAS, all parties desiring to be heard, either for or against said application, were given an opportunity to be heard, and a copy of the proposed ordinance has been made available for public inspection prior to its consideration by the Council; and this Bill having been read by title in open meeting two times before final passage by the City Council, and

WHEREAS, the City Council finds that the application and evidence presented clearly indicate that the proposed conditional use, when subject to certain conditions set forth herein:

1. Complies with all applicable provisions of this Zoning Ordinance Chapter 405 including but not limited to environmental performance standards presented in Section 405.550, the criteria in Section 405.470 and the standards of this Chapter in regard to yard and setback, parking and loading areas, screening and buffering, refuse, storage and service areas and signs.

2. Will contribute to and promote the welfare and convenience of the community at the specific location.

3. Will not cause substantial injury to the value of neighboring property.

4. Is consistent with the applicable provisions of the City's Comprehensive Plan and any applicable neighborhood or sector plans, unless good cause is demonstrated for deviation there from.

5. Will provide, if applicable, erosion control and on-site stormwater detention in accordance with the standards contained in this Chapter.

6. Will be compatible with the character of the surrounding area and thus will not impose an excessive burden or have a substantial negative impact on surrounding or adjacent users or on pedestrian or vehicular traffic or on community facilities or services, including but not limited to emergency services.

NOW, THEREFORE, be it ordained by the City Council of the City of Creve Coeur, Missouri, as follows:

SECTION 1: A Conditional Use Permit is authorized to be issued pursuant to Section 3 hereof for the operation of EquipmentShare for a general rental center at 1121 N. Warson Road, Creve Coeur, MO, 63141, within the North Warson Business Center, zoned LI-Light Industrial District, whose legal description is as follows:

A tract of land being part of Section 36, Township 46 North - Range 5 East, City of Creve Coeur, St. Louis County, Missouri and being more particularly described as follows: Beginning at the Northwest corner of property conveyed to Warson Village Apartments Associates, L.L.C. as described in the deed recorded in Book 10552, Page 1310 of the St. Louis County records; thence North 00 degrees 44 minutes 25 seconds East 904.30 feet to a point on the South line of the "Resubdivision of Sections 2, 3, and 4 of Lindbergh Warson Industrial Center Addition 1", a subdivision according to the plat thereof recorded in Plat Book 100, Page 52 of the St. Louis County records; thence Eastwardly along said South line South 89 degrees 16 minutes 51 seconds East 830.00 feet to a point on the West line of Warson Road, 80 foot wide; thence Southwardly along said West line South 00 degrees 47 minutes 00 seconds West 905.03 feet to a point on the North line of aforesaid Warson Village Apartments Associates, L.L.C. property; thence Westwardly along said North line North 89 degrees 13 minutes 50 seconds West 829.32 feet to the point of beginning.

SECTION 2: The Conditional Use Permit granted shall be subject to all applicable statutes, ordinances, rules and regulations, and the following conditions:

1. The Conditional Use Permit shall be for the operation of a 17,835 square foot general rental center space located at 1121 North Warson Road.
2. The hours of operation shall be: 7:00 A.M. to 5:00 P.M. Monday through Friday.
3. Additional business hours may be permitted with the Zoning Administrator's approval.
4. All signs and banners shall be in conformance with Article VII, Sign Regulations, of the Zoning Code.
5. Any future enlargement, extension, expansion or exterior alteration in the use of the structures or site must be approved by the City Council upon receipt of the recommendation of the Planning and Zoning Commission as an amendment to the Conditional Use Permit before a Building Permit for the enlargement, expansion or exterior alteration may be issued.
6. Failure to comply with any one or all of the conditions of this permit shall be adequate cause for the revocation of said permit by the City Council, provided, however, no permit shall be revoked without prior notice to the owner of the intention of the City Council to revoke this permit and reasonable time granted to the owner to correct or remedy any such breach of conditions, except for repeated breaches or violations.

7. No conditional use permit granted by the City Council shall be valid for a period longer than one year from the date it grants the conditional use permit, unless within such period: (1) a building permit is obtained and construction is begun; or (2) if a building permit is not required, an occupancy permit is obtained and the use of the building commenced. The City Council may grant extensions to the one (1) year period of not more than one hundred and eighty (180) days each, without notice or hearing, provided that a written request for such extension is filed by the original applicant and approved by the City Council prior to the date the conditional use permit is scheduled to expire.

SECTION 3: The City Administrator of the City of Creve Coeur is hereby authorized and directed to issue a Conditional Use Permit in accordance with the provisions of this ordinance, said permit to expressly provide for the conditions and stipulations hereinabove set out in Section 2 of this ordinance. Exercise of the rights granted pursuant to the issued permit shall constitute acceptance of all conditions and stipulations set forth herein.

SECTION 4: This ordinance shall become effective in accordance with Section 3.11 (g) of the City Charter.

ADOPTED THIS ____ DAY OF _____, 2024.

_____
NICOLE GREER
PRESIDENT OF CITY COUNCIL

APPROVED THIS ____ DAY OF _____, 2024.

_____
DR. ROBERT HOFFMAN
MAYOR

ATTEST:

_____
KELLIE HENKE
CITY CLERK

city of CREVE COEUR

300 North New Ballas Road • Creve Coeur, Missouri 63141

(314) 432-6000 • Fax (314) 872-2539

APPLICATION TO PLANNING AND ZONING COMMISSION #24-009: A CONDITIONAL USE PERMIT FOR A GENERAL RENTAL CENTER USE FOR EQUIPMENTSHARE LOCATED AT 1121 NORTH WARSON ROAD

FOR THE MEETING OF: Monday, April 1, 2024

LOCATION: 1121 North Warson Road, in the LI (Light Industrial) District

REQUEST: Jeffrey Williams, of EquipmentShare, has submitted an application for a Conditional Use Permit for a tool rental center at 1121 North Warson Road in the "LI" Light Industrial Zoning District. NAICS 532310 General Rental Centers is a Conditional Use in the "LI" Light Industrial District. The 17,835 square foot space within the existing building will be used to store EquipmentShare's Tool Division inventory of tools and light equipment for rent. The hours will be from 7:00 AM to 5:00 PM Monday through Friday with 10 employees at the busiest shift. No exterior changes are proposed.

ADDITIONAL INFORMATION: Under Section 405.380, Table A of the Zoning Code, NAICS 532310 General Rental Centers, requires the issuance of a conditional use permit in the "LI" zoning district subject to the recommendation of the Planning and Zoning Commission and approval of the City Council.

Key Issues:

- Does the request further the goals and/or implement the Comprehensive Plan?
- Is the request consistent with the requirements for a conditional use permit?
- Does the request follow the design guidelines?

Creve Coeur 2030 Comprehensive Plan References

- Mixed-Use Innovation Campus District
- Design Guidelines

Zoning Code References

- Section 405.380: LI-Light Industrial District
- Section 405.470: Conditional Uses

APPLICANT: Jeffrey Williams
EquipmentShare.com, LLC
1428 Chestnut Street, Ste 110
Chattanooga, TN 37402

OWNER: Richard Henry
NWarson, LLC
3972 Ivy Road
Charlottesville, VA 22903





REPORT PREPARED BY: Bethany L. Moore, AICP, City Planner
DATE: 3/25/2024
ATTACHMENTS: Applicant's Materials
Draft Ordinance

PROJECT REQUEST
The applicant, EquipmentShare, has applied for a Conditional Use Permit for 17,835 square feet of space to house their Tool Division's inventory of tools and light equipment for rent. NAICS 532310 General Rental Centers, is a conditional use in the LI-Light Industrial zoning district. The Tool Division specializes in tool and light equipment rental with no heavy equipment located on site. Rentals include light-duty and industrial equipment used to carry out specific tasks in construction or manufacturing processes. The applicant will have 10 employees at busiest shift and will be open between the hours of 7:00 AM and 5:00 PM Monday through Friday. The subject property is part of a four-building complex known as the North Warson Business Center which was developed in the 1970s in St. Louis County before becoming incorporated into Creve Coeur in the 1990s. This Conditional Use Permit requires approval from the City Council after recommendation from the Planning and Zoning Commission.

LAND USE AND ZONING OF SURROUNDING PROPERTIES
The adjacent zoning and land uses are as follows:

DIRECTION	USE	ZONED	SEPARATED BY
North	Industrial	"LI" Light Industrial	N/A
South	Residential	"AR" Attached Single-Family Residential	N/A
East	City of Olivette	Mixed Use	N. Warson Road
West	Industrial	"LI" Light Industrial	N/A

COMPREHENSIVE PLAN REVIEW
The subject property is located within the Mixed-Use Innovation Campus District (MUIC) located on the east end of Olive Boulevard. The Comprehensive Plan recommends that a variety of active office and residential uses be allowed and encouraged with side and rear lot parking. The MUIC is intended for the development of specialized office, laboratory, institutional, and research buildings for high-tech and biotech industries, supported by vibrant, ground floor mixed-use development, multi-family housing, and other community amenities. The focus of the MUIC is to develop the SLEDP 39 North plant science and agricultural technology district. The property was developed in St. Louis Country prior to incorporation into the City of Creve Coeur and has remained largely unchanged since. Since the proposed use will only be taking up a portion of the existing building and making no exterior or interior changes, this use is compatible in terms of the Comprehensive Plan guidelines. Therefore, the proposed use would satisfy the goals and objectives of the Comprehensive Plan as much as such a use could.



Figure 1: Site Plan.



Figure 2: Proposed Floor Plan.

ZONING REVIEW
As the proposed use is utilizing an existing space within a multi-tenant building and will not be making any changes to the exterior of the building or site, and the use is compatible with other surrounding uses, staff does not have any concerns with this use or the condition of the property.

Parking:
There are 205 total parking spaces on site that are shared between the four industrial buildings on the lot. NAICS 532310 General Rental Centers requires parking to be determined based on the square footage of the space. The total square footage of the space that the applicant is proposed to lease is 17,835 square feet. Section 405.820, Required Off-Street Parking Spaces, requires that 4 parking spaces be provided per 1,000 square feet of space for the use meaning that this use would need 72 spaces. Given that there are 205 parking spaces on site, staff is not concerned with the amount of parking provided on site and is satisfied that the parking requirements of Section 405.820 have been met.

RECOMMENDATION
Based on the above analysis, the request for a conditional use permit meets the requirements of the Zoning Ordinances and goals of the Comprehensive Plan. Staff recommends the following conditions below which are included in the draft ordinance:

1. The Conditional Use Permit shall be for the operation of a 17,835 square foot general rental center space located at 1121 North Warson Road.
2. The hours of operation shall be: 7:00 A.M. to 5:00 P.M. Monday through Friday.
3. Additional business hours may be permitted with the Zoning Administrator's approval.
4. All signs and banners shall be in conformance with Article VII, Sign Regulations, of the Zoning Code.
5. Any future enlargement, extension, expansion or exterior alteration in the use of the structures or site must be approved by the City Council upon receipt of the recommendation of the Planning and Zoning Commission as an amendment to the Conditional Use Permit before a Building Permit for the enlargement, expansion or exterior alteration may be issued.
6. Failure to comply with any one or all of the conditions of this permit shall be adequate cause for the revocation of said permit by the City Council, provided, however, no permit shall be revoked without prior notice to the owner of the intention of the City Council to revoke this permit and reasonable time granted to the owner to correct or remedy any such breach of conditions, except for repeated breaches or violations.
7. No conditional use permit granted by the City Council shall be valid for a period longer than one year from the date it grants the conditional use permit, unless within such period: (1) a building permit is obtained and construction is begun; or (2) if a building permit is not required, an occupancy permit is obtained and the use of the building commenced. The City Council may grant extensions to the one (1) year period of not more than one hundred and eighty (180) days each, without notice or hearing, provided that a written request for such extension is filed by the original applicant and approved by the City Council prior to the date the conditional use permit is scheduled to expire.

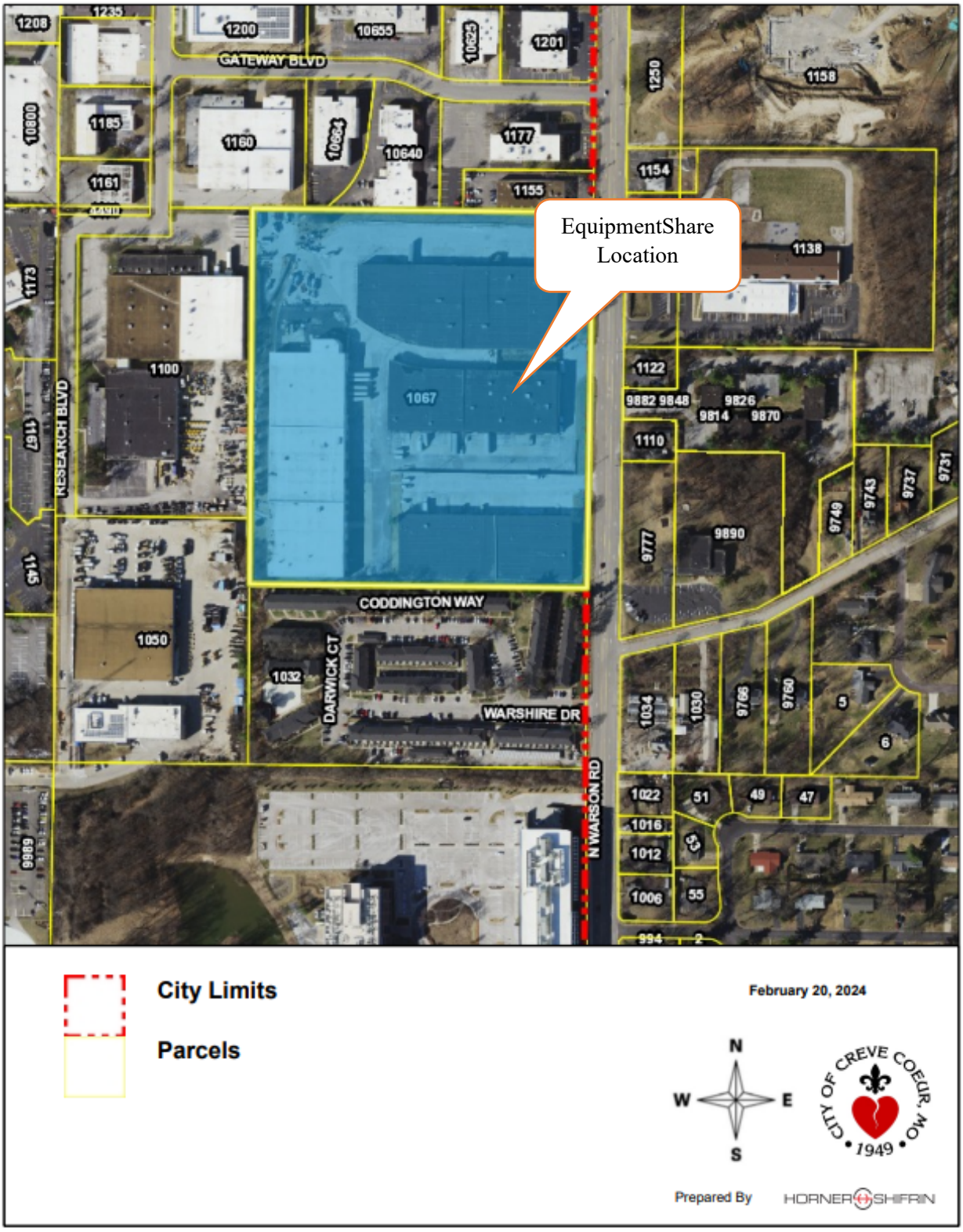
MOTION
If the Commission wishes to vote on a recommendation to the City Council based on the current proposal, the following would be an appropriate motion:

> "I move to recommend approval of the conditional use permit for EquipmentShare with conditions according to the draft ordinance attached to the staff report for Application #24-009, for the meeting of April 1, 2024." (Conditions in the draft ordinance may be added, eliminated, or modified by preceding motion)

APPENDIX 1: COMPREHENSIVE PLAN
Included and attached by reference. See body of report for specific excerpts.

APPENDIX 2: ZONING CODE
Included and attached by reference. See body of report for specific excerpts.

APPENDIX 3: AERIAL PHOTO


EquipmentShare Location
GATEWAY BLVD
CODDINGTON WAY
WARSHIRE DR
DARWICK CT
N WARSON RD
RESEARCH BLVD
1067
City Limits
Parcels
February 20, 2024
N
W
E
S
CITY OF CREVE COEUR, MO
1949
Prepared By
HORNER SHIFRIN

city of CREVE COEUR
PLANNING DIVISION
300 North New Ballas Road, Creve Coeur, Missouri 63141
Tel. (314) 872-2501 • Fax (314) 872-2505

File #_____

PLANNING AND ZONING COMMISSION AGENDA APPLICATION
CONDITIONAL USE PERMIT

PLEASE COMPLETE FRONT AND BACK PAGES

Applicant:	***Applicant's Representative (if applicable):***
_____ *Name*	Jeffrey Williams *Name*
_____ *Company (If Applicable)*	EquipmentShare.Com LLC *Company (If Applicable)*
_____ *Address*	1428 Chestnut St., Ste 110 *Address*
_____ *Address*	Chattanooga, TN 37402 *Address*
Telephone # _____	*Telephone #* (423) 713-3526
Fax # _____	*Fax #* _____
Email: _____	*Email:* jeffrey.williams@equipmentshare.com
_____ ***Applicant's Signature***	Jeffrey Williams ***Applicant's Representative's Signature***

Property Information:	***Owner's Acknowledgement (if different from applicant):***
1121 N Warson Rd *Address*	Richard Henry *Name*
Saint, Louis, MO 63132 *Address*	NWarson LLC *Company (If Applicable)*
N Warson Business Center *Development Name (if any)*	3972 Ivy Rd *Address*
LI *Current Zoning*	Charlottesville, VA *Address*
_____ *Prior CUP Approvals (if known)*	*Telephone #* 310-779-3062
_____	*Fax #* _____
_____	*Email:* richard@clovellyfund.com
	Richard Henry Digitally signed by Richard Henry Date: 2024.02.28 11:07:03 -08'00' ***Owner's Signature***

Description of Requested Use (attach additional sheets as needed)

General Description of Business: See additional sheet.

Gross Floor Area – Existing and Proposed: 17,835 SF Existing

Number of Seats (for restaurant only): N/A

Number of Employees at the busiest shift: 10

Hours of Operation: Monday through Friday 7:00 AM to 5:00 PM.

Current or Most Recent Use of the Property: Vacant

Will the applicant apply for a liquor license: Yes ☐ No ☑

Rationale

Please describe in detail, on an attached sheet, the reasons why you believe the request for a conditional use permit should be approved and what steps are being taken to lessen any impacts on surrounding residences and businesses. An explanation of the building and landscape designs (if changes are proposed) should also be included.

Submittal Checklist

☐ Rationale	☐ Building elevations for new construction
☐ Site plan	☐ Photographs of existing structures
☐ Access and parking plan; (may be shown on site plan)	☐ Materials samples
	☐ Legal Description in Word format
☐ Landscape plan	☐ Fees: $250 (non-refundable)
☐ Floor plan	$2000 (refundable deposit)
☐ Electronic copies of all materials	☐ Other items as requested by staff

Preferred Public Hearing Date: Monday, April 1 ***, 20*** 24 ***.***

*****See Planning & Zoning Commission schedule and confirm available meeting dates with Planning Division staff*****

Office Use Only	
____ **All Sections Complete**	Received By:
____ **All Documents, incl. e-Copies**	_____
____ **Fees Paid**	Date: _____

Revised: 7/22

1121 N Warson Road, St Louis, MO 63132
Legal Description and Locator Number

- Unit 1121, Building C, North Warson Business Center. Note that this parcel has four buildings and EquipmentShare is occupying a portion of one of these buildings.

- Legal Description (Entire Parcel): A tract of land being part of Section 36, Township 46 North - Range 5 East, City of Creve Coeur, St. Louis County, Missouri and being more particularly described as follows:Beginning at the Northwest corner of property conveyed to Warson Village Apartments Associates, L.L.C. as described in the deed recorded in Book 10552, Page 1310 of the St. Louis County records; thence North 00 degrees 44 minutes 25 seconds East 904.30 feet to a point on the South line of the "Resubdivision of Sections 2, 3, and 4 of Lindbergh Warson Industrial Center Addition 1", a subdivision according to the plat thereof recorded in Plat Book 100, Page 52 of the St. Louis County records; thence Eastwardly along said South line South 89 degrees 16 minutes 51 seconds East 830.00 feet to a point on the West line of Warson Road, 80 foot wide; thence Southwardly along said West line South 00 degrees 47 minutes 00 seconds West 905.03 feet to a point on the North line of aforesaid Warson Village Apartments Associates, L.L.C. property; thence Westwardly along said North line North 89 degrees 13 minutes 50 seconds West 829.32 feet to the point of beginning.

- Parcel APN/Locator Number 16M220089

1121 N Warson Road, St Louis, MO 63132 Rationale and EquipmentShare Company Information

EquipmentShare's Need and Rationale for a Conditional Use Permit

EquipmentShare is requesting a Conditional Use Permit to open one of its tooling divisions at 1121 N Warson Rd, St Louis, MO 63132. After discussions with a Creve Coeur City Planner, it was determined that our intended use is classified as NAICS 532310 (General Rental Centers). Per Table A (Permitted and Conditional Uses) of the Creve Coeur Zoning Ordinance, this NAICS classification requires a Conditional Use Permit for property zoned LI.

1121 N Warson Rd is located within the North Warson Business Center. This center is comprised of four large warehouses that are divided into suites. 1121 N Warson is located in the center of the middle building (see site plan) and only adjoins other warehouses in this center. This location does not adjoin any residential property and is well-buffered. EquipmentShare's intended use is comparable to other businesses' current and historical uses located within this Business Center. Given these factors, EquipmentShare believes that its intended use will have little or no impact on the surrounding residences and businesses.

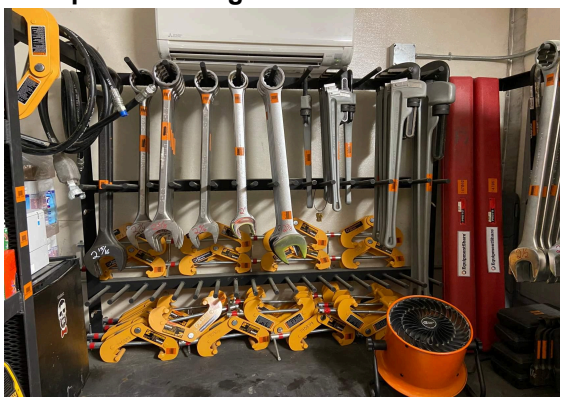
About EquipmentShare and its Tooling Division

EquipmentShare is a nationwide construction technology company dedicated to increasing industry productivity through smart jobsite technology and equipment rental, retail, and service centers. EquipmentShare integrates its cloud-connected platform, T3, into its rental experience which gives customers unparalleled visibility and control over their machines and job site operations. We operate 4 Divisions including Core Solutions, Advanced Solutions, Tooling Solutions, and a Dealership Division. The demand for the company's innovation continues to drive EquipmentShare's growth with over 200 locations across the United States employing over 4,500 team members.

The Tooling Division's typical site will specialize in tooling and light equipment rental. No heavy equipment will be located at this location. The typical site is one to two acres with 10,000 to 30,000 square feet of warehouse space and 800 to 2500 square feet of office space. These warehouses will typically have 2-4 dock doors with levelers. The hours of operation are Monday through Friday 7:00 AM to 5:00 PM and are typically closed on weekends and most major holidays. This division specializes in the rental of light-duty and industrial equipment used to carry out specific tasks in the construction or manufacturing process. These tools include welders, various handheld tools, saws, cutters, and pipe fabricators. More specific examples of these systems include:

- Welding, Cutting, and Pipe Fabrication
- Hazardous Location Lighting Equipment
- Electric Contractor Tools
- Industrial Supplies
- Material Handling
- Torquing, Hydraulic, and Electrical Power Tools
- Compressed Air Tools
- Tool Testing, Certification, and Repair
- Safety and Communication Equipment

Example of Tooling Solutions Handheld Tooling Equipment



Sales and Uses of Location

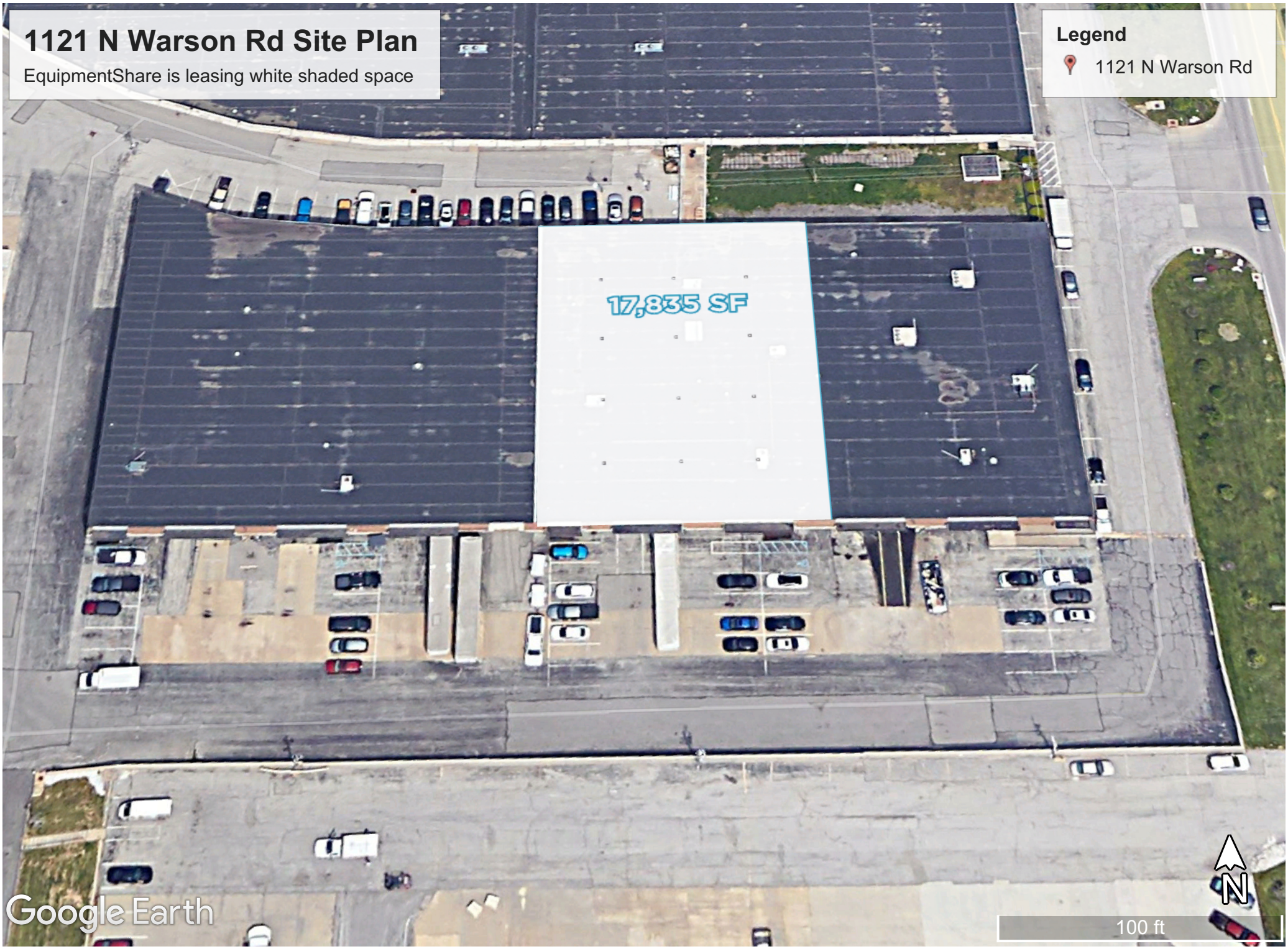
EquipmentShare primarily engages in business-to-business transactions with limited retail customer interaction. The company uses technology to allow for mobile ordering and site delivery for tool and equipment rental. Additionally, light-duty service and repair and maintenance of equipment will be done on-site (inside). Typical repairs would include small engine repair, hose and valve replacement on various equipment, and gasket repair for various pumps, etc.

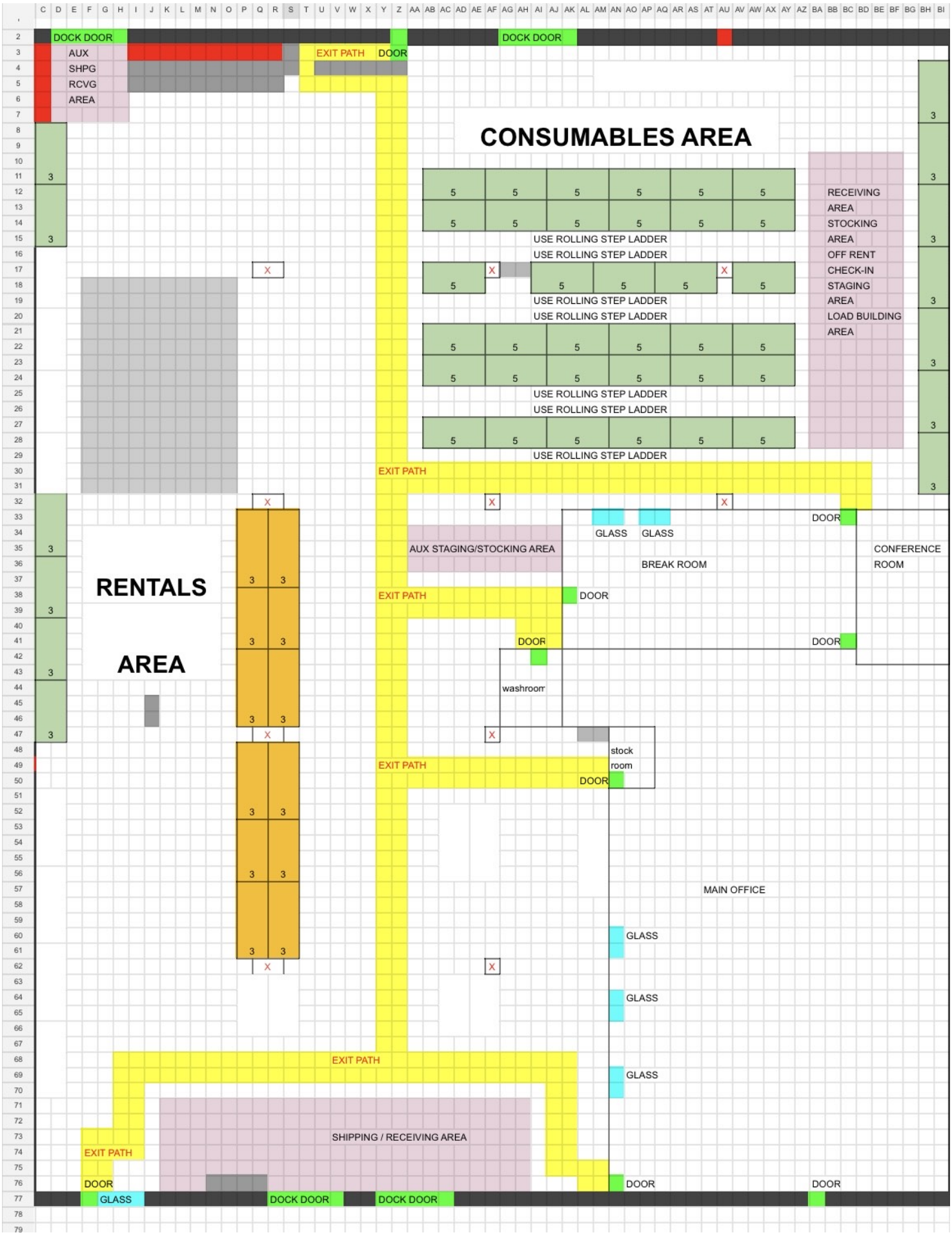
For more information please visit our website at www.equipmentshare.com.


1121 N Warson Rd Site Plan(2)
Corporate Lake Dr
Research Blvd
N Warson Rd
Greenery Ct
Grandview Dr
Coddington Way
1131
1141
1143
1145
1151
1129
1101
1125
1100
1085
1107
1113
1121
1127
1093
1083
1077
1071
1067
1050
1138
1146
1142
1122
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1047
Thu Jul 6 2023
Imagery © 2024 Nearmap, HERE
100 ft
nearmap

1121 N Warson Rd Site Plan

EquipmentShare is leasing white shaded space




DOCK DOOR
AUX
SHPG
RCVG
AREA
EXIT PATH
DOOR
DOCK DOOR
CONSUMABLES AREA
USE ROLLING STEP LADDER
RECEIVING
AREA
STOCKING
AREA
OFF RENT
CHECK-IN
STAGING
AREA
LOAD BUILDING
AREA
EXIT PATH
GLASS
GLASS
DOOR
AUX STAGING/STOCKING AREA
BREAK ROOM
CONFERENCE
ROOM
RENTALS
AREA
EXIT PATH
DOOR
DOOR
DOOR
washroom
stock
room
EXIT PATH
DOOR
MAIN OFFICE
GLASS
GLASS
GLASS
EXIT PATH
SHIPPING / RECEIVING AREA
EXIT PATH
DOOR
DOOR
GLASS
DOCK DOOR
DOCK DOOR

PLANNING AND ZONING COMMISSION MEETING

CITY OF CREVE COEUR, MISSOURI

300 NORTH NEW BALLAS ROAD

MONDAY, APRIL 1, 2024

6:00 P.M.

PUBLIC HEARING

APPLICATION NO. 24-009

THOSE IN ATTENDANCE:

Ms. Julie LaBonte, Chair
Mr. Larry Potashnick
Ms. Rhonda O'Brien
Mr. Thomas Buelter
Ms. Marjorie Richter
Mr. Carl Lumley, City Attorney
Mr. Jason Jaggi, Director of Community Development
Ms. Bethany L. Moore, City Planner
Ms. Christine Schuermann, Administrative Services Associate/Recording Secretary

McLaughlin Court Reporting Services, Inc.

Deborah K. McLaughlin, RPR, MO-CCR #314, IL-CSR, KS-CCR
4772 Gatesbury Drive
St. Louis, MO 63128
(314) 974-1199

CHAIRMAN LABONTE: We'll call the meeting to order at 6:01 starting with roll call.

Ms. Hall is not present.

Mr. Potashnick?

MR. POTASHNICK: Present.

CHAIRMAN LABONTE: Ms. Richter?

MS. RICHTER: Present.

CHAIRMAN LABONTE: Mr. Wang is not present.

Ms. O'Brien?

MS. O'BRIEN: Present.

CHAIRMAN LABONTE: Mr. Buelter?

MR. BUELTER: Present.

CHAIRMAN LABONTE: Mr. Lumley?

MR. LUMLEY: Present.

CHAIRMAN LABONTE: Mr. Jaggi.

MR. JAGGI: Present.

CHAIRMAN LABONTE: Ms. Moore?

MS. MOORE: Present.

CHAIRMAN LABONTE: And, Ms. Schuermann?

MS. SCHUERMANN: Present.

CHAIRMAN LABONTE: There is no Unfinished Business, so we'll move to New Business.

We'll start with our Public Hearing for Application 24-009: A Conditional Use Permit for a General Rental Center Use for EquipmentShare Located at 1121 North Warson Road.

If anyone speaking could please come forward and be sworn in.

(The speakers were sworn in by the court reporter.)

CHAIRMAN LABONTE: Thank you.

And if you could please start with your name and address.

MR. JEFFREY WILLIAMS: Yes.

Hello. My name's Jeff Williams. I'm with EquipmentShare. Our corporate address is in Columbia, Missouri, however, I'm in the real estate -- real estate side of things, and that corporate address is in Chattanooga, Tennessee, so. Okay.

So, is that all I need to do as far as the --

CHAIRMAN LABONTE: Yeah.

MR. JEFFREY WILLIAMS: -- the address goes? Okay.

So, we -- EquipmentShare is a national, throughout the whole country, and we rent equipment for construction companies, essentially.

We've got multiple divisions, specifically four. You've probably heard of a United Rental, or, perhaps, a Sunbelt, something like that, that's kind of what we are.

But at this particular site, there's no heavy

equipment.

We have a tooling division, which is handheld tools, and everything's going to be within the warehouse itself. There will be no outside storage of equipment, and we predominantly do not deal with the retail industry, so we don't have a bunch of customers coming to our -- to our location. We deliver everything by trucks using our technology.

We're in the middle, as you can see. We got about 18,000 square feet right there. And, essentially, for lack of a better word, it's kind of a condominium warehouse development.

This particular building is in the very center of that, and it's completely surrounded by all other warehouse uses, and that's, essentially, what we're going to do.

It's, essentially, warehouse for our tooling facilities.

We will use dock ports for trucks, and that's, essentially -- I think we had, you know, a lot of times I deal with NAICS codes, and, unfortunately, there's not really a very good code for this particular use, so I think that probably led, somewhat, to, you know, you see equipment rental can be anything, you know, and I think that's kind of -- but, specifically, what it's going to be

warehousing tools, and we will have some trucks coming in and out of there to take tools to various people.

That's, essentially, what's going on.

CHAIRMAN LABONTE: Okay.

MR. JEFFREY WILLIAMS: Do you all have any --

CHAIRMAN LABONTE: Any --

MR. JEFFREY WILLIAMS: -- questions?

CHAIRMAN LABONTE: -- questions?

MR. BUELTER: Two.

MR. JEFFREY WILLIAMS: Sure.

MR. BUELTER: Approximate amount of people that are employed?

MR. JEFFREY WILLIAMS: We'll have about ten employees. We're closed on weekends.

MR. BUELTER: Okay.

MR. JEFFREY WILLIAMS: And our hours are generally from seven to five.

MS. O'BRIEN: So, when people are done with the tools do you come pick them up?

MR. JEFFREY WILLIAMS: Yes.

MR. BUELTER: And that was my other question answered.

MR. JEFFREY WILLIAMS: Okay.

MR. BUELTER: Time -- times open, so, seven to five weekdays?

MR. JEFFREY WILLIAMS: Uh-huh.

MR. BUELTER: Okay. No Saturdays and Sundays?

MR. JEFFREY WILLIAMS: No.

MR. BUELTER: Okay.

CHAIRMAN LABONTE: Where -- do you have -- do you have trucks that you keep on site then, or where are the trucks housed?

MR. JEFFREY WILLIAMS: We'll probably have -- at this particular location, we'll probably have one box truck that will be kept on site.

And there's plenty, like I said, we don't really have any retail customers. There's -- I've been by -- I went by the site earlier today, and there's plenty of parking. We're not going to hinder anybody, any other traffic coming in and out.

CHAIRMAN LABONTE: Any other questions?

Okay. Thank you.

MR. JEFFREY WILLIAMS: All right. Thank you.

MS. MOORE: Hello.

CHAIRMAN LABONTE: Hello.

MS. MOORE: Bethany Moore, City Planner.

As you guys are probably familiar, we have another conditional use permit at the North Warson Road properties at 1121 North Warson Road for a general rental center use for EquipmentShare.

It is in this building right here, and it's in our LI District. And the NAICS code is for general rental centers, which are a conditional use in LI.

And, again, like the applicant explained, there are no exterior changes, there's no exterior storage. It's purely interior.

And here is the site plan. Here is the location of their space. And then here is the docks over here. And then all of this is parking in and around here.

And then the existing conditions. It's -- the site is in very good condition. It has all the adequate lighting. The landscaping is in good condition. And there is plenty of parking on site.

So, staff does not have any concerns with this use. It integrates well with the existing uses as well.

Any questions?

CHAIRMAN LABONTE: Did you need to have anything there to say that there could be a truck that remained on site or --

MS. MOORE: No, not for this use.

CHAIRMAN LABONTE: Okay.

MS. MOORE: I mean he's -- he's able to park there without any other requirements.

CHAIRMAN LABONTE: Okay.

Any questions? No.

Is there anyone in the audience that would like to share any comments?

Okay. We'll --

MR. LUMLEY: I offer the following exhibits into the record of this Public Hearing: Documentation in possession of the City Clerk reflecting the public notice that's been provided, the staff report, the staff's presentation, City Code of Ordinances and Charter, the City Comprehensive Plan and the public file regarding this application.

The Public Hearing was concluded at 6:08 p.m.

STATE OF MISSOURI)
) SS
COUNTY OF ST. LOUIS)

I, Deborah K. McLaughlin, Registered Professional Reporter, Missouri Certified Court Reporter, Illinois Certified Shorthand Reporter and Kansas Certified Court Reporter, do hereby certify that I reported the Planning and Zoning Public Hearing stenographically and later reduced to typewriting; and that this is a true and accurate transcript of the public hearing.

Deborah K. McLaughlin, RPR, MO-CCR, IL-CSR, KS-CCR

Deborah K. McLaughlin, RPR, MO-CCR, IL-CSR, KS-CCR

CHAIRMAN LABONTE: [20]
MR. BUELTER: [8] 2/12 5/9 5/11 5/15 5/21 5/24 6/2 6/4
MR. JAGGI: [1] 2/16
MR. JEFFREY WILLIAMS: [13]
MR. LUMLEY: [2] 2/14 8/4
MR. POTASHNICK: [1] 2/5
MS. MOORE: [5] 2/18 6/19 6/21 7/20 7/22
MS. O'BRIEN: [2] 2/10 5/18
MS. RICHTER: [1] 2/7
MS. SCHUERMANN: [1] 2/20

0

009 [2] 1/8 2/24

1

1121 [2] 3/1 6/24
1199 [1] 1/24
18,000 square [1] 4/10

2

2024 [1] 1/4
24-009 [2] 1/8 2/24

3

300 [1] 1/3
314 [2] 1/23 1/24

4

4772 [1] 1/23

6

63128 [1] 1/24
6:00 [1] 1/5
6:01 [1] 2/2
6:08 [1] 8/11

9

974-1199 [1] 1/24

A

able [1] 7/22
about [2] 4/10 5/13
accurate [1] 9/10
address [4] 3/8 3/11 3/13 3/17
adequate [1] 7/11
Administrative [1] 1/15
again [1] 7/4
all [6] 3/15 4/14 5/5 6/18 7/9 7/11
amount [1] 5/11
another [1] 6/23
answered [1] 5/22
any [10]
anybody [1] 6/14
anyone [2] 3/2 8/1
anything [2] 4/24 7/17
applicant [1] 7/4
application [3] 1/8 2/24 8/10
Approximate [1] 5/11
APRIL [1] 1/4
are [8] 3/24 5/12 5/16 5/18 6/6 6/22 7/3 7/5
around [1] 7/9
as [5] 3/15 3/15 4/9 6/22 7/15
Associate [1] 1/15
Associate/Recording [1] 1/15
at [7] 2/2 2/25 3/25 6/8 6/23 6/24 8/11
ATTENDANCE [1] 1/10
Attorney [1] 1/13
audience [1] 8/1

B

BALLAS [1] 1/3
be [7] 3/3 4/3 4/4 4/24 4/25 6/10 7/18
been [2] 6/12 8/7
Bethany [2] 1/14 6/21
better [1] 4/11
box [1] 6/9
Buelter [2] 1/12 2/11
building [2] 4/13 7/1
bunch [1] 4/6
Business [2] 2/22 2/22
but [2] 3/25 4/25

C

call [2] 2/1 2/2
can [2] 4/9 4/24
Carl [1] 1/13
CCR [6] 1/23 1/23 9/13 9/13 9/14 9/14
center [3] 2/25 4/13 6/25
centers [1] 7/3
Certified [3] 9/5 9/6 9/6
certify [1] 9/7
Chair [1] 1/11
changes [1] 7/5
Charter [1] 8/8
Chattanooga [1] 3/14
Christine [1] 1/15
CITY [7] 1/2 1/13 1/14 6/21 8/6 8/8 8/9
Clerk [1] 8/6
closed [1] 5/14
code [3] 4/22 7/2 8/8
codes [1] 4/21
COEUR [1] 1/2
Columbia [1] 3/11
come [2] 3/2 5/19
coming [3] 4/6 5/1 6/15
comments [1] 8/2
COMMISSION [1] 1/1
Community [1] 1/14
companies [1] 3/21
completely [1] 4/14
Comprehensive [1] 8/9
concerns [1] 7/14
concluded [1] 8/11
condition [2] 7/11 7/12
conditional [3] 2/24 6/23 7/3
conditions [1] 7/10
condominium [1] 4/11
construction [1] 3/21
corporate [2] 3/11 3/13
could [3] 3/2 3/7 7/18
country [1] 3/20
COUNTY [1] 9/2
court [4] 1/22 3/4 9/5 9/7
CREVE [1] 1/2
CSR [3] 1/23 9/13 9/14
customers [2] 4/6 6/12

D

deal [2] 4/5 4/21
Deborah [3] 1/23 9/4 9/14
deliver [1] 4/7
development [2] 1/14 4/12
Did [1] 7/17
Director [1] 1/14
District [1] 7/2
division [1] 4/2
divisions [1] 3/22
do [8] 3/15 4/5 4/16 5/5 5/19 6/5 6/5 9/7
dock [1] 4/19
docks [1] 7/8
Documentation [1] 8/5
does [1] 7/14
don't [2] 4/6 6/11
done [1] 5/18
Drive [1] 1/23

E

earlier [1] 6/13
employed [1] 5/12
employees [1] 5/14
equipment [4] 3/20 4/1 4/4 4/24
EquipmentShare [4] 2/25 3/11 3/19 6/25
essentially [6] 3/21 4/10 4/15 4/17 4/20 5/3
estate [2] 3/12 3/12
everything [1] 4/7
everything's [1] 4/3
exhibits [1] 8/4
existing [2] 7/10 7/15
explained [1] 7/4
exterior [2] 7/5 7/5

F

facilities [1] 4/18
familiar [1] 6/22
far [1] 3/15
feet [1] 4/10
file [1] 8/9
five [2] 5/17 5/25
following [1] 8/4
forward [1] 3/2
four [1] 3/22

G

Gatesbury [1] 1/23
general [3] 2/25 6/24 7/2
generally [1] 5/17
goes [1] 3/17
going [5] 4/3 4/15 4/25 5/3 6/14
good [3] 4/22 7/11 7/12
got [2] 3/22 4/9
guys [1] 6/22

H

had [1] 4/20
Hall [1] 2/3
handheld [1] 4/2
has [1] 7/11
have [13]
he's [2] 7/22 7/22
heard [1] 3/23
hearing [6] 1/7 2/23 8/5 8/11 9/8 9/10
heavy [1] 3/25
Hello [3] 3/10 6/19 6/20
here [6] 7/1 7/7 7/7 7/8 7/8 7/9
hereby [1] 9/7
hinder [1] 6/14
hours [1] 5/16
housed [1] 6/7
however [1] 3/12
huh [1] 6/1

I

I'm [2] 3/10 3/12
I've [1] 6/12
if [2] 3/2 3/7
IL [3] 1/23 9/13 9/14
IL-CSR [3] 1/23 9/13 9/14
Illinois [1] 9/6
in [18]
Inc [1] 1/22
industry [1] 4/5
integrates [1] 7/15
interior [1] 7/6
into [1] 8/4

I

is [20]
It [3] 7/1 7/11 7/15
it's [7] 4/11 4/14 4/17 4/25 7/1 7/6 7/10
itself [1] 4/4

J

Jaggi [2] 1/14 2/15
Jason [1] 1/14
Jeff [1] 3/10
Julie [1] 1/11

K

Kansas [1] 9/6
keep [1] 6/6
kept [1] 6/10
kind [3] 3/24 4/11 4/25
know [3] 4/20 4/23 4/24
KS [3] 1/23 9/13 9/14
KS-CCR [3] 1/23 9/13 9/14

L

LaBonte [1] 1/11
lack [1] 4/11
landscaping [1] 7/12
Larry [1] 1/11
later [1] 9/9
led [1] 4/23
LI [2] 7/2 7/3
lighting [1] 7/12
like [4] 3/24 6/11 7/4 8/1
Located [1] 2/25
location [3] 4/7 6/9 7/7
lot [1] 4/20
Louis [2] 1/24 9/2
Lumley [2] 1/13 2/13

M

Marjorie [1] 1/13
McLaughlin [4] 1/22 1/23 9/4 9/14
mean [1] 7/22
meeting [2] 1/1 2/1
middle [1] 4/9
MISSOURI [4] 1/2 3/12 9/1 9/5
MO [4] 1/23 1/24 9/13 9/14
MO-CCR [3] 1/23 9/13 9/14
MONDAY [1] 1/4
Moore [3] 1/14 2/17 6/21
move [1] 2/22
Mr [5] 1/11 1/12 1/13 1/14 2/4
Mr. [4] 2/8 2/11 2/13 2/15
Mr. Buelter [1] 2/11
Mr. Jaggi [1] 2/15
Mr. Lumley [1] 2/13
Mr. Wang [1] 2/8
Ms [5] 1/11 1/12 1/13 1/14 1/15
Ms. [5] 2/3 2/6 2/9 2/17 2/19
Ms. Hall [1] 2/3
Ms. Moore [1] 2/17
Ms. O'Brien [1] 2/9
Ms. Richter [1] 2/6
Ms. Schuermann [1] 2/19
multiple [1] 3/22
my [2] 3/10 5/21

N

NAICS [2] 4/21 7/2
name [1] 3/7
name's [1] 3/10
national [1] 3/19
need [2] 3/15 7/17
need to [1] 3/15
NEW [2] 1/3 2/22
no [10]
NORTH [4] 1/3 3/1 6/23 6/24
not [7] 2/3 2/8 4/5 4/21 6/14 7/14 7/20
notice [1] 8/6

O

O'Brien [2] 1/12 2/9
offer [1] 8/4
on [6] 5/3 5/14 6/6 6/10 7/13 7/18
one [1] 6/9
open [1] 5/24
or [3] 3/23 6/6 7/19
order [1] 2/2
Ordinances [1] 8/8
other [5] 4/14 5/21 6/14 6/16 7/23
our [8] 2/23 3/11 4/6 4/7 4/7 4/17 5/16 7/2
out [2] 5/2 6/15
outside [1] 4/4
over [1] 7/8

P

p.m [2] 1/5 8/11
park [1] 7/22
parking [3] 6/14 7/9 7/13
particular [4] 3/25 4/13 4/22 6/9
people [3] 5/2 5/11 5/18
people that [1] 5/11
perhaps [1] 3/23
permit [2] 2/24 6/23
pick [1] 5/19
plan [2] 7/7 8/9
Planner [2] 1/14 6/21
PLANNING [2] 1/1 9/8
please [2] 3/2 3/7
plenty [3] 6/11 6/13 7/13
ports [1] 4/19
possession [1] 8/6
Potashnick [2] 1/11 2/4
predominantly [1] 4/5
present [10]
presentation [1] 8/8
probably [5] 3/23 4/23 6/8 6/9 6/22
Professional [1] 9/5
properties [1] 6/24
provided [1] 8/7
public [8] 1/7 2/23 8/5 8/6 8/9 8/11 9/8 9/10
purely [1] 7/6

Q

question [1] 5/21
questions [5] 5/7 5/8 6/16 7/16 7/25

R

real [2] 3/12 3/12
really [2] 4/22 6/11
record [1] 8/5
Recording [1] 1/15
reduced [1] 9/9
reflecting [1] 8/6
regarding [1] 8/9
Registered [1] 9/4
remained [1] 7/18
rent [1] 3/20
rental [5] 2/25 3/23 4/24 6/24 7/2
report [1] 8/7
reported [1] 9/7
reporter [5] 3/5 9/5 9/5 9/6 9/7
Reporting [1] 1/22
requirements [1] 7/23
retail [2] 4/5 6/12
Rhonda [1] 1/12
Richter [2] 1/13 2/6
right [3] 4/10 6/18 7/1
ROAD [4] 1/3 3/1 6/23 6/24
roll [1] 2/2
RPR [3] 1/23 9/13 9/14

S

said [1] 6/11
Saturdays [1] 6/2
say [1] 7/18
Schuermann [2] 1/15 2/19
Secretary [1] 1/15
see [2] 4/9 4/23
Services [2] 1/15 1/22
seven [2] 5/17 5/24
share [1] 8/2
Shorthand [1] 9/6
side [1] 3/13
site [8] 3/25 6/6 6/10 6/13 7/7 7/11 7/13 7/19
so [9] 2/22 3/14 3/15 3/19 4/6 4/22 5/18 5/24 7/14
some [1] 5/1
something [1] 3/24
somewhat [1] 4/23
space [1] 7/8
speakers [1] 3/4
speaking [1] 3/2
specifically [2] 3/22 4/25
square [1] 4/10
SS [1] 9/1
St [2] 1/24 9/2
staff [2] 7/14 8/7
staff's [1] 8/7
start [2] 2/23 3/7
starting [1] 2/2
STATE [1] 8/12
stenographically [1] 9/8
storage [2] 4/4 7/5
Sunbelt [1] 3/24
Sundays [1] 6/2
Sure [1] 5/10
surrounded [1] 4/14
sworn [2] 3/3 3/4

T

take [1] 5/2
technology [1] 4/8
ten [1] 5/13
Tennessee [1] 3/14
Thank [3] 3/6 6/17 6/18
that [14]
that's [6] 3/24 4/15 4/19 4/25 5/3 8/7
their [1] 7/8
them [1] 5/19
then [4] 6/6 7/8 7/9 7/10
there [10]
there's [6] 3/25 4/21 6/11 6/12 6/13 7/5
things [1] 3/13
think [3] 4/20 4/23 4/24
this [11]
Thomas [1] 1/12
THOSE [1] 1/10
throughout [1] 3/20
Time [1] 5/24
times [2] 4/20 5/24
today [1] 6/13
tooling [2] 4/2 4/17
tools [4] 4/3 5/1 5/2 5/19

T

traffic [1] 6/15
transcript [1] 9/10
truck [2] 6/10 7/18
trucks [5] 4/7 4/19 5/1 6/6 6/7
true [1] 9/9
Two [1] 5/9
typewriting [1] 9/9

U

Uh [1] 6/1
Uh-huh [1] 6/1
Unfinished [1] 2/21
unfortunately [1] 4/21
United [1] 3/23
up [1] 5/19
use [9] 2/24 2/25 4/19 4/22 6/23 6/25 7/3 7/15 7/20
uses [2] 4/15 7/15
using [1] 4/7

V

various [1] 5/2
very [3] 4/13 4/22 7/11

W

Wang [1] 2/8
warehouse [4] 4/3 4/12 4/15 4/17
warehousing [1] 5/1
Warson [3] 3/1 6/23 6/24
was [2] 5/21 8/11
we [13]
we'll [7] 1/25 2/22 2/23 5/13 6/8 6/9 8/3
we're [4] 4/9 4/15 5/14 6/14
We've [1] 3/22
weekdays [1] 5/25
weekends [1] 5/14
well [2] 7/15 7/15
went [1] 6/13
were [1] 3/4
what [3] 3/24 4/15 4/25
what's [1] 5/3
when [1] 5/18
where [2] 6/5 6/6
which [2] 4/2 7/3
whole [1] 3/20
will [4] 4/4 4/19 5/1 6/10
Williams [1] 3/10
within [1] 4/3
without [1] 7/23
word [1] 4/11
would [1] 8/1

Y

Yeah [1] 3/16
Yes [2] 3/9 5/20
you [16]
You've [1] 3/23
your [1] 3/7

Z

ZONING [2] 1/1 9/8

BILL NO. _6119_____ **ORDINANCE NO.** _____

AN ORDINANCE AMENDING THE PERSONNEL POLICY AND PROCEDURES MANUAL OF THE CITY OF CREVE COEUR AND AMENDING RELATED ORDINANCES.

WHEREAS, the City has in effect a Personnel Policy and Procedures Manual, and

WHEREAS, changes in law and circumstances require updates to that Manual,

NOW, THEREFORE, be it ordained by the City Council of the City of Creve Coeur, Missouri, as follows:

SECTION 1: The Personnel Procedures Manual dated September 1, 2023 is hereby amended effective as of _____, 2024 by incorporating the changes set forth in Exhibit A hereto and Section 130.010.A of the Code of Ordinances shall be amended to read as follows:

> A. The Personnel Procedures Manual, as previously adopted and amended, is hereby further amended and restated by adopting the new version dated _____, 2024 contained in Exhibit A to Ordinance No. _____, which is on file in the City offices and incorporated herein by this reference.

SECTION 2: This ordinance shall become effective in accordance with Section 3.11 (g) of the City Charter.

ADOPTED THIS __DAY OF _____, 2024.

_____
NICOLE GREER
PRESIDENT OF CITY COUNCIL

APPROVED THIS __DAY OF _____, 2024.

_____
DR. ROBERT HOFFMAN
MAYOR

ATTEST:

_____
KELLIE HENKE
CITY CLERK

City of Creve Coeur

To: Mayor, City Council

CC: Mark Perkins, City Administrator; Carl Lumley, City Attorney

From: Sharon Stott, Assistant City Administrator

Date: April 4, 2024

Re: Personnel Policy and Procedures Manual Update

The City Administrator's Office and the City Attorney have developed updates to the City Personnel Policy and Procedures Manual (the manual) for review and approval by the City Council. The manual is updated periodically to bring the manual up-to-date with current laws and clarify or change existing policies and procedures. The majority of the proposed changes are to bring the manual up to date with current laws. The last update to the Personnel Policy and Procedures Manual was September 1, 2023.

Below summarizes the proposed revisions:

- Title Page/Table of Contents
  - Revision date, new ordinance number, and repagination applies.
- Section 1 – Legislative History of Revisions
  - Notes sections added or changed.
- Section 7.9 – Promotions
  - Deleted reference to a probationary employee regarding eligibility for promotion.
  - Added an employee on a performance improvement plan is not eligible for promotion consideration.
- Section 11.1.2 – Leave/Definitions
  - Added serious illness of a parent under Family Leave.
  - Deleted reference to parent from Medical Leave.
- Section 11.4 – Sick Leave
  - Added sick leave and reasonable accommodations are made in the event of pregnancy, childbirth, or recuperation.
  - Added reference to the Pregnant Workers Fairness Act.
- Section 11.7.2 – FMLA (Family and Medical Leave Act)
  - Clarified benefit eligibility is measured by calendar year.
  - Added there is no pay deduction for an exempt employee or a break less than 20 minutes for any employee to express breast milk.

- Section 11.10.7 – Military Caregiver Leave
    - Added clarification that if two employees are eligible for Military Caregiver Leave due to the same circumstances, they are entitled to an aggregate 26 weeks in a single 12-month period either alone or in combination with Qualifying Exigency Leave.
- Section 11.19.8 – Qualifying Exigency Leave
    - Added clarification that if two employees are eligible for Military Caregiver Leave due to the same circumstances, they are entitled to an aggregate 26 weeks in a single 12-month period either alone or in combination with Qualifying Exigency Leave.

The proposed manual changes will be effective upon final reading and approval of the Ordinance. Please let me know if you have any questions.

Attachment: Marked-up version of City of Creve Coeur Personnel Policy and Procedures Manual dated 9/1/2023

CITY OF CREVE COEUR, MISSOURI

PERSONNEL POLICY AND PROCEDURES MANUAL

~~September 1~~, 202~~4~~3

Ordinance #58~~52~~

Mark C. Perkins
City Administrator

TABLE OF CONTENTS

INTRODUCTION 1

SECTION 1 PURPOSE 2

SECTION 2 DEFINITIONS 8

SECTION 3 ADMINISTRATION OF RULES 10

3.1 RESPONSIBILITY FOR ADMINISTRATION 10

3.2 DEPARTMENTAL RULES AND PROCEDURES 10

3.3 PERSONNEL APPEALS BOARD 10

3.4 APPLICABILITY 10

3.5 ELIGIBILITY FOR USE OF LEAVE, HOLIDAYS, AND OTHER BENEFITS 11

3.6 APPOINTING AUTHORITY 11

3.7 MANAGEMENT RIGHTS 11

3.8 ADMINISTRATIVE RULES AND PROCEDURES 11

3.9 INTERPRETATION 12

SECTION 4 CLASSIFICATION PLAN 13

4.1 CLASSIFICATION OF POSITIONS 13

4.2 JOB EVALUATION 13

4.3 DEVELOPMENT OF NEW CLASSIFICATIONS OR POSITIONS 13

4.4 RECLASSIFICATION 13

SECTION 5 PAY PLAN 15

5.1 ESTABLISHMENT OF THE PLAN 15

5.2 ADMINISTRATION OF THE PAY PLAN 15

5.3 NEW EMPLOYEE PLACEMENT 15

5.4 PROMOTIONS, DEMOTIONS AND TRANSFERS 16

5.5 MERIT INCREASES 16

5.6 FREQUENCY OF MERIT INCREASE 17

5.7 LONGEVITY PAY 17

5.8 PERFORMANCE MANAGEMENT 17

5.9 CALCULATION OF PAY RATES 18

5.10 DIRECT DEPOSIT 19

SECTION 6 QUALIFICATIONS FOR EMPLOYMENT 20

6.1 MERIT PHILOSOPHY 20

6.2 EQUAL OPPORTUNITY 20
6.3 NEPOTISM 21
6.4 RESIDENCY REQUIREMENTS 21
6.5 PERSONAL CONDUCT 22
SECTION 7 APPOINTMENTS AND VACANCIES 23
7.1 FILLING OF POSITIONS 23
7.2 EMERGENCY APPOINTMENTS 23
7.3 PUBLICITY 23
7.4 APPLICANT SCREENING PROCESS 24
7.5 INTER-DEPARTMENT TRANSFERS 24
7.6 REEMPLOYMENT OF A FORMER CITY EMPLOYEE 24
7.7 LAID OFF/DEMOTED EMPLOYEES 25
7.8 PART TIME/TEMPORARY/SEASONAL APPOINTMENTS 25
7.9 PROMOTIONS 25
7.10 GENERAL EXAMINATION PROVISIONS 25
7.11 PROBATIONARY PERIOD 26
7.12 TERMINATION DURING PROBATION 27
SECTION 8 HOURS OF WORK AND ATTENDANCE 28
8.1 HOURS OF WORK 28
8.2 SCHEDULING HOURS OF WORK 28
8.3 ATTENDANCE 28
8.4 ABSENCE WITHOUT LEAVE 28
8.5 OVERTIME 28
8.6 BOARDS AND COMMISSION MEETINGS 30
8.7 PUNCTUALITY AND REGULAR ATTENDANCE 30
8.8 PREMIUM PAY 30
8.9 POSITIONS EXEMPT FROM OVERTIME 31
SECTION 9 SEPARATION FROM EMPLOYMENT 33
9.1 TERMINATION DATE 33
9.2 RESIGNATION 33
9.3 DISABILITY 33
9.4 TERMINATION 34
9.5 RETURN OF CITY PROPERTY 34

9.6 REPAYMENT OF EDUCATIONAL BENEFITS 34
9.7 LAYOFF/REDUCTION OF WORK 34
9.8 ORDER OF LAYOFF AND RECALL 35
9.9 DEATH OF AN EMPLOYEE 35
SECTION 10 HOLIDAYS 36
10.1 SCHEDULE FOR CLASSIFIED SERVICE - OTHER THAN CERTAIN POLICE EMPLOYEES 36
10.2 PROCEDURE FOR OBSERVANCE OF A WEEKEND HOLIDAY 36
10.3 HOLIDAY ON A SCHEDULED WORK DAY 36
10.4 SCHEDULE OF HOLIDAYS FOR COMMISSIONED POLICE OFFICERS 36
10.5 HOLIDAY BONUS PAY AND OVERTIME 37
10.6 PERSONAL LEAVE 37
SECTION 11 LEAVE SYSTEM 39
11.1 POLICY AND DEFINITIONS 39
11.2 ELIGIBILITY FOR LEAVE 40
11.3 VACATION 40
11.4 SICK LEAVE 43
11.5 OCCUPATIONAL INJURY OR ILLNESS LEAVE 46
11.6 RESTRICTED WORK 49
11.7 FAMILY AND MEDICAL LEAVE 50
11.8 BEREAVEMENT LEAVE 54
11.9 JURY LEAVE 54
11.10 MILITARY LEAVE 54
11.11 VOTING TIME 61
11.12 LEAVE OF ABSENCE 62
11.13 PROCEDURE FOR REQUESTING LEAVE OF ABSENCE 62
11.14 BENEFITS WHILE ON LEAVE 62
11.15 UNPAID LEAVE FOR VICTIMS OF DOMESTIC OR SEXUAL VIOLENCE 63
SECTION 12 COUNSELING AND DISCIPLINE 70
12.1 COMMUNICATION OF RULES 70
12.2 PROGRESSIVE COUNSELING AND DISCIPLINARY STEPS 70
12.3 INVESTIGATION AND REPORT 71
12.4 GROUNDS FOR DISCIPLINARY ACTION 71
SECTION 13 PERSONNEL DISCIPLINARY RECONSIDERATION AND APPEALS 72

13.1 RECONSIDERATION OF DISCIPLINARY ACTION BY THE CITY ADMINISTRATOR 72
13.2 SUBMISSION OF EMPLOYEE APPEAL TO THE PERSONNEL APPEALS BOARD 72
13.3 PROCEDURAL REVIEW MEETING 73
13.4 HEARING 73
13.5 BOARD ACTIONS DURING PENDING INVESTIGATIONS 77
SECTION 14 EMPLOYEE GRIEVANCE PROCEDURE 78
14.1 POLICY 78
14.2 DEFINITION 78
14.3 EXCLUSIONS 78
14.4 PROCEDURE TO RESOLVE COMPLAINTS 78
SECTION 15 FRINGE BENEFITS 80
15.1 GENERAL DESCRIPTION 80
15.2 RETIREMENT PLANS AND DEFERRED COMPENSATION 80
15.3 INSURANCE COVERAGE UPON RETIREMENT 80
15.4 PROFESSIONAL DUES 84
15.5 TRAINING AND CONFERENCE ATTENDANCE 84
15.6 TUITION REIMBURSEMENT PROGRAM 84
15.7 UNIFORMS AND CLOTHING MAINTENANCE 85
15.8 SOCIAL SECURITY 85
15.9 USE OF AUTOMOBILES 85
15.10 MEDICAL BENEFIT REIMBURSEMENT 85
15.11 CITY SELF-INSURED PORTION OF HEALTH INSURANCE DEDUCTIBLE 86
15.12 SPOUSAL HEALTH INSURANCE SURCHARGE 87
SECTION 16 EMPLOYEE RELATIONS 88
16.1 EMPLOYEE SUGGESTIONS 88
16.2 EMPLOYEE APPEARANCE 88
16.3 OUTSIDE EMPLOYMENT 88
16.4 ETHICAL CONDUCT 88
16.5 POLICY AGAINST HARASSMENT 89
16.6 COMMUNITY RELATIONS 91
16.7 EMPLOYEE SAFETY 91
16.8 PERSONNEL RECORDS 92
16.9 PAYROLL DEDUCTIONS 92

16.10 REPORT CHANGE OF ADDRESS....93
SECTION 17 POLICY AGAINST SUBSTANCE ABUSE....94
17.1 POLICY STATEMENT....94
17.2 LEGAL DRUGS (excluding alcohol)....95
17.3 ILLEGAL DRUGS....95
17.4 ALCOHOL....96
17.5 PRE-EMPLOYMENT SCREENING....96
17.6 POST-HIRING TESTING....97
17.7 TESTING PROCEDURES....97
17.8 REHABILITATION....98
17.9 VOLUNTARY DISCLOSURE....99
17.10 EDUCATION AND TRAINING....100
17.11 CONFIDENTIALITY OF RECORDS....100
SECTION 18 ALCOHOL & CONTROLLED SUBSTANCE USE, ABUSE & TESTING POLICY FOR DRIVERS OF COMMERCIAL MOTOR VEHICLES....101
18.1 PURPOSE....101
18.2 APPLICABILITY....101
18.3 DEFINITIONS....101
18.4 POLICY ADMINISTRATOR....103
18.5 ALCOHOL & CONTROLLED SUBSTANCES PROHIBITIONS....103
18.6 CONTROLLED SUBSTANCE AND ALCOHOL TESTING PROVISIONS....105
18.7 EMPLOYEE ASSESSMENT....108
18.8 REHABILITATION....109
18.9 EDUCATION AND TRAINING....109
18.10 CONFIDENTIALITY OF RECORDS....109
18.11 REFERENCE....110
SECTION 19 REPEAL AND AMENDMENT....111
~~**INTRODUCTION....1**~~
~~**SECTION 1 PURPOSE....2**~~
~~**SECTION 2 DEFINITIONS....8**~~
~~**SECTION 3 ADMINISTRATION OF RULES....10**~~
~~3.1 RESPONSIBILITY FOR ADMINISTRATION....10~~
~~3.2 DEPARTMENTAL RULES AND PROCEDURES....10~~

3.3 PERSONNEL APPEALS BOARD 10
3.4 APPLICABILITY 10
3.5 ELIGIBILITY FOR USE OF LEAVE, HOLIDAYS, AND OTHER BENEFITS 11
3.6 APPOINTING AUTHORITY 11
3.7 MANAGEMENT RIGHTS 11
3.8 ADMINISTRATIVE RULES AND PROCEDURES 11
3.9 INTERPRETATION 12
SECTION 4 CLASSIFICATION PLAN 13
4.1 CLASSIFICATION OF POSITIONS 13
4.2 JOB EVALUATION 13
4.3 DEVELOPMENT OF NEW CLASSIFICATIONS OR POSITIONS 13
4.4 RECLASSIFICATION 13
SECTION 5 PAY PLAN 15
5.1 ESTABLISHMENT OF THE PLAN 15
5.2 ADMINISTRATION OF THE PAY PLAN 15
5.3 NEW EMPLOYEE PLACEMENT 15
5.4 PROMOTIONS, DEMOTIONS AND TRANSFERS 16
5.5 MERIT INCREASES 16
5.6 FREQUENCY OF MERIT INCREASE 17
5.7 LONGEVITY PAY 17
5.8 PERFORMANCE MANAGEMENT 17
5.9 CALCULATION OF PAY RATES 18
5.10 DIRECT DEPOSIT 19
SECTION 6 QUALIFICATIONS FOR EMPLOYMENT 20
6.1 MERIT PHILOSOPHY 20
6.2 EQUAL OPPORTUNITY 20
6.3 NEPOTISM 21
6.4 RESIDENCY REQUIREMENTS 21
6.5 PERSONAL CONDUCT 22
SECTION 7 APPOINTMENTS AND VACANCIES 23
7.1 FILLING OF POSITIONS 23
7.2 EMERGENCY APPOINTMENTS 23
7.3 PUBLICITY 23

7.4 APPLICANT SCREENING PROCESS 24
7.5 INTER-DEPARTMENT TRANSFERS 24
7.6 REEMPLOYMENT OF A FORMER CITY EMPLOYEE 24
7.7 LAID OFF/DEMOTED EMPLOYEES 25
7.8 PART TIME/TEMPORARY/SEASONAL APPOINTMENTS 25
7.9 PROMOTIONS 25
7.10 GENERAL EXAMINATION PROVISIONS 25
7.11 PROBATIONARY PERIOD 26
7.12 TERMINATION DURING PROBATION 27
SECTION 8 HOURS OF WORK AND ATTENDANCE 28
8.1 HOURS OF WORK 28
8.2 SCHEDULING HOURS OF WORK 28
8.3 ATTENDANCE 28
8.4 ABSENCE WITHOUT LEAVE 28
8.5 OVERTIME 28
8.6 BOARDS AND COMMISSION MEETINGS 30
8.7 PUNCTUALITY AND REGULAR ATTENDANCE 30
8.8 PREMIUM PAY 30
8.9 POSITIONS EXEMPT FROM OVERTIME 31
SECTION 9 SEPARATION FROM EMPLOYMENT 33
9.1 TERMINATION DATE 33
9.2 RESIGNATION 33
9.3 DISABILITY 33
9.4 TERMINATION 34
9.5 RETURN OF CITY PROPERTY 34
9.6 REPAYMENT OF EDUCATIONAL BENEFITS 34
9.7 LAYOFF/REDUCTION OF WORK 34
9.8 ORDER OF LAYOFF AND RECALL 35
9.9 DEATH OF AN EMPLOYEE 35
SECTION 10 HOLIDAYS 36
10.1 SCHEDULE FOR CLASSIFIED SERVICE - OTHER THAN CERTAIN POLICE EMPLOYEES 36
10.2 PROCEDURE FOR OBSERVANCE OF A WEEKEND HOLIDAY 36
10.3 HOLIDAY ON A SCHEDULED WORK DAY 36

10.4 SCHEDULE OF HOLIDAYS FOR COMMISSIONED POLICE OFFICERS 36
10.5 HOLIDAY BONUS PAY AND OVERTIME 37
10.6 PERSONAL LEAVE 37
SECTION 11 LEAVE SYSTEM 39
11.1 POLICY AND DEFINITIONS 39
11.2 ELIGIBILITY FOR LEAVE 40
11.3 VACATION 40
11.4 SICK LEAVE 43
11.5 OCCUPATIONAL INJURY OR ILLNESS LEAVE 46
11.6 RESTRICTED WORK 48
11.7 FAMILY AND MEDICAL LEAVE 49
11.8 BEREAVEMENT LEAVE 52
11.9 JURY LEAVE 52
11.10 MILITARY LEAVE 52
11.11 VOTING TIME 59
11.12 LEAVE OF ABSENCE 60
11.13 PROCEDURE FOR REQUESTING LEAVE OF ABSENCE 60
11.14 BENEFITS WHILE ON LEAVE 60
11.15 UNPAID LEAVE FOR VICTIMS OF DOMESTIC OR SEXUAL VIOLENCE 61
SECTION 12 COUNSELING AND DISCIPLINE 68
12.1 COMMUNICATION OF RULES 68
12.2 PROGRESSIVE COUNSELING AND DISCIPLINARY STEPS 68
12.3 INVESTIGATION AND REPORT 69
12.4 GROUNDS FOR DISCIPLINARY ACTION 69
SECTION 13 PERSONNEL DISCIPLINARY RECONSIDERATION AND APPEALS 70
13.1 RECONSIDERATION OF DISCIPLINARY ACTION BY THE CITY ADMINISTRATOR 70
13.2 SUBMISSION OF EMPLOYEE APPEAL TO THE PERSONNEL APPEALS BOARD 70
13.3 PROCEDURAL REVIEW MEETING 71
13.4 HEARING 71
13.5 BOARD ACTIONS DURING PENDING INVESTIGATIONS 75
SECTION 14 EMPLOYEE GRIEVANCE PROCEDURE 76
14.1 POLICY 76
14.2 DEFINITION 76

14.3 EXCLUSIONS 76
14.4 PROCEDURE TO RESOLVE COMPLAINTS 76
SECTION 15 FRINGE BENEFITS 78
15.1 GENERAL DESCRIPTION 78
15.2 RETIREMENT PLANS AND DEFERRED COMPENSATION 78
15.3 INSURANCE COVERAGE UPON RETIREMENT 78
15.4 PROFESSIONAL DUES 82
15.5 TRAINING AND CONFERENCE ATTENDANCE 82
15.6 TUITION REIMBURSEMENT PROGRAM 82
15.7 UNIFORMS AND CLOTHING MAINTENANCE 83
15.8 SOCIAL SECURITY 83
15.9 USE OF AUTOMOBILES 83
15.10 MEDICAL BENEFIT REIMBURSEMENT 83
15.11 CITY SELF-INSURED PORTION OF HEALTH INSURANCE DEDUCTIBLE 84
15.12 SPOUSAL HEALTH INSURANCE SURCHARGE 85
SECTION 16 EMPLOYEE RELATIONS 86
16.1 EMPLOYEE SUGGESTIONS 86
16.2 EMPLOYEE APPEARANCE 86
16.3 OUTSIDE EMPLOYMENT 86
16.4 ETHICAL CONDUCT 86
16.5 POLICY AGAINST HARASSMENT 87
16.6 COMMUNITY RELATIONS 89
16.7 EMPLOYEE SAFETY 89
16.8 PERSONNEL RECORDS 90
16.9 PAYROLL DEDUCTIONS 90
16.10 REPORT CHANGE OF ADDRESS 91
SECTION 17 POLICY AGAINST SUBSTANCE ABUSE 92
17.1 POLICY STATEMENT 92
17.2 LEGAL DRUGS (excluding alcohol) 93
17.3 ILLEGAL DRUGS 93
17.4 ALCOHOL 94
17.5 PRE-EMPLOYMENT SCREENING 94
17.6 POST-HIRING TESTING 95

~~17.7 TESTING PROCEDURES ..... 95~~
~~17.8 REHABILITATION ..... 96~~
~~17.9 VOLUNTARY DISCLOSURE ..... 97~~
~~17.10 EDUCATION AND TRAINING ..... 98~~
~~17.11 CONFIDENTIALITY OF RECORDS ..... 98~~
~~SECTION 18 ALCOHOL & CONTROLLED SUBSTANCE USE, ABUSE & TESTING POLICY FOR DRIVERS OF COMMERCIAL MOTOR VEHICLES ..... 99~~
~~18.1 PURPOSE ..... 99~~
~~18.2 APPLICABILITY ..... 99~~
~~18.3 DEFINITIONS ..... 99~~
~~18.4 POLICY ADMINISTRATOR ..... 101~~
~~18.5 ALCOHOL & CONTROLLED SUBSTANCES PROHIBITIONS ..... 101~~
~~18.6 CONTROLLED SUBSTANCE AND ALCOHOL TESTING PROVISIONS ..... 103~~
~~18.7 EMPLOYEE ASSESSMENT ..... 106~~
~~18.8 REHABILITATION ..... 107~~
~~18.9 EDUCATION AND TRAINING ..... 107~~
~~18.10 CONFIDENTIALITY OF RECORDS ..... 107~~
~~18.11 REFERENCE ..... 108~~
~~SECTION 19 REPEAL AND AMENDMENT ..... 109~~

INTRODUCTION

The City of Creve Coeur was incorporated on December 21, 1949. In 1976, the citizens of Creve Coeur adopted a Home Rule Charter for their City. The Charter sets forth the basic organization of the City, provides the legal municipal powers of the City and stipulates that employment be based on merit and regulated by personnel rules. The Charter calls for a Mayor and eight members of a City Council elected by the residents to govern the City. The Council approves the budget and adopts ordinances and resolutions establishing City laws and policies including personnel procedures. The Charter provides for a City Administrator appointed by the Mayor and City Council to administer the affairs of the City. The City Administrator is responsible to the Mayor and Council for enforcing City laws, implementing City policies, appointing and directing employees, and directing the day-to-day operations of the local government.

SECTION 1 PURPOSE

In accordance with Section 8.2 of the City Charter, it is the purpose of these rules to establish normal policies and procedures which will serve as guides to administrative actions concerning various personnel activities and transactions. These rules are intended to indicate the customary and the most reasonable methods whereby the aims of the personnel program can be carried out.

The City's goal is to provide all employees: fair management; competitive salaries and benefits; opportunities for personal growth and development; and a safe and pleasant work place.

This manual also outlines employee benefits provided by the City and provides general information regarding, among other items, the equitable/non-discriminatory standards for selection, classification and compensation; leaves of absence; and the fair and equitable settlement of disputes. The City is not granting to any employee any contractual commitment, expressed or implied, by the issuance of this manual. Employment with the City is “at will” unless otherwise provided by written contract; however, employees may not be discharged for unlawful reasons. This manual should provide most of the information about employment with the City. Specific questions should be addressed to the employee's Supervisor.

In addition to this policy manual, the City and its employees are subject to all applicable state and federal laws, as well as the City’s Charter, ordinances, regulations and policies.

LEGISLATIVE HISTORY OF REVISIONS:

Ordinance 1475	Section 5	Pay Plan	8/26/1991
	Section 10	Holidays	
	Section 11	Military Leave Policy	
Ordinance 1502	Section 11	Occupational Leave Policy	3/23/1992
Ordinance 1599	Section 11	Leave Policy	7/26/1993
Ordinance 1600	Section 6	Nepotism Policy	8/9/1993
Ordinance 1622	Section 13	Personnel Disciplinary Appeals Policy	2/14/1994
Ordinance 1765	Section 17	Substance Abuse Policy	12/11/1996
	Section 18	Alcohol and Controlled Substance Abuse and Testing	
Ordinance 1861	N/A	Policy for Drivers of Commercial Motor Vehicles Introduction	5/12/1997
	Section 4	Classification Plan	
	Section 5	Pay Plan	
	Section 8	Hours of Work and Attendance	
	Section 11	Leave Policy	
	Section 12	Counseling and Discipline	
	Section 15	Fringe Benefits	
Ordinance 2117	Section 15	Fringe Benefits	4/9/2001

Ordinance 2136	Section 5	Pay Plan	6/25/2001
	Section 7	Appointments and Vacancies	
	Section 11	Leave System	
Ordinance 2295	Section 5	Pay Plan	7/12/2004
Ordinance 3039	Section 15	Fringe Benefits	2/14/2005
Ordinance 4004	Section 11	Military Leave Policy	2/27/2006
	Section 15	Fringe Benefits	
Ordinance 4041	Section 11	Leave System	10/23/2006
Ordinance 5045		Comprehensive Update	6/9/2008
Ordinance 5091	Section 4	Classification Plan	6/22/2009
	Section 5	Pay Plan	
	Section 6	Qualifications	
	Section 11	Leave System	
	Section 14	Employee Grievance Procedures	
Ordinance 5116	Section 8	Premium Pay	11/23/2009
	Section 11	Military Leave	
	Section 16	Harassment Policy	
Ordinance 5193	Section 8.5	Overtime	5/23/2011
	Section 8.9	Overtime Exemptions	
	Section 10	Holiday and Holiday Pay	
	Section 11.10	Military Leave	
	Section 15.10	Medical Benefit Reimbursement	
Ordinance 5252	Section 5.8	Calculation of Pay Rates	6/11/2012
	Section 6.2	Equal Opportunity	
	Section 6.3	Nepotism	
	Section 11.10	Military Leave	
	Section 16.5	Harassment	
Ordinance 5384		Comprehensive Update	8/11/2014
Ordinance 5443	Section 2	Definitions	10/26/2015
	Section 3.3	Personnel Appeals Board	
	Section 8.9	Positions Exempt from Overtime	
	Section 11.4	Sick Leave and Medical Leave	
	Section 11.7	Family Leave	
	Section 11.10	Military Leave	
	Section 11.14.2	Unpaid Leave Exceeding 16 Calendar Days	
	Section 13	Personnel Disciplinary Appeals	
	Section 15.3	Health Insurance Coverage Upon Retirement	
	Section 15.10	Medical Benefit Reimbursement	
	Section 17.8	Rehabilitation	
	Section 18.5	Alcohol & Controlled Substances Prohibition	
	Section 18.6	Controlled Substance and Alcohol Testing Provisions	
	Section 18.7	Employee Assessment	
Ordinance 5475	Section 3.9	Interpretation	5/23/2016

	Section 8.5	Overtime	
	Section 8.9	Positions Exempt from Overtime	
	Section 16.5	Policy Against Harassment	
	Section 16.9	Payroll Deductions	
Ordinance 5545	Section 2	Definitions	9/25/2017
	Section 3.7	Management Rights	
	Section 4.4	Reclassification	
	Section 4.5	Maintenance of the Plan	
	Section 5.7	Longevity Pay	
	Section 6.2	Equal Opportunity	
	Section 6.5	Personal Conduct	
	Section 7.6	Re-Employment of a Former City Employee	
	Section 8.5.2	Compensatory Time	
	Section 8.9	Positions Exempt from Overtime	
	Section 9.2	Resignation	
	Section 11.3.3	Eligibility for Vacation	
	Section 11.4.2	Sick Leave Administration	
	Section 11.4.5	Sick Leave and Medical Leave – Notice	
	Section 11.4.5	Proof of Illness – Sick Leave	
	Section 11.7.3	Family Leave – Notice	
	Section 11.10.3.i	Extended Active Duty Leave	
	Section 11.10.6.a	Reinstatement	
	Section 11.14.2	Unpaid Leave Exceeding Seven (7) Consecutive Calendar Days	
	Section 12.4	Grounds for Disciplinary Action	
	Section 14.3	Exclusions	
	Section 14.4.c	Procedure to Resolve Complaints	
	Section 15.3	Health Insurance Coverage Upon Retirement	
	Section 16.4	Ethical Conduct	
	Section 17.5	Pre-Employment Screening	
Ordinance 5567	Section 11.3.4	Pay In Lieu of Vacation	2/12/2018
Ordinance 5594	Section 2	Definitions	6/25/2018
	Section 5.4.3	Transfers	
	Section 5.9	Calculation of Pay Rates	
	Section 8.5.2	Compensatory Time	
	Section 8.7	Punctuality and Attendance	
	Section 9.2	Resignation	
	Section 9.6	Repayment of Educational Benefits	
	Section 9.8	Order of Layoff and Recall	
	Section 10.3	Holiday on a Scheduled Workday	
	Section 10.5	Holiday Bonus Pay and Overtime	
	Section 10.6	Personal Holiday	
	Section 11	Leave System	
	Section 15	Fringe Benefits	
	Section 16.5	Policy Against Harassment	
	Section 18.6.a.1	Pre-Employment Testing	
Ordinance 5644	Section 8.9	Positions Exempt from Overtime	7/1/2019
	Section 11.2.3.e	Vacation Administration	

	Section 11.3.5	Scheduling Vacation	
	Section 11.4.13	Return to Work	
	Section 11.6.1	Job-Related Injury	
	Section 11.6.2	Non Job-Related Injury	
	Section 11.6.4	Duration of Restricted Work	
	Section 11.10.4	Notice of Leave Request and Orders	
	Section 17	Policy Against Substance Abuse	
	Section 18	Alcohol & Controlled Substance Use, Abuse & Testing Policy for Drivers of Commercial Motor Vehicles	
Ordinance 5659	Section 11.1	Leave System Policy and Definitions	9/23/2019
	Section 11.4	Sick Leave and Medical Leave	
	Section 11.5	Occupational Injury or Illness Leave	
	Section 11.6	Restricted Work	
	Section 11.7	Family and Medical Leave	
	Section 15.9	Use of Automobiles	
Ordinance 5682	Section 10.5	Holiday Bonus Pay and Overtime	2/10/2020
	Section 10.6	Personal Holiday	
	Section 11.1	Policy	
	Section 11.1.2	Definitions	
	Section 11.3.4	Pay In Lieu	
	Section 11.4.3	Charging Sick Leave	
	Section 11.14.1	Paid Leave	
	Section 15.6	Tuition Reimbursement Program	
Ordinance 5705	Section 2	Definitions	7/1/2020
	Section 5.8.1	Frequency of Reviews	
	Section 5.9	Calculation of Pay Rates	
	Section 7.11	Probationary Period	
	Section 8.5.1	Overtime Compensation	
	Section 11.1.2	Definitions	
	Section 11.3.2	Vacation Administration	
	Section 11.3.4	Pay In Lieu of Vacation	
	Section 11.4.2	Sick Leave Administration	
	Section 11.5.4	Options Upon Expiration of Occupational Injury Leave	
	Section 15.3	Health Insurance Upon Retirement	
	Section 15.6	Tuition Reimbursement	
	Section 15.12	Spousal Health Insurance Surcharge	
	Section 16.10	Report Change of Address	
Ordinance 5752	Section 3.5	Eligibility for Use of Leave, Holidays and Other Benefits	9/13/2021
	Section 8.3	Attendance	
	Section 8.9	Positions Exempt from Overtime	
	Section 11.10	Military Leave	

	Section 11.15	Unpaid Leave for Victims of Domestic or Sexual Violence	
	Section 12.3	Investigation and Report	
	Section 12.4	Grounds for Disciplinary Action	
	Section 13	Personnel Disciplinary Reconsideration and Appeals	
	Section 14.1	Policy	
	Section 16.8	Personnel Records	
Ordinance 5786	Section 2	Definitions	7/1/2022
	Section 3.4	Applicability	
	Section 4.4	Reclassification	
	Section 5.4.2	Demotions	
	Section 5.5	Merit Increases	
	Section 5.6	Frequency of Merit Increases	
	Section 5.6.1	Probationary Completion Bonus	
	Section 7.11	Probationary Period	
	Section 7.12	Termination During Probation	
	Section 8.5	Overtime	
	Section 8.9	Positions Exempt from Overtime	
	Section 11.3.3	Eligibility for Vacation	
	Section 11.4.2.a.ii	Sick Leave Administration	
	Section 11.4.5	Proof of Illness – Sick Leave	
	Section 11.8	Bereavement Leave	
	Section 16.3	Outside Employment	
Ordinance 5795	Section 8.5	Overtime	8/22/2022
Ordinance 5813	Section 5.10	Direct Deposit	11/14/2022
	Section 7.11	Probationary Period	
	Section 11.3	Vacation	
	Section 11.4	Sick Leave	
	Section 11.6.4	Duration of Restricted Work	
	Section 11.14	Benefits While on Leave	
Ordinance 5824	Section 11.4.1.b	Sick Leave Policy	01/23/2023
	Section 11.4.5	Proof of Illness – Sick Leave	
	Section 15.3.c	One-Time Re-Enrollment Option	
	Section 17	Policy Against Substance Abuse	
	Section 18	Alcohol & Controlled Substance Use, Abuse & Testing Policy for Drivers of Commercial Motor Vehicles	
Ordinance 5841	Section 8.9	Positions Exempt from Overtime	07/01/2023
	Section 10.6	Personal Leave	
	Section 11.3	Vacation	
	Section 11.4	Sick Leave	

	Section 11.7.3	Notice of Intent to Utilize FMLA Required	
	Section 11.8	Bereavement Leave	
	Section 11.14.2	Unpaid Leave Exceeding Fourteen (14) Consecutive Days	
	Section 15.3	Insurance Coverage Upon Retirement	
	Section 15.6	Tuition Reimbursement Program	
Ordinance 5852	Section 2	Definitions	09/01/2023
	Section 5.7	Longevity Pay	
	Section 9.2	Resignation	
	Section 11.14.4	Family and Medical Leave Act	
	Section 15.1	General Description	
	Section 15.3	Insurance Upon Retirement	
Ordinance 58??	Section 7.9	Promotions	
	Section 11.1.2	Leave/Definitions	
	Section 11.4.1	Sick Leave	
	Section 11.7.2	FMLA	
	Section 11.7.9	Maternity	
	Section 11.10.7	Military Caregiver Leave	
	Section 11.10.8	Qualifying Exigency Leave	

SECTION 2 DEFINITIONS

"Acting" means serving temporarily in a position with all the authority, responsibility and duties of that position.

"Appointment" means the employment of an individual by the City Administrator.

"City" means the municipal corporation of Creve Coeur, Missouri.

"Commissioned Employee" means (see sworn employee defined below).

"Compensation" means either monetary payment or compensatory time in lieu thereof.

"Department Head" means the employee appointed to administer a Department of the City, including Administration, Community Development, Finance, Police, Public Works, Recreation, and the City Clerk's Office.

"Employee" means all full-time and part-time paid personnel who are appointed by the Mayor and City Council or the City Administrator, except members of Boards, Commissions and Committees, and elected officials.

"Full-Time Employee" means person duly employed by the City in a position for which employment with the City is at least thirty-five (35) hours per seven-day work period, provided; however, as of January 1, 2014 for purposes of determining eligibility for health insurance benefits a person duly employed by the City who averages thirty (30) hours per seven (7)-day work period from June 1 to May 31 as determined in compliance with applicable law as a twelve (12) month standard measurement period (or in the case of a new hire, is expected to), shall be considered full-time. For police department commissioned employees, hours per seven-day work period shall be calculated based on a twenty-eight (28)-day cycle.

"LAGERS" means Missouri Local Government Employees Retirement System.

"Management" means the Mayor and City Council, the City Administrator, and Department Heads. Ranked employees above the rank of Sergeant are also considered management employees.

"Nepotism" means the practice of hiring relatives, as prohibited by law and herein.

"Part-Time Employee" means a person employed by the City who works an average of less than thirty-five (35) hours per seven (7)-day work period (except for purposes of determining eligibility for health insurance benefits, see definition of Full-Time Employee). For police department commissioned employees, hours per seven (7)-day work period shall be calculated based on a twenty-eight (28)-day cycle.

"Personnel Officer" means the Assistant City Administrator.

"Regular Employee" means a person who has a position with the City which, by its nature, is continued from year to year, throughout the year, whether on a full-time or part-time basis and who is paid on a semi-monthly basis.

"Seasonal Employee" means a person who has a position with the City, whether on a full-time or part-time basis which, by its nature, is temporary and is affected by a particular need or the availability of work at a defined time and is not meant to be continued uninterrupted from year to year. The duration is determined by the Department Head. Also, a temporary employee.

"Supervisor" means an employee appointed by the Department Head, or another level of management within the department, to oversee the operations of subordinate personnel for a work unit within the department (i.e., shift, crew, division).

"Sworn Employee" means personnel of the Police Department who have taken the prescribed oath of office and have been granted full police powers.

SECTION 3 ADMINISTRATION OF RULES

3.1 RESPONSIBILITY FOR ADMINISTRATION

The responsibility to establish rules and procedures with regard to city employment lies with the City Council of the City of Creve Coeur.

Administration of these rules and regulations shall be the responsibility of the City Administrator. The Personnel Officer shall have the day-to-day responsibilities of administering the rules and regulations as set forth herein. The City Administrator shall interpret the rules and from time to time recommend to the City Council appropriate amendments in order to maintain a fair and equitable system of personnel rules and regulations.

3.2 DEPARTMENTAL RULES AND PROCEDURES

Department Heads may formulate written work rules necessary for the safe, efficient and effective administration of their department. These rules shall not supersede the provisions of this Manual nor shall they conflict with the provisions of these rules. A copy of all departmental rules shall be placed on file with the City Administrator.

3.3 PERSONNEL APPEALS BOARD

There is a Personnel Appeals Board established in Sections 130.020, 130.030, and 130.040 of the City Code of Ordinances. It is comprised of City residents, all of whom support the application of merit principles of public employment.

The duties of the Personnel Appeals Board are to:

a. Hear employee appeals on disciplinary actions as set forth in the Code and City of Creve Coeur Personnel Policy and Procedures Manual.
b. Perform such other advisory activities as may be requested by the Mayor and City Council.

3.4 APPLICABILITY

The rules and regulations set forth in this Manual shall be applicable to all employees of the City, except as otherwise provided in the City Charter or otherwise determined by the City Council for the appointed positions of the City Administrator and City Clerk.

3.5 ELIGIBILITY FOR USE OF LEAVE, HOLIDAYS, AND OTHER BENEFITS

Only full-time, regular employees shall be eligible for use of leave, holidays and other city employee fringe benefits. Employees having seasonal, part-time, temporary full-time or temporary part-time work with the City are not eligible for fringe benefits, leave, and holidays.

3.6 APPOINTING AUTHORITY

Appointing authority is the City Administrator who shall appoint all employees of the City, except as otherwise provided by the City Charter, and the City Administrator shall have the authority to dismiss, reduce in pay, discipline, or suspend without pay, any employee appointed by him and under his supervisory direction as provided by the City Charter.

3.7 MANAGEMENT RIGHTS

The Management of the City shall subject to applicable law:

a. Determine the nature, scope and definition of the city organization including: classification, pay plan, selection, number, retention, promotion, reorganization, transfer, deployment, assignment, layoff, recall and scheduling of employees.
b. Determine the methods, means, tools and equipment, and personnel by which operations are to be conducted, including the right to contract and subcontract existing and future work
c. Direct employees.
d. Discipline, suspend, demote and/or terminate employees.
e. Require as a part of normal employee development that an employee fulfill the responsibility of the position and attain or maintain minimal skills of his classification.
f. Take the necessary measures to attain and maintain optimum productivity in operations.
g. Determine the necessity for and assignment of overtime.
h. Determine the scope, priority, and amount of budget allocations.
i. Determine eligibility for employee participation in bargaining unit activities.

3.8 ADMINISTRATIVE RULES AND PROCEDURES

The City Administrator or designees shall promulgate and establish administrative rules and procedures based on the general policies outlined herein covering such areas as:

a. Hours of work/work schedules;
b. Pay plan and pay periods;
c. Performance appraisal systems;
d. Personnel records and reports;
e. Temporary work assignments and transfers;

f. Use of city vehicles and mileage reimbursement;
g. Outside employment;
h. Seniority and impact of seniority;
i. Safety procedures;
j. Job related injury procedures;
k. Other related internal administrative personnel matters.

3.9 INTERPRETATION

Where required by the context hereof, singular words and pronouns shall be construed as plural, plural words and pronouns shall be construed as singular, and personal pronouns shall be construed as referring to all persons without regard to gender.

SECTION 4 CLASSIFICATION PLAN

4.1 CLASSIFICATION OF POSITIONS

The overall objective of the classification plan and the corresponding compensation plan is to provide fair and competitive compensation for positions in the city service which are sufficiently alike in duties and responsibilities to be called by the same job title, to be accorded the same pay range and to require substantially the same qualifications on the part of the incumbents.

No city employee shall be classified nor paid at a pay rate which is not established and recognized in the City's classification and pay plans.

4.2 JOB EVALUATION

The Personnel Officer, with the assistance of the Department Heads and approval of the City Administrator, shall maintain a current Classification Plan including a job evaluation for each classified position which shall include a job title, job purpose, essential knowledge and skills, any special requirements, suggested training and experience and related information.

The job evaluations are descriptive and not restrictive and are intended to indicate generally the requirements for the established position. Job evaluations are utilized to measure and rank a job's relative worth for compensation purposes. The job evaluation is also utilized to develop the job description and performance criteria designed to measure an employee's annual performance.

4.3 DEVELOPMENT OF NEW CLASSIFICATIONS OR POSITIONS

When, in the opinion of the City Administrator, Department Head or the Personnel Officer, there arises a need to establish a new position, the Department Head shall complete a job questionnaire and provide a recommended job evaluation to the Personnel Officer. The City Administrator shall review and approve all requests for new positions and refer the request to the City Council for final approval. Once the position has been approved and properly classified, a job description including the essential job functions and corresponding performance criteria for the position shall be developed by the Department Head and the Personnel Officer.

4.4 RECLASSIFICATION

A job reclassification occurs when a job is moved to a different pay grade because the essential job functions have significantly changed or because the market for a job has significantly changed such that the current pay grade is no longer appropriate. In order to ensure jobs are evaluated correctly, a periodic review by the Department Head and the Personnel Officer shall be made. Annually, certain positions will be reviewed as selected by the Personnel Officer or suggested by the Department Head. If

upon reevaluation of a position, it is determined that the position is still within the same pay range, no pay reclassification is required. If the job is reclassified to a new pay grade, the employee's pay will be adjusted to at least the minimum of the new pay grade. If the position is reclassified to a lower pay grade, the employee's pay shall be reduced to the maximum of the new grade, except if such reduction would exceed ten percent (10%) of the current pay in which case such reduction shall be limited to ten percent (10%) of current pay. Appropriate changes will be made to reflect the new essential job functions and performance criteria.

An employee may request a review of his job evaluation annually during the time period established for such reviews. Specific requests must be addressed to the Department Head. The employee will submit information to his Supervisor regarding why he believes the current job evaluation is not accurate. The information shall be reviewed by the Supervisor, who will initiate a job questionnaire being completed by the employee. The Supervisor will add his own comments to the questionnaire. The Department Head shall review the job questionnaire and add comments necessary and forward this document to the Personnel Office. Any changes in the job description or performance criteria are required to be reviewed by the Personnel Officer. All changes in job evaluation which result in a change in the classification of the position require the approval of the City Administrator and the approval of the City Council. Once the position has been approved and properly classified, a job description including the essential job functions and corresponding performance criteria for the position shall be developed by the Department Head and the Personnel Officer.

SECTION 5 PAY PLAN

5.1 ESTABLISHMENT OF THE PLAN

Compensation established for a pay range is based on such factors as knowledge, experience, training, decision-making authority and responsibility, problem-solving, supervisory responsibility, environmental working conditions and external market factors. The actual placement of an employee within the job grade is based on individual productivity and merit. The pay policy is designed to stimulate excellence in both individual and organizational performance.

The City Administrator is responsible for presenting to the City Council for approval a uniform and equitable pay plan which consists of pay ranges of minimum, midpoint and maximum rates of pay for each job classification and provides reasonable progression in the pay range based on employee job performance. The pay plan shall reflect an equitable relationship among the job classifications and shall be made after review of prevailing rates for comparable work in other public and private business, the current cost of living, responsibilities of the position, and the budgetary policies of the City Council.

5.2 ADMINISTRATION OF THE PAY PLAN

Administration of pay rates within pay ranges and on the basis of merit is the responsibility of the Personnel Officer with approval of the City Administrator. All positions in the city service requiring similar qualifications and having similar duties and responsibilities shall be similarly compensated, insofar as possible, as established by the current classification plan.

The pay ranges will be competitive with the external market. Periodic review of the pay plan shall be made. Adjustments may be made to correct significant discrepancies between the City's level of pay and market pay levels for certain jobs. Actual adjustment amounts will be based on the City's capability to pay the adjustments as determined by the City Council and approved in the annual city budget. Individual job performance shall also be a determining factor.

If a particular job is increasingly difficult to retain and recruit because of compensation requirements, the Department Head may recommend to the City Administrator the job be placed in a range above the current range midpoint.

5.3 NEW EMPLOYEE PLACEMENT

Generally, a new employee shall be hired at the minimum rate in the appropriate classification unless his qualifications are such that it is to the City's advantage to offer a higher starting pay within the range. Hiring at an advanced rate shall be based upon years of experience or the skill qualifications of the individual and shall require the approval of the City Administrator. Appropriate documentation by the

Department Head that such action is to the benefit of the City shall be provided with the recommendation.

5.4 PROMOTIONS, DEMOTIONS AND TRANSFERS

1. Promotions

When an employee is promoted to a position in a higher pay range the employee's pay shall be increased to at least the minimum rate for the higher pay range to ensure a starting pay commensurate with that given to new hires with equivalent training and experience for that position.

2. Demotions

A demotion occurs when an employee is moved to a job evaluated at a lower pay grade due to poor performance, necessity of organizational change, or developmental assignment. The pay of an employee being demoted due to poor performance, inability to perform the essential functions of the current position (and if applicable, no reasonable accommodations can be made without undue burden), or employee choice will be reduced by ten percent (10%) unless such reduced pay would still exceed the new pay range maximum in which case the current pay shall be reduced to such pay range maximum. The City will adjust the pay of an employee who is demoted solely due to organizational change as provided in Section 4.4.

3. Transfers

When an employee moves from one position to another in the same pay grade, either voluntarily or involuntarily, or voluntarily seeks a position at a lower pay classification than his current position, it is considered a transfer. An employee who accepts an assignment in a different pay grade shall receive an increase or decrease to pay in order that actual pay is established within the new range. When an employee transfers between positions in the same pay grade, no adjustments to pay shall be made.

5.5 MERIT INCREASES

Advancement to a higher rate of pay within an established range shall be called a merit increase. All merit increases shall be based upon the performance of the individual in the position measured against established job performance criteria. Such criteria may include level of knowledge, skills, ability, work traits, compliance with established city or departmental rules and regulations or any other criteria which are indicative of performance.

Merit increases may be granted only upon approval by the City Administrator and after documentation by the appropriate Department Head, including, but not limited to, the most recently completed performance evaluation for the individual. Annually, guidelines shall be established by the City Council and approved in the annual budget regarding pay adjustments as they relate to performance ratings.

5.6 FREQUENCY OF MERIT INCREASE

An employee, not on a step pay plan, shall be eligible for a merit increase at the successful completion of the probationary period for the position. After the employee has been removed from probationary status, merit increases will normally be available at the beginning of the fiscal year and made effective each July 1. However, the City Administrator may authorize an earlier merit increase in the event of documented superior individual performance. Said merit increase shall be based on the same criteria as set forth in subsection 5.5. The initial July 1 merit increase shall be prorated according to the number of full calendar days the employee has worked since the employee's probation-completion merit increase date, if any.

1. Probationary Completion Bonus

A commissioned officer on a step pay plan shall be eligible for a one-time, lump-sum Probationary Completion Bonus at the successful completion of the probationary period for the position. The Probationary Completion Bonus is prorated according to the number of calendar days from the employee's probation completion date to July 1, when the officer is eligible to advance to the next step in the pay plan with a successful prorated performance evaluation.

5.7 LONGEVITY PAY

A full-time employee hired before August 1, 2004 shall receive an additional eight dollars per month of compensation for each completed year of service computed from the employee's latest date of employment. Notwithstanding any other provision of this Manual, no employee last hired on or after August 1, 2004 shall be entitled to this additional compensation. Current eligibility for longevity pay shall be based on the last date of hire and not total time of service with the City. There is a parallel longevity provision in LAGERS.

5.8 PERFORMANCE MANAGEMENT

1. Frequency of Reviews

Performance reviews for a City employee, utilizing the performance management job description and performance criteria, shall be conducted during the employee's probationary period no less frequent than at the one (1) year anniversary of employment. Thereafter, performance reviews shall be conducted at least once annually near the end of each fiscal year. An evaluation may, however, be conducted more frequently at the

discretion of the Department Head or at the request of the Personnel Officer, including during the initial probationary period. Normally, no merit increase shall be granted unless a performance evaluation has taken place within sixty days prior to the effective date of the increase.

2. Annual Performance Cycle

Annually, at the beginning of the employee's performance cycle, or in the event of significant change in the City's or department's goals, the immediate supervisor shall conduct a performance planning session with the employee to discuss the essential job functions, the individual employee's, the City's and the department's performance goals and the employee's job performance criteria.

Any changes in the existing job performance criteria shall be recorded on the job description form and approved by the Department Head and the Personnel Officer before taking effect.

3. Performance Reviews and Coaching

The employee's immediate supervisor will regularly monitor the employee's performance and on a periodic basis conduct a performance review meeting with the employee utilizing the performance management coaching forms to document individual performance.

4. Completion of the Performance Cycle

The supervisor shall provide non-probationary employees with copies of the self-appraisal form by April 20 of each year. The employee shall complete the self-appraisal form and provide it to his immediate supervisor by May 1. The supervisor shall complete the performance appraisal form in the most objective manner possible based on the performance data collected throughout the year, information contained on the self-appraisal form and the established performance criteria for the position. The immediate supervisor shall assign a total performance score which shall be reviewed and approved by the Department Head and submitted to the Office of the City Administrator by June 15. The supervisor shall meet with the employee and discuss the evaluation and future areas of development. The employee shall be given an opportunity to provide written comments and sign the form. The Department Head shall review and approve the form. A copy shall be provided to the employee and the original forwarded to the Personnel Officer with a completed personal action form.

5.9 CALCULATION OF PAY RATES

For full-time employees, when it is necessary to calculate an effective hourly rate for purposes of administration of benefits (i.e., overtime), unless expressly provided otherwise in this manual (i.e.,

Section 11.3.4 pay-in-lieu of vacation), the City generally determines an employee's hourly rate by dividing the annual salary by 2,080 hours, the number of full-time hours worked per year.

5.10 DIRECT DEPOSIT

All employees are required to participate in the City's Payroll Direct Deposit program as a condition of employment. Employees are allowed to select the financial institution(s) that will receive the direct deposits. The City Administrator may temporarily or permanently waive required participation for an employee, for good cause as determined in his discretion.

Employees must complete the City's Direct Deposit authorization form. This form authorizes deposits as well as adjustments (withdrawals) to correct for any overpayment or error. Direct deposits will be subject to all applicable banking and clearinghouse rules and laws.

An employee that does not wish to direct deposit to a checking or savings account may select the option of depositing to a payroll card account at the financial institution(s) selected by the City for such purpose. Such employee must complete the applicable additional forms and comply with the financial institution's fees and terms.

SECTION 6 QUALIFICATIONS FOR EMPLOYMENT

6.1 MERIT PHILOSOPHY

All appointments and promotions of City officers and employees except as otherwise provided by City Charter shall be made solely on the basis of merit and fitness demonstrated by examination or other evidence of competence. All such action shall be taken wholly without favoritism or unlawful discrimination.

6.2 EQUAL OPPORTUNITY

In compliance with applicable law, no person employed by the City or seeking employment from the City shall be appointed, promoted, demoted, removed or in any way favored or discriminated against because of age, race, color, marital or familial status, national origin, ancestry, political affiliation, religion, sex, gender, gender identity, sexual orientation, genetic information, disability, or any other characteristic protected by law except where specific age, sex or physical requirements constitutes a bona fide occupational qualification. The City is committed to equal treatment of qualified individuals and meeting the requirements of applicable law including the ADA. The City encourages employees to discuss potentially necessary accommodation of a disability with the Personnel Officer, whether to facilitate continued work or return to work.

In compliance with applicable law, no person employed by the City or seeking employment from the City will be appointed, promoted, demoted, removed or in any way favored or discriminated against based on HIV infection or acquired immune deficiency syndrome (AIDS) status unless the individual poses a direct threat to the health or safety of others or is unable to perform required job duties.

No person seeking employment or promotion shall, either directly or indirectly, give, render or pay any money, service or other valuable thing to any person for or on account of or in connection with an employment test, appointment, proposed appointment, promotion or proposed promotion, except for bona fide test preparation service fees.

Pursuant to 41.1005 RSMo, no member of the United States Coast Guard Auxiliary shall be discharged from employment because of being a member of the United States Coast Guard Auxiliary or holding any office, position, or appointment under the United States Coast Guard Auxiliary, nor otherwise discriminated against or dissuaded from joining or continuing such person's service in the United States Coast Guard Auxiliary by threat or injury to such person in respect to such person's employment, or of any other rights or benefits to which the employee would otherwise be entitled.

Likewise, the City shall not discriminate against veterans or members of the US Armed Forces or National Guard.

6.3 NEPOTISM

The following definitions apply to this policy:

"Affinity" means related by marriage or having a relationship by marriage.

"Consanguinity (eous)" means of the same blood or descended from the same ancestor.

"Nepotism" means the practice of hiring of relatives. This practice is prohibited in Article 7 of the Missouri Constitution as follows:

> *"Section 6. Any public officer or employee in this state who by virtue of his office or employment, names or appoints to public office or employment any relative within the fourth degree [within the first, second, third and fourth degrees] by consanguinity or affinity, shall thereby forfeit his office or employment."*

In addition, it shall be the City's policy that no relative within the first and second degrees, by consanguinity or affinity, to any elected official of the City of Creve Coeur shall be employed in any capacity by the City.

No relative within the first and second degrees, by consanguinity or affinity, to any full-time City employee may be employed full-time in the same department. Under no circumstance shall any employee of the City be involved in the supervision, hiring, termination, discipline, promotion, or performance evaluation of another employee of the City who is a relative within the fourth degree by consanguinity or affinity.

Degrees of kindred shall be determined by consulting the English Background of Degrees of Kindred according to Civil Law. If further clarification is required, the City Attorney shall render a decision.

Degrees of kindred to the employee by blood or marriage:	
1st degree of relatives	Spouse, children & parents
2nd degree of relatives	Grandparents, grandchildren, brothers & sisters
3rd degree of relatives	Great grandparents, great grandchildren, uncles, aunts, nephews & nieces
4th degree of relatives	Great, great grandparents, great, great grandchildren, great uncles, great aunts, first cousins, grandnephews & nieces

6.4 RESIDENCY REQUIREMENTS

There shall be no residency requirement for any full-time city employee at the time of his employment or during the term of his employment unless otherwise provided by the City Charter or Ordinance. Residents who are qualified will be given preferential consideration for part-time and seasonal positions.

The City and its employees will comply with all applicable laws regarding eligibility of non-citizens for employment and/or receipt of public benefits from the City.

6.5 PERSONAL CONDUCT

Whether during working hours or outside of working hours, conduct can reflect upon suitability and qualification for employment. Professional and courteous behavior is required at all times during working hours. (See also Section 16.6). Any illegal conduct or other conduct at any time that demonstrates an inability to fulfill assigned duties or an inability to work with other employees can result in discipline and/or termination. Employees retain all constitutional and legal rights, which include the right to discuss the terms and conditions of employment and complain about illegal activity. Employees are not authorized to use their position or City logos, insignia, uniforms, or similar items to convey the impression they are acting for the City, except in connection with performance of assigned duties.

SECTION 7 APPOINTMENTS AND VACANCIES

7.1 FILLING OF POSITIONS

Department Heads shall notify the Personnel Officer as far in advance as possible of any requirements for authorized personnel, setting forth such information as requested to facilitate the filling of the position.

The Personnel Officer shall administer application and testing procedures, as approved by the City Administrator. He shall certify qualified applicants to Department Heads for interview and recommendation. The Chief of Police may determine the appropriate application and testing procedures for commissioned personnel, subject to the approval of the City Administrator.

Department Heads shall recommend to the City Administrator the appointment of the certified applicant acceptable for employment.

The City Administrator shall review and either accept or reject the recommendation. Once an employment recommendation is approved by the City Administrator, an offer or conditional offer of employment may be made.

7.2 EMERGENCY APPOINTMENTS

When a vacancy occurs in a position which is necessary to carry out City business without interruption, and no suitable list of candidates exists for selections, the Department Head may appoint an employee in an acting capacity with the approval of the City Administrator. In the event of a Department Head vacancy, the City Administrator may appoint an acting Department Head to fill the position. The duration of the appointment shall not exceed three months or until an appointment can be made through established procedures, whichever is shorter, unless the City Council approves continued acting status.

7.3 PUBLICITY

The Personnel Officer shall determine the nature and extent of publicity required to obtain a reasonable number of qualified applicants for each vacancy. All positions shall be announced to the public through standard announcement form, and/or by posting on city bulletin boards or by mass media advertising, at least seven (7) calendar days in advance of the last date for filing applications. Vacancies which can be filled through promotion shall be announced, to eligible current city employees on city bulletin boards or by memorandum, for at least seven calendar days prior to the application closing date. Job announcements with "open" application submission dates must remain open at least seven calendar days, and may be closed by the Personnel Officer when sufficient applicant response has been achieved.

7.4 APPLICANT SCREENING PROCESS

The screening process for an applicant shall include an oral interview, evaluation of experience, education and training, all legally mandated inquiries, and a reference check. The process may also include, but not be limited to, one or any combination of the following as determined by the Personnel Officer in consultation with the Department Head and City Administrator:

- Written examinations
- Performance evaluations
- Medical examinations
- Substance abuse screening
- Psychological evaluations/intelligence tests
- Background investigations
- Physical agility-dexterity tests

Reasonable measures shall be taken by the Personnel Officer to confirm the reliability and validity of the various screening processes. Some screening measures shall be utilized after a conditional offer of employment has been made.

7.5 INTER-DEPARTMENT TRANSFERS

A current city employee who meets the minimum qualifications for a classification in which a vacancy exists in another department may request an inter-department transfer.

An inter-department transfer is defined as a lateral reassignment of an employee to another department. Any such transfer has to be approved by the receiving Department Head.

An employee working in his first probationary period is not eligible to request an inter-department transfer.

The Personnel Officer shall keep a list of city employees who have requested a transfer to another department and shall communicate the names of those interested in and qualified for a vacancy at the request of a Department Head to fill an applicable vacancy.

7.6 REEMPLOYMENT OF A FORMER CITY EMPLOYEE

A former employee shall be required to compete for a position with any other qualified applicants. Retroactive reinstatement of an employee's vacation or sick leave shall be given in the event a former employee is rehired within one year of his separation.

Retirement benefits from past service may be reinstated in accordance with the provisions of the applicable retirement plan.

7.7 LAID OFF/DEMOTED EMPLOYEES

A full-time city employee laid-off or reduced to a lower classification due to a reduction in force, reassignment of priorities, duties, or projects, who was in good standing at the time the action was taken and remains in good standing, shall rank ahead of other individuals competing for the same position.

7.8 PART TIME/TEMPORARY/SEASONAL APPOINTMENTS

If a position is to be filled for a limited time only, appointments may be made from the list of eligible applicants interested in full-time work. A temporary or seasonal appointment shall not affect an applicant's eligibility for full-time positions.

Part-time, seasonal and temporary positions shall be filled in the manner described in Section 7.4 above. A former employee may be rehired to fill temporary positions without re-screening, subject to meeting legally mandated eligibility requirements.

All part-time, temporary and/or seasonal employee appointments must be approved by the Personnel Officer under the direction of the City Administrator and in accordance with budgetary authorization and limitations.

7.9 PROMOTIONS

All vacancies shall, whenever possible, be filled by promotion of a qualified employee within the city service. The Personnel Officer shall review the qualifications of employees who are receiving salaries lower than that of the class in which the vacancy exists to determine which employees will be eligible for consideration. ~~A probationary employee~~An employee on a performance improvement plan is not eligible for promotion consideration. A notice of the position shall be posted and distributed to the Departments.

Promotions may be rescinded by the City Administrator at any time during the probationary period, in which case the employee shall revert to the previously held position. Such rescission shall not be subject to the grievance process.

7.10 GENERAL EXAMINATION PROVISIONS

The Personnel Officer may disqualify an applicant and remove the name from further consideration if:

1. The applicant is found to be lacking in any of the preliminary requirements established for the position.

2. The applicant is disabled or inhibited to an extent which would render the individual unfit for performance of the duties as established for the position (subject to reasonable accommodations as required by applicable law).
3. The applicant has been found to have conflicting interests which may impair or compromise total effectiveness in a given classification including, but not limited to: criminal background; narcotic or alcoholic addictions; and/or personal business interests.
4. The applicant has made a false statement of material fact on the application in violation of the certificate made by the applicant on the application form.
5. The applicant has used or attempted to use political pressure or bribery to secure an advantage in the screening or appointment procedure.
6. The applicant has previously been discharged or has a documented, unsatisfactory service record with the City.
7. The applicant has presented an application and has failed to sign the application form.
8. The applicant requests such an action.
9. An ample number of better qualified candidates are available for the position.

An individual's application and examination records shall not be open to public inspection; however, the individual's record shall be available for inspection by that applicant. An applicant's records shall be maintained in accordance with the State of Missouri and federal record retention regulations.

The examination records of all persons who are appointed to positions shall be kept in the employee's personnel file and shall be retained throughout his employment and subsequent to their separation in accordance with the requirements of the State of Missouri and federal record retention regulations.

A new employee is required to pass a physical examination and be certified by the City's physician as physically qualified to perform the duties of the position he seeks before his appointment may be finalized.

The City Administrator may, when it is deemed in the best interest of the City, utilize an applicant's examination results established and administered by other agencies through cooperative or reciprocal arrangements for expediting recruitment and screening of applicants.

7.11 PROBATIONARY PERIOD

The probationary period shall be regarded as an integral part of the screening process and shall be utilized for closely observing the employee's work, for securing the most effective adjustment of a new, transferred or promoted employee to the position, and for replacing any employee whose performance does not meet the required work standards.

Every person transferred, promoted, appointed or reappointed to a full-time position with the City shall successfully complete a probationary or qualifying period of one year.

The probationary or qualifying period shall begin immediately upon appointment to a full-time position. The probationary period shall not be deemed to be successfully completed until a performance evaluation and personnel action form stating the employee is released from probation has been submitted by the Department Head and approved by the Office of the City Administrator. Such notice shall not be unreasonably withheld and within ten (10) days following the one year anniversary date of the employee such notice shall be submitted or the Department Head shall submit a proposed extension of the probationary period.

The probationary period may be extended, if deemed necessary and supporting documentation is provided by the Department Head, after review and approval by the City Administrator.

Time spent in an acting capacity prior to receiving a permanent appointment to the same classification and department shall be considered as time spent as a probationary employee in that position.

An employee after serving the first thirty (30) days of employment is eligible to utilize accrued sick and vacation benefits upon the Department Head's approval. (Sections 11.3(3) and 11.4(2)) Persons terminated during the probationary period shall not be paid for unused vacation leave.

An employee who is promoted or transferred shall serve a probationary period of one year in the new position. Any sick leave and vacation leave benefits the employee had at the time of the promotion or transfer shall be retained.

7.12 TERMINATION DURING PROBATION

At any time during the initial probationary period the Department Head, with the approval of the City Administrator, may terminate an employee, with or without cause and with or without notice.

An employee promoted into a position who does not successfully complete a probationary period may be demoted to his previous or similar classification, provided such position is vacant and authorized. If such a position is not available, the employee may be placed on priority reemployment or transfer lists for a position for which the employee is qualified, at the written request of the employee.

An employee terminated or demoted during their initial probationary period cannot appeal such action, except for a "Law Enforcement Officer" as defined in Section 590.502 RSMo.

SECTION 8 HOURS OF WORK AND ATTENDANCE

8.1 HOURS OF WORK

The hours during which offices will be kept open for business shall be determined by the City Administrator. The number of hours per week or per month for full-time employment for each classification shall be considered an integral part of the pay plan, which shall specify the full-time work schedule for regular office, field, police, and recreation employees. Working hours are to be devoted to fulfillment of assigned duties and not to personal matters other than on a very incidental basis.

8.2 SCHEDULING HOURS OF WORK

All Departments shall observe and keep office and working hours necessary for the efficient transaction of services. The Department Head with the approval of the City Administrator shall determine appropriate hours of work. Full-time employees will generally be scheduled to work forty (40) hours in a seven (7) day pay period. Police personnel will be scheduled to work according to the established Police Department scheduling policy.

8.3 ATTENDANCE

Employees shall be on time and in attendance at their work in accordance with these rules and departmental time-keeping practices. All department heads, or designees, shall keep attendance records of employees which shall be reported to the Finance Department through the employee attendance tracking system. Employees must identify any perceived error in attendance records within seven (7) days of receipt of pay for the period.

8.4 ABSENCE WITHOUT LEAVE

An absence of an employee from duty, including any absence for a single day or part of a day, that is not authorized by a specific grant of leave under the provisions of these rules shall be deemed to be an absence without leave. Any such absence shall be subject to disciplinary action, including forfeiture of pay in non-exempt positions.

8.5 OVERTIME

1. Overtime Compensation

It is the policy of the City to minimize the necessity for overtime work. When overtime work is necessary and consistent with protection of the lives and property of the citizens of Creve Coeur, and efficient operations, such overtime shall be authorized in advance by the Department Head but shall be kept at a minimum.

Overtime compensation generally applies when a non-exempt employee works in excess of their normal daily work schedule, notwithstanding exceptions noted in this section, and as approved by the Department Head as a benefit to City operations.

The rate of overtime compensation for employees shall be as follows:

OVERTIME RATES:

	1-1/2 Times Normal Pay	Straight Time	Exempt
EMPLOYEE GROUPS:	Street Maintenance Park Maintenance Inspections Maintenance of Municipal Property Office Clerical[2] Commissioned Police Officers[3] Ice Arena Golf Course**	Golf Course[1]	See Section 8.9

[1]*Golf Course employees qualify for the FLSA recreational exemption when during the preceding calendar year, average receipts at the golf course for any six months of the year are not more than 33 1/3 percent of its average receipts for the other six months of the year (29 U.S.C. § 213(a)(3)(A)-(B). Such qualifying golf course employees shall receive premium pay equal to 1-1/2 times their normal rate of pay for time worked beyond forty-four (44) hours in a week (Sunday thru Saturday), and shall receive straight time for time worked up to forty-four (44) hours in a week (Monday through Sunday).*

[2]*Office clerical are compensated for evening meetings and Saturday meeting work as per section 8.6 of this policy.*

[3]*Commissioned police officers hours per work week shall be calculated based on one hundred seventy one (171) hours in a twenty eight (28)-day cycle. Traffic Enforcement Overtime shall authorize commissioned police officers to receive an overtime rate of two times (2x) normal pay, not to exceed $100 per hour; conversion of such overtime to compensatory time is prohibited.*

2. Compensatory Time

An employee may elect to earn compensatory time at the rate of 1-1/2 his normal hourly rate for any overtime hours worked. The use of compensatory time is subject to the approval of the Department Head. Commissioned employees shall accrue no more than eighty (80) hours of compensatory time. All other City employees shall accrue no more than forty (40) hours of compensatory time. Temporary exceptions may be approved by the City Administrator or his designee.

Exempt employees shall not be eligible for compensatory overtime. In the event that a non-exempt employee is promoted or reclassified to an exempt position, said employee shall be paid for the remaining balance of his compensatory time at his non-exempt hourly rate prior to promotion or reclassification.

8.6 BOARDS AND COMMISSION MEETINGS

A member of the city secretarial staff who serves as a clerk of the Municipal Court, or a secretary to one of the various boards and commissions, which meet in the evening and/or on Saturday mornings, shall receive compensation in accordance with the approved pay plan. For weekday meetings which start on or after 6:00 pm and Saturday meetings, if the meeting lasts under two hours, the secretary shall receive a minimum of two hours of pay.

8.7 PUNCTUALITY AND REGULAR ATTENDANCE

Punctuality and regular attendance are essential if the city service is to accomplish its objective of providing efficient services to the public. If an employee is unable to arrive at work on time, he is either to notify his Supervisor or make arrangements for someone else to contact the Supervisor as soon as possible in accordance with established departmental rules and regulations. This will allow the Supervisor time to rearrange the work schedule with minimum possible inconvenience. Punctuality and attendance play an important role in an employee's probation, merit and promotional reviews.

In instances where tardiness is unavoidable or weather conditions preclude timely arrival at work, it is the Supervisor's responsibility to arrange for the employee to make up lost time at the regular pay rate. In other instances, of tardiness, vacation time will be docked by a corresponding amount of time, in fifteen (15)-minute increments, unless the time is made up in the same week at the regular pay rate.

8.8 PREMIUM PAY

1. Supervisory Premium Pay

Regular full-time commissioned non-supervisory personnel requested by the Department Head to serve in a temporary supervisory capacity shall receive a premium per work shift at the rate established in the City's annual budget. Serving in a supervisory capacity shall mean that the employee is placed in effective charge of non-supervisory personnel and required to perform all normal supervisory functions for that work group during the assigned work shift.

Regular full-time non-commissioned non-supervisory personnel requested to serve in an acting supervisory capacity shall be upgraded to the entry level of the supervisor grade or shall receive a minimum ten percent (10%) increase in salary during the period in which the employee is serving as acting supervisor. When service in such an acting capacity extends

beyond a pay period, it shall be considered a change to base pay. Otherwise, such premium pay is a bonus that is taxable in accordance with Internal Revenue Service regulations.

2. Field Training Officer Premium Pay

Police officers shall receive a premium per work shift as bonus pay at a rate established in the City's annual budget for each day assigned as a field training officer. Such assignments and pay shall be subject to the approval of the Chief of Police. Such premium pay is a bonus that is taxable in accordance with Internal Revenue Service regulations.

8.9 POSITIONS EXEMPT FROM OVERTIME

The City Administrator shall maintain a current listing of positions, including Department Head, administrative, technical and professional positions, which are required to work extra hours as a normal part of fulfillment of his employment responsibilities to the City. Such extra hours shall be considered in establishing annual pay grades for exempt positions in accordance with applicable law.

The following positions are considered to be exempt from the overtime requirements of applicable law:

Assistant City Administrator
Assistant Director of Public Works/City Engineer
Assistant Recreation Director
Assistant to the City Administrator
Chief Building Official
City Administrator
City Attorney*
City Clerk
City Engineer
City Planner
Civil Engineer
Court Administrator
Director of Community Development
Director of Finance
Director of Public Works
Director of Recreation
Finance Manager/Accountant
Golf Course Manager
Golf Maintenance Superintendent
Human Resources Generalist
Information Systems Coordinator
Information Systems Manager
Municipal Judge*
Operations Superintendent
Police Captain
Police Chief

Police Lieutenant
Police Sergeant-Administrative
Public Information Officer & Management Analyst
Prosecuting Attorney*
Recreation Supervisor
Senior Accounting Associate
**Independent contractors*

Certain circumstances may warrant the payment of overtime to individuals who are otherwise exempt from overtime pay. The Department Head may review the situation which created the need for the overtime work and if he feels the situation warrants additional compensation may recommend to the City Administrator approval of overtime pay to an exempt employee.

SECTION 9 SEPARATION FROM EMPLOYMENT

9.1 TERMINATION DATE

The official termination date of employment with the City shall be the date of the employee's last day in attendance at work except as provided for in Section 9.2. All eligible accrued leave shall be paid through the date of termination. Payment shall be made on the next pay date following the date of termination; however, the Director of Finance may make payment sooner in extenuating circumstances as authorized by the City Administrator.

9.2 RESIGNATION

An employee resigning from the service of the City is expected to give written notice to his Supervisor at least ten (10) scheduled working days prior to the effective date of his resignation in order to leave in good standing unless other arrangements are approved by the City Administrator. Failure to comply with this policy shall be entered on the permanent personnel record of the employee.

The Department Head with City Administrator approval may elect to require or mutually agree with the employee that he use vacation time for some or all of his remaining scheduled working days prior to his effective date of resignation. In such cases, the effective date of resignation shall be the last date for which the employee receives vacation pay.

An employee retiring from service to the City is expected to give written notice to his supervisor, the Director of Finance and the LAGERS board, at least thirty (30) calendar days (and not more than ninety (90) days) prior to the effective date of his retirement in order to provide adequate time to calculate and process the retirement benefit. (70.645RSMo)

9.3 DISABILITY

An employee may be transferred, demoted or separated for disability when the employee cannot perform the essential job functions of the position because of physical or mental impairment, taking into account reasonable accommodations that do not create an undue hardship for the City. The City may require an employee to be examined by the City's physician for the purpose of determining an employee's ability to perform the essential job functions of his position. The City is committed to equal treatment of qualified individuals and meeting the requirements of applicable law including the ADA. The City encourages employees to discuss potentially necessary accommodation of a disability with the Personnel officer, whether to facilitate continued work or return to work.

An employee unable to perform the essential job functions of his position due to a disability, taking into account reasonable accommodations that do not create an undue hardship for the City, may be transferred or demoted to a position for which he is able to perform the essential job functions and shall

be compensated in accordance with the rate for that position. If such a position is not available, the employee may be placed on a priority reemployment list for a position for which the employee is qualified.

An employee who does not return to work and cannot perform the essential job functions of his position within one year of the occurrence of the disabling event, shall be separated from employment.

9.4 TERMINATION

An employee terminated by the City shall be removed from the position as promptly as possible and officially notified that such action is being taken, on or before the effective date of such action. A statement of the reasons for the termination shall be presented to the employee at the time of the discharge either in person or by certified mail to the last known address of record of the employee.

If an employee wishes to appeal the termination, he may do so as provided in these rules.

9.5 RETURN OF CITY PROPERTY

An employee leaving the city service for any reason and who has city-owned equipment or property in his possession shall return such equipment or property to his Department Head prior to receiving his last paycheck. Failure to return said property shall result in an amount being withheld from the employee's paycheck equal to the value of the property.

9.6 REPAYMENT OF EDUCATIONAL BENEFITS

An employee separating from the service shall repay in full all funds advanced under the educational program for college credit coursework during the previous two (2) years preceding separation. A written agreement shall be executed by the employee prior to any payment being made for educational benefits.

9.7 LAYOFF/REDUCTION OF WORK

A Department Head may, with the City Administrator's approval, lay off an employee when it is deemed necessary by reason of shortage of work, funding, abolition of the position or change of duties or organizational structure or other reasons which are outside of the employee's control and which do not reflect discredit on the employee's performance. The duties performed by an employee laid off may be reassigned to other employees currently working who hold positions in appropriate classification. No regular employee shall be laid off while another person is employed on a probationary or temporary basis in the same classification and not laid off.

9.8 ORDER OF LAYOFF AND RECALL

Layoff and recall of an employee shall be made in inverse order of current performance ratings of employees in the classification involved. In the event current performance ratings are not available or the ratings of employees shall be equal, the order of layoff and recall shall be based on tenure. Employees laid off shall be placed on a priority recall list for a maximum of one hundred eighty (180) calendar days. Employees separated because of layoff shall be given at least fourteen (14) days prior notice of such layoff.

9.9 DEATH OF AN EMPLOYEE

In the event of the death of an employee, all compensation due in accordance with the policies of the City shall be paid to the legal representative of the employee's estate or any other properly designated individual.

SECTION 10 HOLIDAYS

10.1 SCHEDULE FOR CLASSIFIED SERVICE - OTHER THAN CERTAIN POLICE EMPLOYEES

The following holidays shall be considered a part of a full-time employee's normal work week (except certain police employees who are eligible for holiday bonus pay as set forth in Sections 10.4 and 10.5 of this policy), and such employees shall be excused without loss of pay on the following designated holidays:

New Year's Day	- January 1
Martin Luther King National Holiday*	- 3rd Monday in January
President's Day	- 3rd Monday in February
Memorial Day	- Last Monday in May
Independence Day	- July 4
Labor Day	- 1st Monday in September
Veterans Day*	- November 11
Thanksgiving Day	- 4th Thursday in November
Day after Thanksgiving Day	- Friday after 4th Thursday in November
From Noon Christmas Eve	- December 24
Christmas Day	- December 25

**May be substituted for day before Christmas when Christmas falls on Tuesday or for day after Christmas when Christmas falls on Thursday.*

10.2 PROCEDURE FOR OBSERVANCE OF A WEEKEND HOLIDAY

When any of the above holidays falls on a Sunday, the following Monday shall be observed as the holiday; or, when the holiday falls on a Saturday the previous Friday shall be observed as the holiday.

10.3 HOLIDAY ON A SCHEDULED WORK DAY

No employee (except for certain police employees as set forth in Sections 10.4 and 10.5 of this policy) shall be required to work on a holiday except when it is necessary to maintain essential services. Non-exempt employees other than police employees as specified in Sections 10.4 and 10.5 who must work on approved holidays shall be compensated with compensatory time or overtime pay.

10.4 SCHEDULE OF HOLIDAYS FOR COMMISSIONED POLICE OFFICERS

The following holidays shall be considered a part of the normal work week for certain commissioned police officers who are eligible for holiday bonus pay under section 10.5:

New Year's Day	- January 1
Martin Luther King National Holiday	- 3rd Monday in January
President's Day	- 3rd Monday in February
Easter Sunday	
Memorial Day	- Last Monday in May
Independence Day	- July 4
Labor Day	- 1st Monday in September
Veterans Day	- November 11
Thanksgiving Day	- 4th Thursday in November
From Noon Christmas Eve	- December 24
Christmas Day	- December 25

10.5 HOLIDAY BONUS PAY AND OVERTIME

A holiday bonus will be paid for each holiday as part of the pay for the period in which the holiday occurs; such bonus pay shall be equivalent to normal pay. Only commissioned police personnel are eligible for holiday bonus pay. Police Commanders including the positions of Police Chief, Captain, and Lieutenant are not eligible for holiday bonus pay and are excused without loss of pay on designated City holidays subject to the foregoing provisions of this Section 10.

To qualify for the holiday bonus pay for a given holiday, an employee must be employed on such holiday and, if scheduled, must work the holiday unless the absence was approved by the Chief of Police in advance of the holiday. Employees absent from scheduled work on a holiday due to unscheduled leave or unexcused absence will not receive bonus pay for that holiday.

The Chief of Police is responsible for determining necessary manpower staffing on all shifts, including holidays. The Chief may permit personnel the use of accumulated compensatory time, a vacation day, or a personal day on a holiday; such an absence will be considered an excused absence for the purpose of determining eligibility for holiday pay.

If a holiday falls on a police officer's previously scheduled day off and circumstances necessitate a schedule change within sixty (60) days of the holiday resulting in the police officer working on that holiday due to the need to maintain necessary manpower levels, he shall be compensated with overtime pay at the rate of one and one-half (1-1/2) times the normal pay for the overtime hours worked.

10.6 PERSONAL LEAVE

A new full-time employee will be awarded sixteen (16) hours of personal leave completing the initial 30 calendar days of full-time service. A full-time employee who has successfully completed his probationary period is eligible to accrue for that first year and each year thereafter sixteen (16) hours off with pay as a personal leave. The time is to be taken at the election of the employee, subject to the approval of his Department Head. The employee is eligible to receive sixteen (16) hours of personal leave each calendar

year after his first anniversary, including the calendar year in which the employee's first anniversary occurs. Up to forty (40) hours of unused personal leave may be carried over from one calendar year to the next. Personal leave at no time shall be considered a benefit convertible to compensation during employment or at time of separation of employment.

SECTION 11 LEAVE SYSTEM

11.1 POLICY AND DEFINITIONS

1. Policy

Leave requests shall be subject to approval by the Department Head, and when applicable the City Administrator, in conformance with the rules established in this policy for each type of leave. Each employee must submit requests for leave in the City's time keeping system, or when applicable in writing. Department Head shall review appropriate records of all leaves requested and granted for the department's employees. The Department Head, shall approve the necessary information in the City's time keeping system.

Notwithstanding the foregoing, FMLA leave will be handled in accordance with section 11.7 Family and Medical Leave. In compliance with the federal Family and Medical Leave Act, the City will grant, under certain circumstances, up to twelve (12) weeks of unpaid leave in a calendar year.

Additionally, the City will grant leave related to service in the armed forces and injuries sustained in such service, pursuant to the requirements of Public Law 110-181 enacted by the United States Congress in 2008, and related regulations, as set forth below regarding Military Caregiver Leave and Qualifying Exigency Leave.

2. Definitions

Some of the following words and phrases are also defined in other pertinent places in this policy, but the definitions are repeated here for convenience. Any inconsistency between these definitions and the ones set forth elsewhere in the policy is unintended and shall be resolved in favor of the definitions set forth elsewhere. Further, any inconsistency between these definitions and legal requirements is unintended and shall be resolved in favor of applicable law.

"Child, Son or ***Daughter"*** means natural, adopted, step, and foster children, a legal ward or the child of an employee "in loco parentis" (standing in place of a parent), who is under the age of eighteen (18) years, or who is eighteen (18) years or older to the extent the person is incapable of caring for themselves due to mental or physical disability.

"Family Leave" means unpaid leave related to an event that ~~which~~ increases the size of the employee's family by birth, or adoption, or the acceptance of a child for foster care, or related to the serious illness of a parent.

"FMLA" means the Family and Medical Leave Act or leave permitted under the Family and Medical Leave Act.

"Jury Leave" means leave with pay granted when an employee is required to be absent from work for jury duty or as a subpoenaed trial witness.

"Leave of Absence" means leave without pay for reasons other than those covered by the Family and Medical Leave policy which are considered in the best interest of the City.

"Medical Leave" means unpaid leave related to a serious illness of the employee, or the employee's spouse, or the employee's child ~~or parent~~.

"Occupational Injury or ***Illness Leave Pay"*** means the 90 calendar day period in which the City supplements the difference in pay between state workers' compensation division pay and the employee's regular pay granted in the event of a bona fide occupational injury or illness incurred in the performance of an employee's city job, which necessitates absence from assigned duties.

"Parent" means a natural parent of the employee or an individual who stood in as a parent for the employee when the employee was a child.

"Sick Leave" means paid leave granted to the full-time employee for protection against endangering the employee's health and that of fellow workers.

"Spouse" means only the legally recognized marital partner of the employee.

"Unscheduled Leave" means the employee did not obtain the required verbal or written approval from the supervisor or Department Head by close of business on the employee's regular scheduled workday prior to the absence.

"Vacation" means paid leave granted to an employee to provide a period of recreation and change from day-to-day routine in order that they may be better able to meet the obligations of their work.

11.2 ELIGIBILITY FOR LEAVE

Eligibility requirements pertaining to the various types of leave are set forth in the pertinent sections of this policy. Any inconsistency between the stated eligibility requirements and applicable law is unintended and shall be resolved in favor of such law.

11.3 VACATION

1. Policy

Vacation is paid leave granted to an employee to provide a period of recreation and change from day to day routine in order that they may be better able to meet the obligations of their work.

2. Vacation Administration

a. A full time employee shall be eligible for Vacation as prescribed in section 3 below.

b. Any accrued Vacation benefit in excess of the permitted total carry over limit as prescribed below which is neither used nor reimbursed under the "Pay in Lieu" provision prior to 11:59 PM on December 31, shall be forfeited and shall not be carried forward to the subsequent year, except that upon employee request made on or before the immediately preceding November 30, the City Administrator may waive this restriction in writing when unusual employee circumstances exist and it is in the best interest of city operations.

YEARS OF SERVICE	PERMITTED TOTAL CARRY OVER
0 to 2 yrs. (80.08 hours annual accrual)	120.08 hours
3 to 4 yrs. (100.10 hours annual accrual)	140.10 hours
5 to 9 yrs. (120.12 hours annual accrual)	160.12 hours
10 to 14 yrs. (160.16 hours annual accrual)	200.16 hours
15 to 19 yrs. (180.18 hours annual accrual)	220.18 hours
20 yrs. or more (200.20 hours annual accrual)	240.20 hours

Years of service shall mean total years of continuous full-time employment with the City as of December 31 of the year from which vacation leave will be carried from.

c. If an employee is laid off, resigns, retires or is dismissed and the employee is eligible for Vacation which has not been taken, the employee will be entitled to a payment in lieu of the Vacation, except that new employees terminated before successfully completing their first probationary period shall not be paid for unused Vacation. If an employee dies and was eligible for Vacation which had not been taken, payment in lieu of Vacation shall be made to the legal representatives of the employee's estate or any other properly designated individual. To determine payment in lieu of vacation under this paragraph, the City generally determines the hourly rate by dividing the employee’s annual salary by 2,080 hours, the number of full-time hours worked per year.

d. An employee shall be granted a day off with pay for an authorized holiday occurring during the employee's Vacation.

e. An employee that uses two (2) or fewer days of accrued Sick Leave in a calendar year shall be granted an additional eight (8) hours of Vacation in the following year. A day of

sick leave shall be determined by the regularly scheduled hours of work per day of employee.

3. Eligibility for Vacation

An employee is eligible to utilize accrued Vacation after the first thirty (30) calendar days of full-time service with the City with the Department Head's approval.

Vacation accrues and is based upon years of continuous, full-time employment with the city. The rates of vacation accrual are:

a. Any employee who has completed less than three (3) years of employment will accrue 3.08 hours per full pay period worked.

b. Any employee who has completed three (3) years of employment but less than five (5) years of employment will accrue 3.85 hours per full pay period worked.

c. Any employee who has completed five (5) years of employment but less than ten (10) years of employment will accrue 4.62 hours per full pay period worked.

d. Any employee who has completed ten (10) years of employment but less than fifteen (15) years of employment will accrue 6.16 hours per full pay period worked.

e. Any employee who has completed fifteen (15) years of employment but less than twenty (20) years of employment will accrue 6.93 hours per full pay period worked.

d. Any employee who has completed twenty (20) or more years of employment will accrue 7.70 hours per full pay period worked.

Paid leave including Holidays, Vacation, Sick Leave, Occupational Injury or Illness Leave, Bereavement Leave, and certain types of Military Leave as set forth in Section 11.10 of this policy shall not be deemed to be an interruption to a full pay period of full-time service. Each full-time employee exceeding fourteen (14) consecutive calendar days of unpaid leave will cease to accrue Vacation for the duration of unpaid leave.

If determined to be in the best interest of the City in order to recruit for a department head position or other position as deemed appropriate by the City Administrator, the City may negotiate a higher rate of vacation accrual than that prescribed in the above schedule in an amount not to exceed 160.16 hours per year or 6.16 hours per pay period work. In such event there will not be an increase until the amount prescribed in the above schedule exceeds the initial negotiated amount.

4. Pay in Lieu of Vacation

Pay in lieu of vacation is bonus pay permitted for a city fiscal year maximum of eighty (80) hours, or such different maximum as may be established in annual budget appropriations. In no event shall an employee be allowed to qualify for an amount of pay-in-lieu such that it would reduce his/her total vacation balance to fewer than eighty (80) hours on the date on which payment of pay-in-lieu of vacation is made. Full-time employees who have not successfully completed their first probationary period are not eligible to apply for pay in lieu of vacation.

Requests for pay in lieu of vacation are subject to written approval by the City Administrator pursuant to the following guidelines:

a. Any employee who fails to submit a request to his Supervisor by May 15 of the current fiscal year or other deadline as established by the City Administrator, may receive pay in lieu of vacation during the current city fiscal year only in the event sufficient funds for such purpose are budgeted and available.

b. Normal payment of pay in lieu of vacation shall be made as soon as practical, but no later than the last pay period of the current fiscal year in which the request is timely made.

c. Pay in lieu of vacation may be made at times other than the normal time, upon written approval of the City Administrator.

d. Each hour of pay-in-lieu-of-vacation shall be equal to pay at the employee's hourly rate and shall be calculated by dividing base annual salary by 2,080 hours, the number of full-time hours worked per year.

5. Scheduling Vacation

Requests to schedule vacation shall be subject to approval by the Department Head, to assure adequate staffing. An employee who has commenced a scheduled vacation may not substitute sick leave or other forms of leave for any part of such scheduled vacation, except as otherwise approved by the Department Head in their discretion in extreme circumstances such as an injury or illness resulting in hospitalization.

11.4 SICK LEAVE

1. Policy

Sick Leave is paid leave granted to the full-time employee for protection against endangering the employee's health and that of fellow workers, and in certain other limited circumstances set forth below. It is meant to be a protection in case of need only.

Sick leave shall be granted to eligible employees under the following circumstances:

a. When the employee is injured or is too ill to perform their duties.

b. Medical or dental examinations or treatments for the employee. Each employee is expected to schedule routine medical and dental appointments on their own time to the extent possible; otherwise, Sick Leave time may be used with the advance permission of the Department Head or appointed designee(s).

c. Sick leave and reasonable accommodations shall be made available due to ~~P~~pregnancy, childbirth and recuperation ~~shall be treated as any other medical condition~~ in compliance with the Pregnancy Discrimination Act and the Pregnant Workers Fairness Act.

d. To provide care due to illness or injury to a member of the employee's household or immediate family, or for bonding within six months following the birth or adoption of a child, up to a maximum combined total of one hundred twenty (120) hours in a calendar year. “Immediate family” for the purposes of Sick Leave shall include the employee’s spouse, child, or parent.

e. *Other Parental Leave* - Pursuant to Section 105.271 RSMo, a foster or adoptive parent employed by the City may use accrued sick leave or any leave granted without pay to biological parents to take time off for purposes of arranging for the foster or adopted child’s placement or caring for the child after placement, and a stepparent as defined in 453.015 RSMo may use accrued sick leave or any leave granted without pay to biological parents to take time off to care for their stepchild.

2. Sick Leave Administration

a. Eligibility

i. An employee is eligible to utilize accrued Sick Leave after the first thirty (30) days of full-time service with the City with the Department Head’s approval, unless otherwise provided for by federal or state law.

ii. Each new full-time employee shall accrue five and six tenths (5.6) hours of Sick Leave for each full pay period of full-time service rendered to the City during the initial twelve (12) months of full-time service; and thereafter, will accrue three and seven tenths (3.7) hours of Sick Leave for each full pay period of full-time service rendered to the City. Paid leave including Holidays, Vacation, Sick Leave, Occupational Injury or Illness Leave, Bereavement Leave, and certain types of Military Leave as set forth in Section 11.10 of this policy shall not be deemed to be an interruption to a full pay period of full-time service. Each full-time employee

exceeding fourteen (14) consecutive calendar days of unpaid leave will cease to accrue Sick Leave for the duration of unpaid leave.

However, in no event shall any employee accrue more than one-thousand and fifty-six (1,056) hours of Sick Leave, and at no time shall Sick Leave be considered a benefit convertible to compensation during employment or at the time of separation from employment.

3. Charging of Sick Leave

Saturdays, Sundays and paid holidays occurring during an approved Sick Leave shall not be considered as days of Sick Leave, unless the employee was scheduled to work on the specific day. Employees using Sick Leave shall be considered to be working for purposes of determining Vacation eligibility.

4. Notice Required

Thirty days advance notice by the employee of the intent to utilize Sick Leave is required if the need for leave is foreseeable, including the extent known of the leave when known. If the event is to begin in less than thirty days from the date of notice, the employee must provide as much notice as practicable. The employee must also provide as prompt notice as possible of changes in dates of leave or anticipated duration. When utilizing Sick Leave only (and not also FMLA), the employee is responsible for providing notice to their Supervisor before work or within the first hour of the employee's normal workday on each day of absence, to the extent practicable. Failure to provide timely notice may be cause for denial of Sick Leave Pay for the period of time and result in discipline including termination.

5. Proof of Illness – Sick Leave

If an employee utilizes Sick Leave only (and not also FMLA) for more than three (3) consecutive days, they shall promptly provide proof of illness for the employee or his/her immediate family member as defined in the policy to their Department head or designated assignee. Additionally, a Department Head may request such proof for any days of non-FMLA sick leave. Failure to provide such proof of illness shall result in forfeiture of Sick Leave Pay and may result in discipline including termination.

6. Sick Leave Absence Reporting Required

Sick Leave absence shall be entered into the timekeeping software system on the first day of leave by the Department Head or appointee. An attempt will be made by the Department Head to ascertain when the employee may be expected to return to work.

7. False Claims

Claiming Sick Leave or benefits under any conditions other than those permitted by these regulations shall be cause for disciplinary action. Falsification of any written evidence pertaining to Sick Leave by any employee shall constitute grounds for dismissal and such employee shall be subject to all actions and remedies at law for recovery of all monies paid to such employee by reason of said false written evidence or affidavits.

8. Leave Without Justification

If it is determined that the illness or disability for which Sick Leave, FMLA, or Occupational Injury or Illness Leave is taken by an employee is feigned, such employee shall be subject to disciplinary action.

9. Donation to Sick Leave Bank

Any full-time employee who has completed one year of service and is no longer in probationary status, who is unable to do their job assignment because of illness or injury, and who anticipates that he will exhaust all accrued paid leave rights, may request a voluntary donation of unused Vacation or Compensatory Overtime Leave from other employees. Donated time shall not be applied until after the employee has exhausted all accrued paid leave. An employee may receive such donated leave for a maximum of seven hundred twenty (720) hours following their last day of paid time off.

Any full-time employee is eligible to voluntarily donate a portion of their accrued Vacation or Compensatory Overtime Leave to an employee requesting such donation. Donations shall only be made in four (4) hour increments. All donations shall be credited to the Sick Leave accrual bank of the recipient employee on an hour-for-hour basis.

The city shall provide the forms and maintain the necessary records to implement this donation program. The city shall not be responsible for the solicitation of such donations.

10. Status of Benefits While on Sick Leave

See section 11.14 for an explanation of benefit status regarding Sick Leave.

11.5 OCCUPATIONAL INJURY OR ILLNESS LEAVE

1. Policy

In the case of a bona fide occupational injury or illness incurred in the performance of an employee's city job, which necessitates absence from assigned duties, the policy of the City is that the state workers' compensation program shall be the primary source of income maintenance subject to occupational injury pay provisions outlined in this section.

2. Compensation

The employee who is injured on the job or has a job-related illness shall be placed on Occupational Injury or Illness Leave and receive occupational injury leave pay by the City in accordance with the provisions of this section. A full-time employee injured on the job shall receive occupational injury pay pursuant to this section 11.5 which is the full-time employee's regular compensation less any amount paid to the employee by the state workers' compensation program from the date of the injury.

Employees must report earnings received from the Missouri Workers Compensation Division to the Finance Director who shall ensure all appropriate adjustments are made to the employee's compensation due from the City. In no case shall an employee receive a combination of workers compensation payments and occupational injury pay which exceeds the employee's regular compensation. In the event this occurs, the employee must repay to the City any excess occupational injury pay received from the City.

3. Duration of Leave

The maximum duration of Occupational Injury and Illness leave pay from the City shall be 90 calendar days per injury. During this 90 calendar day period utilization of paid Sick Leave and Vacation will not be required. However, concurrent use of available Medical Leave is required during Occupational Injury and Illness Leave.

Occupational injury pay shall be discontinued upon the earliest occurrence of any of the following events:

a. the date such employee shall be determined to be permanently disabled pursuant to the State Workers' Compensation Law;
b. the date such employee is determined and certified to be able to return to work by the City's appointed physician, provided, however, if the employee is only allowed to return to restricted duty work and then needs to return to Occupational Injury and Illness Leave due to unavailability of such work or expiration of the time allowed for such work under this manual, they may use any balance remaining of the 90 calendar day Occupational Injury and Illness Leave period;
c. the elapse of 90 calendar days of utilized Occupational Injury and Illness Leave pay;
d. the employee submits a fraudulent report;
e. the employee fails to seek or take prescribed medication/treatments as directed by the attending physician;
f. the employee fails to submit to examination by the City's appointed physician at the time and place prescribed by the City; or
g. the employee refuses to sign a release of information authorizing the City to receive pertinent medical information from private care providers or hospitals.

4. Options Upon Expiration of Occupational Injury Leave

a. Utilization of Sick Leave, Medical Leave and Vacation benefits: after the expiration of the Occupational Injury and Illness Leave pay, the employee should consult the provisions of the Sick Leave, Medical Leave and Vacation, Personal Leave and Compensatory Leave sections of this policy. Any available paid leave must be used. In no case shall an employee receive a combination of City-paid leave and state workers' compensation earnings which exceeds the employee's regular compensation. In the event this occurs, the employee must repay to the City any excess pay received from the City.
b. Leave of absence: once other benefits are exhausted, until the employee is determined to be able to return to work or is determined to be permanently disabled by the state workers' compensation division the employee will be placed on leave of absence unless and until other circumstances cause the City to layoff or terminate the employee.
c. Pay: once paid leave benefits are exhausted, the employee shall only receive state-mandated workers compensation earnings.

5. Authorization to Return to Work

Prior to returning to work after Occupational Injury or Illness Leave, the employee must receive a release from the City's appointed physician authorizing the employee to return to duty. The release must state physical limitations, if any, the employee may have and the expected duration of such limitations. A full release must be provided to the City in order to release the employee to unrestricted duty (see section 11.6 for return to work with restrictions).

11.6 RESTRICTED WORK

1. Job-Related Injury or Illness

Employees sustaining job-related injury, illness or medical condition should apply to return to work as soon as possible when medically permissible. The employee should notify their supervisor as soon as possible of an ability to return to work subject to restrictions, with available information about such restrictions. Approval of restricted work status requires a written request from the employee, a written statement from the employee's physician outlining the restrictions and that the employee can reasonably be expected to return to unrestricted work, a written recommendation from employee's direct supervisor outlining the proposed scope of work, the approval of an employee's Department Head, and the approval of the City Administrator. Work assignments are subject to the work restrictions determined by the City's physician. Employees returning to work with restrictions will be placed on limited-duty status subject to subsection 4. Limited duty work assignments may be within an employee's current job classification, or in a different classification.

2. Non-Job-Related Injury or Illness

Employees seeking to return to work after non-job-related injury, illness or medical condition may be allowed to return to work on restricted work status, subject to subsection 4. The employee shall notify their supervisor of their ability to return to work subject to restrictions, with available information about such restrictions. Approval of restricted work status requires a written request from the employee, a written statement from the employee's physician outlining work restrictions and that the employee can reasonably be expected to return to unrestricted work, a written recommendation from employee's direct supervisor outlining the proposed scope of work, the approval of an employee's Department Head, and the approval of the City Administrator. Restricted work assignments may be within an employee's current job classification, or in a different classification.

3. Physical Activities

Employees on a restricted work schedule may not engage in physical recreational activities, secondary employment, or other activities outside of work if such activities conflict with any restriction placed upon the employee by the physician.

4. Duration of Restricted Work

Restricted duty assignments are temporary and shall be limited to two hundred seventy (270) calendar days per injury, illness or medical condition and shall conclude as soon as medically permissible. Restricted duty assignments will be assigned based upon availability of work and the employee's skills, knowledge and ability. Such assignments are meant to cover a period of recovery. If an employee needs a more permanent arrangement due to long-term disability, they should advise their supervisor that reasonable accommodations should be considered in accordance with the ADA for either their prior job or another open position for which they seek assignment (see section 9.3).

11.7 FAMILY AND MEDICAL LEAVE

1. Policy

Family and Medical Leave (FMLA) is a federally-mandated benefit which grants eligible employees up to twelve (12) weeks of unpaid leave during a calendar year for:

a. serious illness of the employee, their spouse, child or parent.
b. the birth of a son or daughter of the employee;
c. the placement of a son or daughter with the employee for adoption or foster care;
d. incapacity due to pregnancy, prenatal medical, or childbirth.

2. *Eligibility*

FMLA is available to employees who have been employed by the City for a minimum of twelve (12) calendar months during the seven (7) years prior to the leave and who have worked a minimum of 1,250 hours during the twelve months immediately preceding the leave.

The available time allowed under FMLA is 12 weeks in a calendar year. The twelve (12) weeks of leave will be determined as a total number of hours using the employee's regular work week, which will be determined as an average over a 28-day period for police department commissioned employees.

In the case where both spouses are city employees, they are jointly entitled to a total of twelve (12) weeks of Family Leave in a calendar years. Each are also individually entitled to twelve (12) weeks of Medical Leave in a calendar year~~for their own medical conditions~~, less any Family Leave taken by them individually.

3. *Notice of Intent to Utilize FMLA Required*

a. A thirty (30)-day written notice by the employee to the Department Head and the Office of the City Administrator of the intent to utilize FMLA is required if the need for leave is foreseeable. If the event is to begin in less than thirty (30) days from the date of notice, the employee must provide as much written notice as practicable to the Department Head and the Office of the City Administrator. The employee must also provide as prompt notice as possible of changes in dates of leave or anticipated duration.
b. Approval of FMLA is determined once a completed Certification of Health Form (WH-380-E or F) has been received and reviewed by the Office of the City Administrator, in accordance with applicable law.

4. *FMLA To Run Concurrent with Applicable Paid Leave*

An employee shall be required to utilize available paid Sick Leave concurrently with FMLA, if the event qualifies for paid Sick Leave under Section 11.4. When available paid Sick Leave is exhausted, the employee must then use available Vacation Leave concurrent with FMLA. When available Vacation Leave is exhausted, the employee must use any available Personal Days and/or Compensatory Overtime Leave, in that order.

5. *Medical Certificate Required*

The City requires a certification of the medical condition of the employee, spouse, child or parent from the health care provider when FMLA applies. The employee must obtain the

required form to be completed by the health care provider from the City Administrator's Office, in compliance with applicable law.

Prior to returning to work after a period of leave related to their own medical condition, such employee shall obtain a physician's release that indicates whether or not the employee is under any physical restriction, and the nature and anticipated duration of any such restriction.

6. Second and Third Opinion of Condition

If the City is not satisfied with the certification provided under subsection 6 above, a second opinion from a health care provider of the City's choice may be required regarding the employee, spouse, parent or child (as applicable) at the expense of the City. If the second opinion conflicts with the first one, the City may require a third opinion to be obtained from a provider jointly approved by the employee and the City at the expense of the City. The third opinion shall be binding on both the employee and the City.

7. Status of Benefits While on FMLA

See section 11.14 for an explanation of benefit status regarding FMLA.

8. Return to Work

Upon returning to work on or before the expiration of FMLA, the employee will be reinstated to his/her original job or to an equivalent position and at the same rate of pay, without loss of service credit.

9. Maternity

An employee shall be allowed reasonable ~~unpaid~~ break time (unpaid to the extent allowed by law) to express breast milk for her nursing child after the child's birth each time such employee ~~has~~ needs to do so, in a place other than a bathroom that is shielded from view and free from intrusion. There would not be a pay deduction for an exempt employee or for a break less than 20 minutes for any employee.

10. Other Parental Leave

Pursuant to Section 105.271 RSMo, a foster or adoptive parent employed by the City may use accrued sick leave or any leave granted without pay to biological parents to take time off for purposes of arranging for the foster or adopted child's placement or caring for the child after placement, and a stepparent as defined in 453.015 RSMo may use accrued sick leave or any leave granted without pay to biological parents to take time off to care for their stepchild.

11.8 BEREAVEMENT LEAVE

In the event of the death of an immediate family member, upon request a full-time employee shall be eligible for up to three (3) eight (8)-hour workdays of paid leave to plan and/or attend the funeral or similar function for that family member. The purpose of this leave is for bereavement, and pre-planning of and attendance at memorial and burial functions. Immediate family, for the purpose of this section, is defined as any person who was the spouse, child, grandchild, sibling, parent, father-in-law, mother-in-law, sibling-in-law, grandparent, or grandparent-in-law of the employee, or the functional equivalent thereof, or any person whose place of residence was in the employee's home. Bereavement Leave and their sick leave are separate and distinct. An employee's use of bereavement leave will not reduce his sick leave balance.

11.9 JURY LEAVE

An employee will be granted leave with pay when required to be absent from work for jury duty or as a subpoenaed trial witness. Compensation for such leave shall be limited to the difference between pay received for jury or witness duty and the employee's regular pay. For purposes of gaining credit for Vacation and Sick Leave, jury duty and time spent under witness subpoena shall be considered time worked. The employee must provide documentation of the absence from the appropriate source.

11.10 MILITARY LEAVE

1. Temporary Annual Training Periods

Military leave, without loss of time, pay, regular leave, impairment of efficiency rating, or any other right or benefits to which the employee would be entitled if the employee had not been activated, will be authorized for an employee who is a member or who may become a member of the National Guard, Air National Guard of Missouri, or any reserve component of the Armed Forces of the United States or other uniformed service as defined by federal law, for a period not to exceed one hundred twenty (120) hours in each federal fiscal year (October 1 September 30), when the employee is ordered to training with such component. Military leave shall begin with the employee's next regularly scheduled shift after the employee is called to training. An employee shall receive pay for any work shifts the employee would have been scheduled to work up to one hundred twenty (120) hours (RSMo 105.270; 38 USC 4301 et seq).

2. Emergency Active Duty

Military leave, without loss of time, pay, regular leave, impairment of efficiency rating, or any other right or benefits to which the employee would be entitled if the employee had not been activated, will be authorized for an employee who is a member or who may become a member of the National Guard, or Air National Guard of Missouri, or any reserve

component of the Armed Forces of the United States or other uniformed service as defined by federal law, not to exceed one hundred twenty (120) hours in each federal fiscal year (October 1 September 30), when the employee is called to active duty in emergencies declared by the President for short periods of time and for all periods of military service during which the employee is engaged in the performance of duty or training in the service of the state of Missouri at the call of the governor and as ordered by the adjutant general without regard to length of time (RSMo 105.270). Military leave shall begin with the employee's next regularly scheduled shift after the employee is called to such emergency duty. An employee shall receive pay for any work shifts the employee would have been scheduled to work up to one hundred twenty (120) hours (RSMo 105.270, 38 USC 4301 et seq).

3. Extended Active Duty Leave

a. Any employee who is or may become a member of the National Guard or Air National Guard of Missouri, or any reserve component of the Armed Forces of the United State or other uniformed service as defined by federal law and who is engaged in the performance of duty in the service of the United States under competent orders for an extended and indefinite period of time, shall be entitled to leave of absence from the employee's respective duties until such military service is completed without loss of position, seniority, accumulated leave, impairment of performance appraisal, pay status, work schedule including shift, working days and days off assigned at the time leave commences, and any other right or benefit to which the employee is entitled, and no retirement benefit shall be diminished or eliminated because of such service. (RSMo 41.942).

b. Military leave without loss of pay will be authorized for an employee who is a member or who may become a member of the National Guard, or Air National Guard of Missouri, or any reserve component of the Armed Forces of the United States or other uniformed service as defined by federal law, not to exceed one hundred twenty (120) hours in each federal fiscal year (October 1 September 30), when the employee is called to active duty for an extended and indefinite period of time.

c. A fulltime employee that has successfully completed the first probationary period and that is involuntarily called to active duty for other than training may qualify for military differential pay. Full-time employees qualifying for differential pay shall be compensated in an amount that represents the difference between the employee’s gross regular semi-monthly pay with the city and the employee's total military pay plus allowances, not including per diem and other expenses related to travel, if such military pay and allowances is less than the employee’s regular semi-monthly city pay. Such activated employees, including employees who would otherwise qualify for differential pay but do not qualify as a result of the employee’s total military pay being greater than

the employee's gross City pay, shall continue to receive all benefits to which the employee would be entitled had the employee not been activated not including life insurance that excludes coverage for military service or any other insurance with a military exclusion and subject to the lawful specific provisions of any insurance policy or pension or retirement plan. For police department commissioned employees, such semi-monthly pay shall be determined using a twenty-eight (28)-day month.

d. An activated employee shall be entitled to receive military differential pay and benefits as described in subsection 3 subparagraph c of this policy for a period not to exceed one (1) cumulative year of extended active duty status per one (1) year of active employment with the city. Further, an employee must complete at least a one (1) cumulative year of active employment with the city in between each one (1) year period of extended active duty status in which said payments and benefits are received. Said period of active employment with the city shall be calculated as the time between reinstatement to active employment status as provided in section 11.9(6) and the return to extended active duty status. If said period of active employment is less than one (1) year on an employee's return to extended active duty status, the employee will be eligible for said payments and benefits for a period equal to the number of full months worked as an active employee since reinstatement from the last period of extended active duty status.

e. The following authorized military operations are covered by this policy:

Operation Iraqi Freedom
Operation Enduring Freedom
Operation Joint Forge
Operation Noble Eagle
Operations Desert Falcon and Desert Focus
Operation Intrinsic Action
Operation Joint Guardian
Camp X-Ray

The City Administrator may approve additional operations that are similar to these and that Congress has authorized.

f. An employee who is a member of a reserve component shall be entitled to an authorized leave of absence to perform funeral honors duty under 38 USC 4316(e).

g. Military leave shall begin with the employee's next regularly scheduled shift after the employee is called to active duty. An employee who qualifies for military differential pay as described in subsection three (3), subparagraph c shall be entitled to said pay and benefits from the date that his active military status becomes effective or following one hundred twenty (120) hours of regular city pay for military leave as described in

subsections one (1), two (2), and three (3) b of this policy. An employee may not qualify to receive military differential pay as described in subsection three (3) subparagraph c until up to one hundred twenty (120) hours of regular city pay for military leave as described in subsections one (1), two (2), and three (3) b of this policy is exhausted. Military leave shall only be charged for hours that the employee would otherwise have been required to work had it not been for such military leave. The minimum charge shall be one hour and additional charges shall be in multiples of the minimum charge. (RSMo 105.270.4).

h. City health insurance plans are subject to 38 USC 4317. While an employee is on paid military leave, including differential pay as provided above, or if the employee would otherwise qualify for differential pay but does not qualify because his military pay exceeds his City pay, the City shall continue to pay health insurance premiums in the manner that it was making such payments for the employee prior to commencement of the leave.

i. City and State retirement plans are subject to 38 USC 4318.

3.5 Limit on Total Paid Military Leave

Total paid military leave for temporary annual training periods, emergency active duty periods, and extended active duty periods as described in subsections one (1), two (2), and three (3) b of this policy shall not exceed a combined one hundred twenty (120) hours in a federal fiscal year (October 1 – September 30).

4. Notice of Leave Request and Orders

The employee or an appropriate military officer shall provide as much advance notice of a leave request as practicable under the circumstances and to the extent possible shall provide the approximate beginning and ending dates of the period of such military service. A copy of orders should be provided as soon as practicable, if not already submitted with a request for annual, emergency, or extended active duty military leave. To substantiate any payment of salary is made covering the period of leave, as soon as practicable the employee shall file with the City Administrator an official order from the appropriate military authority as evidence of such duty, which order shall contain the certification of the employee's commanding officer of performance of duty in accordance with the terms of such order (RSMo 105.270.2).

5. Other Leave During Military Leave

An employee on military leave may elect to utilize vacation or similar leave during temporary training periods or emergency active duty periods in excess of one hundred

twenty (120) hours and extended active duty in excess of one (1) year. The employee may not be required to utilize vacation or similar leave for military service (38 USC Sec. 4316(d)).

6. Reinstatement

a. An employee who serves active duty in any branch of the Armed Forces for the United States or other uniformed service as defined by federal law for a period not to exceed five (5) years (unless such period is extended by law), not including service periods for temporary annual training and temporary emergency active duty, or who is a member of state military force or national guard ordered or called to active duty by the governor of that state, or a member of any reserve component of the U.S. armed forces, having given advance notice of such service or being excused by law from providing such notice, may request reinstatement to the employee's former position, or a comparable position with similar status, compensation and benefit entitlement, provided the employee has received an honorable discharge and is qualified to return to full-time duties. The time limits for returning to work are as follows (38 USC Sec. 4312(e), 40.490RSMo):

- Less than thirty-one (31) days service (or absence for purpose of an examination to determine fitness to perform service in the uniformed services regardless of duration): The employee must report for work by the beginning of the first regularly scheduled work period after the end of the calendar day of duty, plus time required to return home safely and an eight hour rest period. If this is impossible or unreasonable, then as soon as possible.
- Thirty-one (31) to one hundred eighty (180) days service: The employee must apply for reemployment no later than fourteen (14) days after completion of military service. If this is impossible or unreasonable through no fault of the employee, then as soon as possible.
- One hundred eighty -one (181) days of service or more: The employee must apply for reemployment no later than ninety (90) days after completion of military service.
- Service-connected injury or illness: Reporting or application deadlines are extended for up to two (2) years (or longer if required by law) for persons who are hospitalized or convalescing due to injury or illness incurred in or aggravated during the performance of service in the uniformed services.

The application for reinstatement shall be addressed to the City Administrator and shall include all documentation required by law. Reinstatement shall be evaluated in accordance with applicable law. A person who fails to report or apply for employment or reemployment within the appropriate period of time specified by law shall not automatically forfeit such person's entitlement to rights and benefits, but shall be subject to the conduct rules, established policy, and general practices of the City

pertaining to explanations and discipline with respect to absence from scheduled work. (38 USC 4312(e)(3)).

b. Any employee appointed to a vacancy created by the granting of military leave shall be designated as "military replacement" and the length of such appointment shall be limited to the length of military leave granted the incumbent.

7. Military Caregiver Leave

Military Caregiver Leave is unpaid leave available to employees who have been employed by the City for a minimum of twelve (12) calendar months during the seven years prior to the leave (or such other period as may be required by applicable law) and who have worked a minimum of one thousand two hundred fifty (1,250) hours during the twelve (12) months immediately preceding the leave and who are immediate family members or next of kin (i.e., closest blood relative) of a covered service member with a serious illness or injury incurred in the line of duty on active duty (including aggravation of preexisting injury or illness). A covered service member is an active member of the National Guard or Air National Guard of Missouri, or any reserve component of the Armed Forces of the United State or other uniformed service as defined by federal law, or a member who is on the temporary disability retired list, or a military member discharged or released under conditions other than dishonorable at any time during the five (5)-year period before commencement of leave who needs care due to undergoing medical treatment, recuperation, or therapy for such a serious injury or illness. Eligible employees are allowed up to twenty-six (26) workweeks of unpaid leave in a single twelve (12)-month period from the first day of such leave to care for the covered service member and their injury or illness. Military caregiver leave is an extension of Family Medical Leave. Combined Family Medical Leave and Military Caregiver Leave shall not exceed 26 workweeks per applicable twelve (12)-month period for a single employee. The twenty-six (26) weeks of leave will be determined as a total number of hours using the employee's regular work week, which will be determined as an average over a twenty-eight (28)-day period for police department commissioned employees. Appropriate certification is required.

If two employees are eligible for Military Caregiver Leave due to the same circumstances, they are only entitled to an aggregate of 26 weeks in a single 12-month period for such leave, either alone or in combination with Qualifying Exigency Leave.

8. Qualifying Exigency Leave

Employees may receive up to twelve (12) weeks of unpaid Qualifying Exigency Leave for qualifying exigencies arising out of the fact that the employee's spouse, son, daughter, or parent is on active military duty, or has been notified of an impending call or order to active duty, in support of a contingency operation as a military member in the National Guard or

Air National Guard of Missouri, or any reserve component of the Armed Forces of the United State or other uniformed service as defined by federal law.

Qualifying Exigency Leave is unpaid leave available to employees who have been employed by the City for a minimum of twelve (12) calendar months during the seven years prior to the leave and who have worked a minimum of one thousand two hundred fifty (1250) hours during the twelve (12) months immediately preceding the leave. The twelve (12) weeks of leave will be determined as a total number of hours using the employee's regular work week, which will be determined as an average over a twenty eight (28)-day period for police department commissioned employees. Qualifying Exigency Leave is subject to the procedural requirements of Family and Medical Leave and all such leave shall not exceed twelve (12) workweeks per calendar year for a single employee. Qualifying Exigencies include:

- Issues arising from a covered military member's short-notice deployment (i.e., less than seven (7) days of notice) for a period of seven (7) days from the date of notification;
- Military events and related activities, such as official ceremonies, programs, or events sponsored by the military or family support or assistance programs and informational briefings sponsored or promoted by the military, military service organizations, or the American or call to active duty status of a covered military member;
- Certain childcare and related activities arising from the active duty or call to active duty status of a covered military member, such as arranging for alternative childcare, providing childcare on a non-routine, urgent, immediate need basis, enrolling or transferring a child in a new school or day care facility, and attending certain meetings at a school or a day care facility if they are necessary due to circumstances arising from the active duty or call to active duty of the covered military member;
- Certain parental care for military member's parent who is incapable of self-care when care necessitated by the member's covered active duty, such as arranging for alternative care, providing immediate care, admitting or transferring the parent to a care facility, or attending meetings with staff at a care facility;
- Making or updating financial and legal arrangements to address a covered military member's absence;
- Attending counseling provided by someone other than a health care provider for oneself, the covered military member, or the child of the covered military member, due to the duty or call to active duty status of the covered military member;
- Taking up to one hundred twenty (120) hours of leave to spend time with a covered military member on short-term temporary, rest and recuperation leave during deployment;

- Attending to certain post-deployment activities, including attending arrival ceremonies, reintegration briefings and events, and other official ceremonies or programs sponsored by the military for a period of ninety (90) days following the termination of the covered military member's active duty status and to address issues arising from the death of a covered military member while on active duty status; other activities arising out of the covered military member's active duty status or call to active duty as may be agreed by the City and the employee.

- If two employees are eligible for Qualifying Exigency Leave due to the same circumstances, they are only entitled to an aggregate of 12 weeks in a single 12-month period for such leave. (See above for a combination of Qualifying Exigency Leave with Military Caregiver Leave).

9. United States Coast Guard Auxiliary Leave

Pursuant to 41.1005 RSMo, any employee who is or may become a member of the United States Coast Guard Auxiliary shall be granted a leave of absence from their respective duties, without loss of time, regular leave, or of any other rights or benefits to which the employee would otherwise be entitled, for periods during which the employee is engaged in the performance of United States Coast Guard or United States Coast Guard Auxiliary duties, including travel related to such duties, when authorized by the Director of Auxiliary (DIRAUX) or other appropriate United States Coast Guard authority. Leave for such service shall be for no more than fifteen working days in any calendar year, or without regard to the length of time when responding to a state or nationally declared emergency in the state of Missouri or upon any navigable waterway within or adjacent to the state of Missouri. The City shall not be obligated to pay a salary to the employee during this leave of absence. The City shall have the right to request that the employee be exempted from responding to a specific mission.

Notice – both the City and the employee must comply with legal requirements concerning notice of leave and related rights and responsibilities.

11.11 VOTING TIME

An employee eligible and registered to vote in any election held within this state or the State of Illinois or any primary election held in preparation for such election, on the day of such election, shall upon making a request prior to the day of the election, be entitled to leave from duty (if on duty) which would allow three hours of voting time between the time of opening and the time of closing of the polls.

This section shall not apply to a voter on the day of election if there are three (3) successive hours while the polls are open in which the employee is not on duty. Only the authorized Supervisor may specify the

three hours between the time of opening and closing of the polls during which an employee may be granted voting leave.

Generally, unless the employee provides proof of actually voting, said leave shall not exceed one hour of paid on duty time for each election day for non-exempt employees. Exceptions may be arranged with the approval of the Department Head. The employee may be required to show a current eligible voter registration card to his Supervisor prior to release for voting purposes; and no employee shall be granted time off with pay for voting who is not eligible to participate in a given election.

11.12 LEAVE OF ABSENCE

An employee may be granted leave of absence without pay for a period not to exceed sixty (60) days in any one calendar year for reasons considered in the best interest of the City. The granting of a leave of absence under this section is to be used for circumstances that are not covered by the Family and Medical Leave policy (See Sections 11.4 and 11.7). A leave of more than sixty (60) days may be granted only under exceptional circumstances. Leave of absence requires advance approval of the City Administrator.

11.13 PROCEDURE FOR REQUESTING LEAVE OF ABSENCE

An employee requesting leave of absence for any reason must fill out a request form thirty (30) days in advance of the date, when practical. In order to receive consideration, the requested leave shall be approved by the employee's Department Head and shall require the approval of the City Administrator.

11.14 BENEFITS WHILE ON LEAVE

1. Paid Leave

An employee on paid leave shall continue to receive all employee benefits including Sick Leave, Vacation, and paid holidays. Benefits, including retirement plan contributions, health, dental, life or any other insurance, shall be continued during paid leave, however, exceptions may apply for holiday bonus pay (see Section 10.5).

An employee on paid leave, for periods exceeding thirty (30) days, shall receive no salary adjustments or pay raises while on such leave.

2. Unpaid Leave Exceeding Fourteen (14) Consecutive Calendar Days

Unless otherwise provided for in this policy, an employee on unpaid leave exceeding fourteen (14) consecutive calendar days shall not accrue Sick Leave, Vacation, Personal Leave, or paid for holidays. Employer contributions under City retirement plans will cease during unpaid leave, unless otherwise provided in the plan documents.

Unless otherwise provided for in this policy, an employee exceeding fourteen (14) consecutive calendar days of unpaid leave shall be required to pay the entire cost of continuing employee benefits, including, but not limited to, health, dental, life and other insurances and fringe benefits throughout the remaining duration of the unpaid leave. Employee payments for such insurances and benefits are due on the same day as equivalent paycheck deductions for other employees. An employee on unpaid leave has a thirty (30)-day grace period in which to make premium payments. If payment(s) are not received by the City Finance Department within the grace period, group health, dental, life and other insurances and fringe benefits may be cancelled, provided the City will notify the employee in writing at least fifteen (15) days before the date that coverage(s) will lapse. Any amounts that have not been paid for coverage prior to such lapse shall remain due and owing from the employee.

3. Occupational Injury/Illness Leave

a. An employee who has suffered an occupational injury/illness shall continue to receive the employee benefits provided by the City to its employees while on paid leave. Should the employee exhaust paid leave or become placed on an unpaid leave of absence, the employee shall be responsible for the health, dental and life insurance premiums. The extension of the health and dental coverages is governed by the federal law, COBRA.

b. An employee receiving occupational injury pay may not receive Sick Leave pay or Vacation Leave Pay or receive Pay in Lieu of Vacation while also receiving occupational injury pay.

c. An employee on Occupational Injury or Illness Leave, for periods exceeding thirty (30) days, or on a leave of absence, shall receive no salary adjustments or pay raises while on such leave.

4. Family and Medical Leave (FMLA)

During FMLA, the employee shall remain eligible for employee group benefits. The employee is responsible for the payment of the employee's normal share of the City's group medical insurance coverages during such approved leave. The employee is responsible for the payment of any voluntary individual insurance premiums in order for these coverages to be continued during the leave. Benefits under the City LAGERS retirement plan are described in the plan documents and related statutes. The rules under subsections 1 and 2 of this section 11.14 apply.

11.15 UNPAID LEAVE FOR VICTIMS OF DOMESTIC OR SEXUAL VIOLENCE

1. As used in this section 11.15, the following terms mean:

(1) **“Abuse”**, the same meaning as in section 210.110 RSMo;

(2) **“Domestic violence”**, the same meaning as in section 455.010 RSMo;

(3) **“**Employee benefit plan” or “plan”, an employee welfare benefit plan or an employee pension benefit plan or a plan that is both an employee welfare benefit plan and an employee pension benefit plan;

(4) **“Employment benefits”**, all benefits provided or made available to employees, including life insurance, health insurance, disability insurance, sick leave, annual leave, educational benefits, and pensions, regardless of whether such benefits are provided by a practice or written policy of an employer or through an “employee benefit plan”;

(5) **“Family or household member”**, for employees with a family or household member who is a victim of domestic or sexual violence, a spouse, parent, son, daughter, other person related by blood or by present or prior marriage, other person who shares a relationship through a son or daughter, and persons jointly residing in the same household;

(6) **“Parent”**, the biological parent of an employee or an individual who stood in loco parentis to an employee when the employee was a son or daughter who is a victim of domestic or sexual violence;

(7) **“Qualified individual”**, an applicant or employee who, but for being a victim of domestic or sexual violence or with a family or household member who is a victim of domestic or sexual violence, can perform the essential functions of the employment position that such individual holds or desires;

(8) **“Reasonable safety accommodation”**, an adjustment to a job structure, workplace facility, or work requirement, including a transfer, reassignment, modified schedule, leave, a changed telephone number or seating assignment, installation of a lock, implementation of a safety procedure, or assistance in documenting domestic violence that occurs at the workplace or in work-related settings, in response to actual or threatened domestic violence. Any exigent circumstances or danger facing the employee or his or her family or household member shall be considered in determining whether the accommodation is reasonable;

(9) **"Reduced work schedule"**, a work schedule that reduces the usual number of hours per workweek, or hours per workday, of an employee;

(10) **"Sexual violence"**, a sexual assault, as defined in section 455.010 RSMo, and trafficking for the purposes of sexual exploitation as described in section 566.209 RSMo;

(11) **"Son or daughter"**, a biological, adopted, or foster child, a stepchild, a legal ward, or a child of a person standing in loco parentis, who is under eighteen years of age, or is eighteen years of age or older and incapable of self-care because of a mental or physical disability and is a victim of domestic or sexual violence;

(12) **"Undue hardship"**, significant difficulty or expense, when considered in light of the nature and cost of the reasonable safety accommodation;

(13) **"Victim of domestic or sexual violence"**, an individual who has been subjected to domestic violence, sexual violence, or abuse;

(14) **"Victim services organization",** a nonprofit, nongovernmental organization that provides assistance to victims of domestic violence or to advocates for such victims, including a rape crisis center, a child advocacy center, an organization carrying out a domestic violence program, an organization operating a shelter or providing counseling services, or a legal services organization or other organization providing assistance through the legal process;

2. An employee who is a victim of domestic or sexual violence or who has a family or household member who is a victim of domestic or sexual violence whose interests are not adverse to the employee as it relates to the domestic or sexual violence may take unpaid leave from work pursuant to this section 11.15 to address such violence by:

(1) Seeking medical attention for, or recovering from, physical or psychological injuries caused by domestic or sexual violence to the employee or the employee's family or household member;

(2) Obtaining services from a victim services organization for the employee or the employee's family or household member;

(3) Obtaining psychological or other counseling for the employee or the employee's family or household member;

(4) Participating in safety planning, temporarily or permanently relocating, or taking other actions to increase the safety of the employee or the employee's family or household member from future domestic or sexual violence or to ensure economic security; or

(5) Seeking legal assistance or remedies to ensure the health and safety of the employee or the employee's family or household member, including preparing for or participating in any civil or criminal legal proceeding related to or derived from domestic or sexual violence.

3. Subject to 11.15.6, an employee shall be entitled to a total of two workweeks of unpaid leave under 11.15.2 during any twelve-month period. For purposes of this subsection "workweek" shall mean an individual employee's standard workweek. The total number of workweeks to which an employee is entitled shall not decrease during the relevant twelve-month period. An employee shall not be entitled to take unpaid leave that exceeds the amount of unpaid leave time allowed under the federal Family and Medical Leave Act of 1993 (29 U.S.C. 2601 et seq.). If leave under this section 11.15 also qualifies for FMLA leave, both forms of leave shall be used concurrently.

4. Leave described in 11.15.2-11.15.3 may be taken intermittently or on a reduced work schedule.

5. The employee shall provide at least forty-eight hours' advance notice of the employee's intention to take leave under 11.15.2 to the Office of the City Administrator, unless providing such notice is not practicable. When an unscheduled absence occurs, the City will not take any action against the employee if the employee, upon request of the City Administrator and within a reasonable period after the absence, provides certification under 11.15.6.

6. The City Administrator may require the employee to provide certification that the employee or the employee's family or household member is a victim of domestic or sexual violence and that the leave is for one of the purposes enumerated in 11.15.2. The employee shall provide such certification to the office of the City Administrator within a reasonable period after the City requests certification.

7. An employee may satisfy the certification requirement of 11.15.6 by providing a sworn statement of the employee and the following:

(1) Documentation from an employee, agent, or volunteer of a victim services organization, an attorney, a member of the clergy, or a medical or other professional from whom the employee or the employee's family or household member has sought assistance in addressing domestic violence or sexual violence and the effects of such violence;

(2) A police or court record; or

(3) Other corroborating evidence.

8. All information provided to the City pursuant to 11.15.7 including a statement of the employee or any other documentation, record, or corroborating evidence, and the fact that the employee has requested or obtained leave pursuant to this section 11.15, shall be retained in the strictest confidence by the City, except to the extent that disclosure is requested or consented to in writing by the employee or otherwise required by applicable federal or state law.

9. Any employee who takes leave under this section 11.15 shall be entitled, on return from such leave, to be restored to the position of employment held by the employee when the leave commenced or an equivalent position with equivalent employment benefits, pay, and other terms and conditions of employment.

10. The taking of leave under this section 11.15 shall not result in the loss of any employment benefit accrued prior to the date on which the leave commenced. Nothing in this section 11.15 shall be construed to entitle any restored employee to the accrual of any seniority or employment benefits during any period of leave or any right, benefit, or position of employment other than any right, benefit, or position to which the employee would have been entitled had the employee not taken the leave. Nothing in this section 11.15 shall be construed to prohibit the City from requiring an employee on leave under this section 11.5 to report periodically to the office of the City Administrator on the status and intention of the employee to return to work.

11. Upon the request of the City Administrator, an employee requesting a reasonable safety accommodation pursuant to this section 11.15, shall provide a written statement signed by

the employee or an individual acting on the employee's behalf, certifying that the reasonable safety accommodation is for a purpose authorized under this section 11.15.

12. During any period that an employee takes leave under this section 11.15, the City shall maintain coverage for the employee and any family or household member under any group health plan for the duration of such leave at the level and under the conditions coverage would have been provided if the employee had continued in employment continuously for the duration of such leave.

13. The City may recover from the employee the premium that the City paid for maintaining coverage for the employee and the employee's family or household member under such group health plan during any period of leave under this section 11.15 if the employee fails to return from leave after the period of leave to which the employee is entitled has expired for a reason other than the continuation, recurrence, or onset of domestic violence, sexual violence, abuse, a sexual assault, or human trafficking that entitled the employee to leave under this section 11.15, or other circumstances beyond the control of the employee.

14. The City may require an employee who claims that the employee is unable to return to work because of a reason described in 11.15.13 to provide, within a reasonable period after making the claim, certification to the employer that the employee is unable to return to work because of that reason by providing the employer with:

(1) A sworn statement of the employee;

(2) Documentation from an employee, agent, or volunteer of a victim services organization, an attorney, a member of the clergy, or a medical or other professional from whom the employee has sought assistance in addressing domestic or sexual violence and the effects of such violence;

(3) A police or court record; or

(4) Other corroborating evidence.

15. All information provided to the City pursuant to 11.15.14 including a statement of the employee or any other documentation, record, or corroborating evidence, and the fact that the employee is not returning to work because of a reason described in 11.15.13 shall be

retained in the strictest confidence by the City, except to the extent that disclosure is requested or consented to in writing by the employee, or otherwise required by applicable federal or state law.

16. The City shall make reasonable safety accommodations, in a timely manner, to the known limitations resulting from circumstances relating to being a victim of domestic or sexual violence or a family or household member being a victim of domestic or sexual violence of an otherwise qualified individual:

(1) Who is:

(a) An employee of the employer;

and

(2) Who is:

(a) A victim of domestic or sexual violence; or

(b) With a family or household member who is a victim of domestic or sexual violence whose interests are not adverse to the individual in this subdivision as it relates to the domestic violence, sexual violence, or abuse;

17. 11.15.16 shall not apply if the accommodation would impose an undue hardship on the operation of the City.

18. Nothing in this section 11.15 shall be construed to supersede any provision of any federal, state, or local law, collective bargaining agreement, or employment benefits program or plan that provides:

(1) Greater leave benefits for victims of domestic or sexual violence than the rights established hereunder; or

(2) Leave benefits for a larger group of victims of domestic or sexual violence, as defined in such law, agreement, program, or plan, than the victims of domestic or sexual violence covered under this section 11.15.

State law reference: Sections 285.625 et seq RSMO

SECTION 12 COUNSELING AND DISCIPLINE

12.1 COMMUNICATION OF RULES

Every effort will be made by all Supervisors to counsel employees on the purpose and intent of various rules and regulations in order to encourage genuine cooperation and corrective action.

12.2 PROGRESSIVE COUNSELING AND DISCIPLINARY STEPS

The following steps shall be followed with regard to disciplinary actions:

a. Minor violations of city rules and regulations, and departmental rules and regulations established by the Department Head as provided for herein, shall be explained to the employee by his Supervisor in a counseling session, indicating the corrective steps to be taken to prevent recurring violations.

b. Step "a" may be repeated by the Supervisor for a second violation, representing a warning that any further reoccurrence of the rule infraction will result in more severe discipline, up to and including termination. At the time this oral reprimand is given, it will be clearly explained to the employee that a written record of the oral reprimand shall be kept by the Supervisor.

c. A written reprimand shall be issued by a Supervisor upon the occurrence of a violation of these or departmental personnel rules and regulations warranting such action. The report by the Supervisor shall indicate, but shall not be limited to: the date, time of the infraction of the rule involved, prior record of similar violations and efforts made by the Supervisor to correct the problem indicated. Written reprimands shall become part of the employee's departmental personnel file after the employee is notified and the infraction is reviewed with, and signed by, the employee or a witness upon the employee's refusal to sign.

d. A suspension is a temporary separation from the city service for disciplinary purposes. An employee may be suspended by his Department Head without pay for a length of time determined appropriate, but not to exceed thirty working days. The Department Head shall provide a written copy of the notice of suspension to the affected employee at the time of the suspension. The City Administrator shall be furnished with a written statement setting forth the cause of such suspension. Suspensions may be effectuated immediately but they may be scheduled and administered at the convenience of the City.

e. A demotion is a reduction in rank or classification. An employee may be demoted by his department head for disciplinary purposes. Such demotion shall cause the employee’s salary to be reduced in accordance with section 5.4 (2). A demotion may only be effected when

there is a lower classification available and a position authorized in the same department for which the employee is qualified.

f. A Department Head may terminate an employee in his department. The Department Head must give the employee a written notice of termination at the time of dismissal including the reasons therefore and his right of appeal and must furnish a copy of the notice to the City Administrator. A terminated employee will be given the opportunity to respond to the notice of termination.

The first offense of any rule violations may necessitate the by-pass of one or more steps outlined in the disciplinary procedure described above. Any written reprimand issued to an employee under Step "c", without the implementation of the two preceding steps, will require documentation to support the seriousness of the offense and the propriety of the action taken by the Supervisor. All such written reprimands will require the approval of the Department Head prior to issuance to the employee by the Supervisor.

12.3 INVESTIGATION AND REPORT

Reported violations of a city or departmental rule or regulation will be investigated by the Department Head. The investigation will be made with the purpose of ascertaining the facts of the alleged offense. Leave with pay may be required by the Department Head for investigatory periods, but such paid leave shall not exceed five days without City Administrator approval. The Department Head shall keep the City Administrator informed of all such investigations and decisions. The City Administrator may require additional disciplinary action. Investigations of matters concerning sworn employees shall be conducted pursuant to the Police Department SOP and Section 502.590 RSMo.

12.4 GROUNDS FOR DISCIPLINARY ACTION

Any action which is a direct hindrance to the effective performance of the municipal government shall be grounds for disciplinary action against any employee of the City. Whenever and wherever people work together, people must conform to standards of reasonable conduct to maintain an orderly, efficient atmosphere. Accordingly, a city employee may be disciplined up to and including dismissal in order to protect the rights of others and to encourage correct conduct and cooperation. The foregoing does not restrict employees from exercising their legal rights and employees shall not be disciplined, demoted, dismissed, transferred, or placed on status resulting in economic loss as a result of the assertion of their constitutional rights in any judicial proceeding, unless the employee admits to wrong-doing.

SECTION 13 PERSONNEL DISCIPLINARY RECONSIDERATION AND APPEALS

13.1 RECONSIDERATION OF DISCIPLINARY ACTION BY THE CITY ADMINISTRATOR

a. Any sworn employee and any full time regular (i.e., not temporary or seasonal) employee may ask the City Administrator for a reconsideration of any disciplinary action taken by a Department Head involving demotion, dismissal, transfer, placement on a status, or other action involving economic loss:

   The employee's request shall be in writing and presented within seven (7) calendar days of the disciplinary action. The request shall fully set out the employee's basis for seeking reconsideration and all facts pertinent to the matter including any previous written communication on the issue.

b. After receipt of the request and after notice to the Department Head and affected employee, the City Administrator shall meet with the employee and the employee may present witnesses or documents to support their position; technical rules of evidence shall not apply. The Department Head shall also be given the opportunity to present witnesses and documents at the meeting supporting the disciplinary action taken. The employee may be represented by a representative of his choosing at the meeting. The City Attorney may represent the Department at the meeting. The City Administrator shall determine the parameters of the meeting, in their discretion.

c. The City Administrator shall render a written decision to the employee, within seven (7) calendar days of the conclusion of the meeting.

13.2 SUBMISSION OF EMPLOYEE APPEAL TO THE PERSONNEL APPEALS BOARD

a. Form of Request for An Appeal

If the employee is dissatisfied with the City Administrator's decision made pursuant to Section 13.1 or a Department Head or other employee is dissatisfied with the City Administrator’s direct disciplinary action against them (unless otherwise provided by law, i.e., Section 106.273 RSMo subject to constitutional limitations such as Mo Const Art 6, Sec 22) the employee may submit a request in writing for an appeal to the Personnel Appeals Board ("the Board"). Such request must be addressed to the "Personnel Appeals Board Chairperson" and delivered to the City Clerk at the Creve Coeur Government Center not later than seven (7) calendar days after the City Administrator issues and the employee

receives a written decision pursuant to Section 13.1 or notice of direct disciplinary action from the City Administrator.

b. Receipt of Request for An Appeal from Employee ("Appellant")

Upon receipt of a written request for an appeal, the City Clerk shall forward a copy of the request to the Chairperson of the Personnel Appeals Board. After receipt from the City Clerk, the Chairperson of the Board shall send an acknowledgment of the receipt of the request to the Appellant, and to the Appellant's attorney of record, if any. A copy of such acknowledgment shall be forwarded by the Chairperson to the City Administrator and, if applicable, the Department Head.

The Chairperson shall, at the same time as the acknowledgment is sent to the Appellant as required above, forward a copy of the request for appeal to the members of the Personnel Appeals Board and advise them of the receipt of the request and the need to establish dates for a procedural meeting and for a hearing on the appeal.

c. Assignment of Legal Counsel

The Chairperson may at any time request the City Council to hire legal counsel for the Board. The purpose of legal counsel is to assist the Board with the conduct of hearings and the drafting of decisions, including any findings of fact and conclusions of law, to the extent required by Chapter 536 RSMo.

13.3 PROCEDURAL REVIEW MEETING

a. The Chairperson may call a Procedural Review Meeting of the Board. The purpose of the Procedural Review Meeting is to review Board procedures for the conduct of the hearing and the preparation of the decision. The Board may consult with legal counsel, if appointed. A Procedural Meeting is an open meeting under the Open Meetings and Records Policy of the City of Creve Coeur in accordance with the laws of the State of Missouri.
b. During a Procedural Review Meeting, reference should not be made by any Board member or other party to the underlying facts of a specific appeal before the Board. Further, no discussion should be held by any members of the Board concerning the particular facts of the case relating to an appeal. No access to personnel files shall be granted to the members of the Board during a procedural review meeting. All evidence is to be presented later at the hearing.

13.4 HEARING

On an employee disciplinary appeal properly filed with the Board, the Personnel Appeals Board shall conduct a reconsideration and rehearing in accordance with the provisions of Section 590.502 RSMo,

when applicable, and Chapter 536 RSMo and the City of Creve Coeur Personnel Policy and Procedures Manual, and shall render a written decision, including a findings of fact and conclusions of law to the extent required by law.

a. Notification of Hearing Date

The Chairperson of the Board shall notify the Appellant, or the Appellant's attorney of record, in writing, by certified mail, of the date, time and place of the hearing. The City Administrator and Department Head shall also receive notice of the hearing. In accordance with Chapter 536 RSMo, a minimum of a ten (10)-day notice shall be given prior to the hearing. The hearing notice shall comply in all respects with the requirements of Chapter 536 RSMo. Notice of the hearing shall also be posted on the main bulletin board at the Creve Coeur Government Center.

The employee shall have had the opportunity to access and review documents in the City's possession that are a basis for the disciplinary action, at least seven (7) days in advance of the hearing.

b. Board Hearing Procedure

1. Consistent with Section 590.502 when applicable and Chapter 536 RSMo, the hearing shall be conducted in the manner most conducive to determination of the truth and the Board shall not be bound by technical rules of evidence. However, fundamental rules of evidence are to be followed -- hearsay testimony or similar evidence, such as unsigned or unverified documents, do not qualify as competent and substantial evidence. The Board's decision is to be supported by substantial evidence on the whole record. Decisions made by the Board shall not be invalidated by any informality in the proceedings. The Chairperson shall preside over the hearing, subject to direction by a majority of those members that are present. However, with approval of the Board, the Chairperson may assign legal counsel to preside over the hearing as a hearing officer subject to direction by a majority of those members that are present.

2. Hearings before the Personnel Appeals Board shall be closed meetings under the Open Meetings and Records Policy of the City of Creve Coeur as provided for by the laws of the State of Missouri. Notice of the hearing must be posted in conformance with the above stated policy. The Board shall take a vote closing the meeting for the hearing at the start. The transcript shall reflect this action and serve as the minutes.

3. The Board shall determine the relevancy, weight and credibility of testimony and evidence. The Board shall base its findings on the preponderance of evidence.

4. Each party shall be permitted to make an opening statement and closing argument. The City shall first present its witnesses and evidence (exhibits) in support of the charges and the appellant will then present his witnesses and evidence (exhibits) in defense. The City may respond with further evidence and the appellant may likewise reply. The Board may ask questions relevant to the matter while each witness testifies.

5. Each party will be allowed to call and examine and cross-examine witnesses. A witness waiting to testify is to remain outside of the hearing room until called by the Board to testify.

6. Both the City and the appellant may be represented by legal counsel or other representative of their choice.

7. The Board may request witnesses and/or production of other records or material evidence not previously introduced.

8. A court stenographer shall be present to transcribe a complete record of the hearing and to give an oath to witnesses giving testimony. Such record shall be provided to the employee or their attorney on written request. The entire record of the hearing shall remain confidential and shall not be subject to disclosure under chapter 610 RSMo, except by lawful subpoena, court order or other legally sufficient authorization.

9. The Board reserves the right to recess the hearing and reconvene at a later time and/or date. If this is done, the Board shall announce, during the hearing, that the hearing is recessed to a specific time and date. An additional posting of the reconvened hearing shall be made.

10. The Board shall meet in closed session (without any other person present other than legal counsel to the Board) to deliberate and to come to a decision concerning the matter. A majority of the Board members attending the entire hearing and/or reviewing the transcript and evidence must agree on the decision in the matter.

11. Decisions of the Board shall be in writing and shall be issued within forty-five (45) days after conclusion of the hearing. The decision shall include findings of fact and conclusions of law to the extent required by law and shall include a concise statement upon each issue in the case. The decision shall set forth the charges, if any, the Board finds to be sustained and the reasons therefore. A copy of the written decision and findings and conclusions shall be forward to the Appellant or the Appellant's attorney of record and to the City Administrator, with notice of right to appeal if any. The decision of the Personnel Appeals Board shall be final and binding on the City.

c. Procedures to be followed in accordance with Chapter 536 RSMo

1. All witnesses giving oral testimony shall be sworn.

2. Each party shall have the right to call and examine witnesses, to introduce exhibits, to cross-examine opposing witnesses on any matter relevant to the issues even though that matter was not the subject of the direct examination, to impeach or discredit any witness regardless of which party first called him to testify, and to rebut the evidence against him.

3. A party who does not testify in his own behalf may be called and examined as if under cross-examination, unless otherwise prohibited by law (i.e., Section 590.502 RSMo).

4. The Board shall cause hearings before it to be suitably recorded and preserved by a certified court stenographer attending the hearing. The attendance will be paid for by the City. The transcript will be transcribed on request of the City, the Appellant, or the Board. The City will pay transcription costs. Minutes of the hearing will be kept for the Board's file.

5. Records and documents of the City may be offered in evidence by reference.

6. The Board shall take notice of all matters of which the courts take judicial notice (of undisputed facts of common knowledge which are universally accepted to be true) and, if these matters are relied upon in the Board's decision, the Board is to notify the appellant and allow the opportunity to contest such matters.

7. Evidence to which an objection is sustained by the Chairperson shall, at the request of the party seeking to introduce the same, or at the instance of the Board, nevertheless be heard and preserved in the record together with the cross-examination and the rebuttal.

8. Any evidence received without objection which has probative value (i.e., proving or tending to prove the point) shall be considered by the Board along with the other evidence in the case.

9. Copies of writings, documents and records shall be admissible without proof that the original thereof cannot be produced, if it shall appear by testimony or otherwise that the copy offered is a true copy of the original. If an objection to the evidence is sustained by the Chairperson, the party shall be given an opportunity by the Board to present the original evidence.

10. Any writing or record, whether in the form of an entry in a book or otherwise, made as a memorandum or record of an act, transaction, occurrence or event, shall be admissible

as evidence of the act, transaction, occurrence or event, if it shall appear that it was made in the regular course of business, and that it was the regular course of business to make such memorandum or record at the time of such act, transaction, occurrence or event or within a reasonable time thereafter.

11. Statistical examinations, audits, studies, surveys, interviews with many people, including long complicated accounts, or a large number of figures, etc., may be admitted upon the testimony of a witness present at the hearing who testifies to the accuracy of the information.

12. Any party desiring to introduce an affidavit in evidence at a hearing may serve notice on all other parties including copies of the affidavit. An objection may be filed by the other party. If notice was received less than eight days prior to the hearing, the objection may be filed at the hearing.

13.5 BOARD ACTIONS DURING PENDING INVESTIGATIONS

Pursuant to Section 590.502 RSMo, the Board shall consider petitions for extension of time to complete an investigation regarding a sworn employee, or the tolling of such an investigation pending a criminal investigation regarding the same alleged conduct. Notice and hearing shall be provided in accordance with Section 590.502. The Board shall also consider requests for protective order pursuant to Section 590.502.

SECTION 14 EMPLOYEE GRIEVANCE PROCEDURE

14.1 POLICY

It shall be the policy of the City to ensure fair and just treatment of employee concerns; to foster good communications between personnel to ensure employee problems are recognized and reviewed in a timely manner; and to provide a procedure to handle concerns expressed by the employee. Employees shall receive the opportunity to discuss a complaint in order to find a mutually satisfactory solution as rapidly as possible. Any employee may utilize the grievance procedure. An employee utilizing the procedure in the presentation of grievances at any supervisory level is assured of freedom from undue restraint, unreasonable interference, or unlawful discrimination or reprisal. Employees shall not be afforded nor have legal counsel present at any level of the grievance procedure; however, a co-worker may be present as a witness.

14.2 DEFINITION

A "***grievance"*** is a complaint by an employee concerning the interpretation or the application of city personnel policies, departmental rules and regulations, his working conditions, and his relationship with co-workers(s) or Supervisor(s).

14.3 EXCLUSIONS

An employee may not submit a grievance challenging the City's right to direct employees, or determine the methods, means and resources to conduct city operations. An employee seeking to appeal a disciplinary action shall follow the procedure outlined in Section 13 of this manual.

14.4 PROCEDURE TO RESOLVE COMPLAINTS

a. An employee who has a grievance shall present the grievance in writing by submitting form CA-2009-1 in a timely manner to the employee's immediate Supervisor. The immediate Supervisor shall attempt to resolve the matter promptly and fairly. Nothing in this policy shall prevent an employee from first attempting to resolve a complaint by informally meeting with his or her immediate supervisor without presenting written grievance (form CA-2009-1).

b. If the immediate supervisor or a supervisor in the employee's chain of command receives a written grievance and is unable or fails to settle the issue, the supervisor shall forward form CA-2009-1 within seven (7) calendar days to the next supervisory level, which may be the Department Head. The employee may, in rare circumstances when the situation warrants, by-pass the immediate Supervisor and present his concern directly to the Department Head. By-passing the immediate Supervisor is not encouraged as the policy of the City. If the

employee is not satisfied with the decision at this level, he may appeal to the Department Head within seven (7) calendar days of the decision.

c. The Department Head shall review the written report and shall confer with the employee and the Supervisor(s) involved before rendering a decision. Such decision shall be in writing and shall be delivered to the employee within fourteen (14) calendar days, exclusive of scheduled leaves or illness, of the date on which the written appeal was received by the Department Head. The Department Head shall audio record the conference. The Department Head's audio recording shall be the official recording of the conference.

d. If appeal to the Department Head fails to settle the grievance, the employee may, within seven (7) calendar days of receipt of the Department Head's decision on the appeal, submit an appeal in writing to the City Administrator. Upon receipt of such appeal, the City Administrator shall review all facts pertinent and within fourteen (14) calendar days schedule and conduct a conference on matters pertinent to the grievance. The decision of the City Administrator shall be in writing and shall be delivered to the employee within seven (7) calendar days after the conference. The decision of the City Administrator shall be final with regard to grievance appeals.

e. All grievances (form CA-2009-1) shall be forwarded through the chain of command to the Office of the City Administrator where a grievance file shall be maintained and reviewed annually.

SECTION 15 FRINGE BENEFITS

15.1 GENERAL DESCRIPTION

The following benefits are currently made available to regular, full-time employees of the City. The City reserves the right to alter, adjust or modify the benefits offered to its employees including the levels and availability of coverage based on budgetary considerations and costs of the benefit to the City:

a. group medical and dental insurance;

b. life insurance, accidental death and dismemberment insurance and disability insurance;

c. LAGERS defined benefit retirement plan and deferred compensation plans;

d. participation in employee development or training programs including tuition reimbursement;

e. paid holidays;

f. annual vacation;

g. sick leave;

h. other benefits as approved by the City Council.

15.2 RETIREMENT PLANS AND DEFERRED COMPENSATION

The City sponsors several different retirement and deferred compensation plans. Additional information is available from the Office of the City Administrator.

15.3 INSURANCE COVERAGE UPON RETIREMENT

Whenever an employee meets the retirement conditions under the applicable City retirement plan[1], the employee may elect to retire and receive applicable benefits.

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[1] Under the LAGERS statutory plan, **Normal Retirement Age** is age sixty (60) years, except fifty-five (55) years for police officers. **Early Retirement Age** means retirement after five years of credited service and within five (5) years of minimum service retirement age, see 700.670 RSMo.

[2]For purposes of this section 15.3, date of hire refers to most recent date of hire for those who have had a separation of service.

[3]A spousal health insurance surcharge may apply (reference section 15.12).

In addition, the City makes available insurance to a retired employee and qualified dependent(s), subject to the terms of the applicable coverage and subject to timely payment of applicable premiums to City or directly to provider through COBRA as follows:

a. For the Regular, Full-Time Employee Who Works Until <u>Normal Retirement Age under LAGERS</u>:

1. Employee Hired Before July 1, 2001:[2]

The City will pay the same percentage of the employee and dependent[3] health insurance premium as it is paying for an active employee until the retired employee becomes ineligible for this insurance, due to eligibility for Medicare coverage, which is a qualifying event under the federal Consolidated Omnibus Budget Reconciliation Act of 1986 (COBRA). At the time the retired employee becomes ineligible for group coverage, the retired employee and dependents, who had City group coverage on the day before the qualifying event, shall be eligible to continue City group coverage under the provisions of COBRA. Once the maximum period of coverage provided under COBRA expires, participation in the City's group health insurance will end and they may not re-enroll at a later date.

2. Employee Hired On or After July 1, 2001:

The retired employee may continue individual or family health coverage through the City's group policy, provided: (1) the City's health insurance carrier makes such coverage available; (2) the retired employee completed a minimum of five (5) consecutive years of regular full-time service with the City prior to retirement; and (3) retired employee timely pays the total actual monthly cost of the coverage to the City.

The coverage may continue until the retired employee becomes ineligible for this insurance, due to eligibility for Medicare coverage.

Alternatively, the retired employee may continue individual or family health insurance under the provisions of COBRA.

Regardless of the option chosen, when the retiree becomes eligible for Medicare, coverage for the retiree and then-covered dependents will end and this is a qualifying event for the retiree's dependents as defined under COBRA. At the time the retired employee becomes ineligible for group coverage, the retiree and dependents, who had City group coverage on the day before the qualifying event, shall be eligible to continue City group coverage under the provisions of COBRA. Once the maximum period of coverage provided under COBRA expires, participation in the City's group health insurance will end and they may not re-enroll at a later date.

b. For a Regular, Full-Time Employee, Who Shall Work Until <u>Early Retirement</u> Age (as defined under LAGERS:

1. Employee Hired before July 1, 2001:

The early-retired employee, who had City group coverage on the day before early retirement, may continue individual or family health insurance through the City's group policy, provided: (1) the City's health insurance carrier makes such coverage available; and (2) the early-retired employee timely pays the total actual monthly cost of the coverage to the City, until the early-retired employee has reached normal or minimum retirement age (see above) or becomes ineligible for this insurance due to eligibility for Medicare coverage.

Once the early-retired employee reaches such normal retirement date, the City will pay the premium for individual or family insurance for the early-retired employee at the same percentage for an active employee until the early-retired employee becomes ineligible for group coverage due to eligibility for Medicare coverage. Alternatively, the early-retired employee may continue individual or family health insurance under the provisions of COBRA.

Regardless of the option chosen, when the retiree becomes eligible for Medicare, coverage for the retiree and then-covered dependents will end and this is a qualifying event for the retired employee and dependents and they shall be eligible to continue City group coverage under the provisions of COBRA. Once the maximum period of coverage provided under COBRA expires, participation in the City's group health insurance will end and they may not re-enroll at a later date.

2. Employee Hired On or After July 1, 2001:

The early-retired employee and dependents, who had City group coverage on the day before early retirement, may continue as group participants through the City's group policy provided: (1) the City's health insurance carrier makes such coverage available; (2) the early-retired employee has completed a minimum of five (5) consecutive years of regular full-time service with the City prior to early retirement; and (3) the early-retired employee timely pays the total actual monthly cost of the coverage to the City.

Alternatively, the early retired employee may continue individual or family health insurance under the provisions of COBRA.

Regardless of the option chosen, when the retiree becomes eligible for Medicare, coverage for the retiree and covered dependents will end and this is a qualifying event for the retiree and dependents as defined under COBRA and they shall be eligible to

continue City group coverage under the provisions of COBRA. Once the maximum period of coverage provided under COBRA expires, participation in the City's group health insurance will end and they may not re-enroll at a later date.

c. Dental and Vision

Effective July 1, 2023, retirees who worked to early or full normal retirement as defined by LAGERS may continue as group participants through the City's group policies provided: (1) the City's dental and vision insurance carriers make such coverage available; (2) the retired employee has completed a minimum of five (5) consecutive years of regular full-time service with the City prior to retirement; and (3) the retired employee timely pays the total actual monthly cost of dental and/or vision. A retired employee who drops his/her individual or family group dental and/or vision insurance at any time after retirement is not eligible to re-enroll and the decision is irrevocable.

d. One-Time Health Insurance Re-Enrollment Option

At the time a retired employee subject to Sections A or B above becomes ineligible for group coverage, his/her dependents who had City group coverage on the day before the qualifying event shall be eligible to continue City group coverage under the provisions of COBRA. A retired employee who drops his/her individual insurance through group coverage with the City while otherwise eligible shall also drop all family insurance, but may re-enroll for such individual and family coverage provided the following conditions are met: (1) the retired employee dropped individual or family insurance through group coverage with the City because of enrollment for other group coverage, (2) the retired employee ceases to be covered under the other group coverage, and (3) the retired employee re-enrolls for individual or family insurance group coverage with the City during the normal open enrollment period for group health insurance held annually in June and before becoming eligible for Medicare. This opportunity to re-enroll is limited to one time per lifetime. Upon successful re-enrollment, the retired employee will be subject to the provisions of Sections (a) and (b) above, as applicable. A retired employee who continues individual coverage may make changes in family coverage in the same manner as employees.

Alternately if a retiree elects COBRA coverage, once the maximum period of coverage provided under COBRA expires, participation in the City's group health insurance will end and they may not re-enroll at a later date.

e. Medicare

When a retired employee subject to Sections (a) or (b) above becomes eligible for Medicare coverage, group coverage will terminate. The retired employee and dependents who had coverage on the day before such termination shall be eligible to continue group insurance

coverage with the City's insurer at the total expense under the provisions of COBRA. Once continuous participation in the City's group insurance plan will end and they may not re-enroll at a later date.

15.4 PROFESSIONAL DUES

Employees may, with the approval of the City Administrator, have professional municipal organization dues paid by the City provided that the membership benefits the City by assisting the employee with his assigned duties and responsibilities. Membership payments shall be subject to the availability of funds as provided in the annual budget.

15.5 TRAINING AND CONFERENCE ATTENDANCE

Training and Conference attendance expenses incurred for an employee's professional development and to assist in the development of his skills, knowledge, abilities and to assist him in staying abreast of his field and to perform more effectively the duties of his position in the city service, which shall be deemed beneficial to the City of Creve Coeur, shall be paid by the City, subject to the approval of the Department Head and the City Administrator and the limits of authorized appropriations.

15.6 TUITION REIMBURSEMENT PROGRAM

In order to be eligible for this program, an employee must have completed his first probationary period and be a full-time employee of the City.

a. Reimbursement for tuition during any one calendar year shall not exceed $3,600.
b. The course must be job-related and in the field of employment, including:

    1. Any course required in order to complete a baccalaureate degree will be approved.
    2. Approval for courses outside the normal field of employment but which are related to job positions in other areas of the city government will be considered based upon the employee's career development and job opportunities in other departments.
    3. In limited instances, courses beyond the baccalaureate degree level may be approved by the City Administrator.

c. All courses must be approved, in advance of enrollment, by the Department Head, the Director of Finance and the City Administrator and subject to authorized and available appropriations.
d. If letter grades are used by the educational institution, then a grade of "C" or better for baccalaureate level courses or a grade of "B" or better for graduate level courses must be attained in order to qualify for reimbursement by the City. If a pass/fail or satisfactory/unsatisfactory grading system is used by the educational institution, only grades of "pass" or "satisfactory" will qualify for reimbursement. Proper documentation must be

presented by the employee to the Department Head and the Director of Finance prior to any reimbursement being authorized.

e. In conjunction with tuition reimbursement for a course or courses, the City will also reimburse up to $400 annually for the cost of required course textbooks upon submission by the employee of the proper receipts for such books and proof the textbooks were required for the class.
f. In order to receive reimbursement, the employee must execute an agreement which requires two years of service to the City by the employee or repayment of educational benefits received within the past two years will be required. (See Section 9.6)

15.7 UNIFORMS AND CLOTHING MAINTENANCE

Employees required to wear uniforms will be provided with such clothing allocations as deemed appropriate by the Department Head. In such case, the employee shall be required to wear the uniform clothing and to return the full allocation of garments upon separation from city service. The City shall replace uniform clothing damaged through natural wear on the job, but not due to negligence by the employee. The employee shall wear uniform clothing only in route to and from work and while on duty.

The City Council may establish clothing allowances where deemed appropriate in lieu of providing uniforms. Such clothing allowances are bonuses that are taxable in accordance with Internal Revenue Service regulations. In such instances, the employee shall be fully responsible for all maintenance and replacement of uniform or clothing.

15.8 SOCIAL SECURITY

All city employees shall participate in the Federal Old Age, Survivors, Disability, and Health Insurance program. Employees' contributions are deducted each pay day and are matched by the City pursuant to Federal law.

15.9 USE OF AUTOMOBILES

Employees required to use their personal automobiles in the course of performing their duties for the City shall be paid an automobile allowance as established by city policy.

Any employee operating a motor vehicle while on duty shall comply with all applicable laws regarding such operation, including but not limited to licensing and insurance requirements. Employees shall refrain from using substances that impair their ability to operate a motor vehicle with the highest degree of care and refrain from any activity that distracts them from operating a motor vehicle with the highest degree of care, including texting and other use of hand-held communications devices.

15.10 MEDICAL BENEFIT REIMBURSEMENT

In order to incentivize employees to consider obtaining health insurance coverage outside of the City's plan when available and thereby reducing costs for the City, the City shall reimburse a full-time employee who qualifies to enroll in the City's health insurance plan for a portion of the cost they incur for such other coverage if the employee does not enroll in coverage with the City, or is eligible for spousal, child(ren), or family coverage, but elects to enroll in individual coverage only. This reimbursement shall not be available to employees whose spouse or dependent is also a full-time employee of the City, unless both employees do not enroll themselves and their dependents in coverage under the City's health insurance plan.

The annual reimbursement amount shall not exceed six hundred dollars ($600) per year per eligible employee. Employees are required to complete and submit the Medical Benefit Reimbursement Application (MBRA) to the Office of the City Administrator no later than November 15 of each year to be eligible for reimbursement.

For the purposes of this section, qualifying dependents shall be defined as dependents of the employee that are eligible for coverage in the City's insurance plan as defined in the insurance plan document.

Reimbursements shall be paid in an annual lump sum to all eligible employees on the first payroll date of December each year. Payment shall be based on the number of months that the employee was eligible for the reimbursement over the preceding twelve (12)-month period ending on November 30 of the current year (December 1 through November 30). An employee not meeting the eligibility requirements stated above for the entire twelve (12)-month period shall be eligible for a prorated reimbursement amount based on the number of full months that the employee was eligible during the twelve (12)-month period.

15.11 CITY SELF-INSURED PORTION OF HEALTH INSURANCE DEDUCTIBLE

As of July 1, 2013 the City self-insures up to one thousand one hundred dollars ($1,100) of the one thousand five hundred dollars ($1,500) individual deductible and up to two thousand two hundred dollars ($2,200) of the three thousand dollars ($3,000) family/dependent deductible in connection with employee enrollment in the City's health insurance plan. The employee is responsible for paying the first four hundred dollars ($400) of the individual deductible and the first eight hundred dollars ($800) of the family/dependent plan deductible. Claims shall be submitted in accordance with procedures established by the City Administrator's office. Employees hired before July 1, 2001 who have retired and are receiving the benefit of City payment of a percentage of premium of the City health insurance plan are also eligible to participate in the City' self-insurance of the deductible on the same terms and conditions as an active employee. The City Council may amend these provisions by resolution at any time in its discretion, and such changes may be incorporated into this policy manual.

15.12 SPOUSAL HEALTH INSURANCE SURCHARGE

On and after January 1, 2021, in an effort to keep costs down for all employees, the City of Creve Coeur requires all employees, or retirees hired before July 1, 2001, who cover their spouses under the City-employee cost-sharing health insurance benefit to be assessed a monthly surcharge if the spouse is eligible for a major medical/prescription insurance plan through their employer which meets minimum value standards on all employee health insurance benefits. This provision does not apply to employee spouses who are covered under Medicare and also under the age of 65, Tricare, or COBRA.

The monthly spousal health insurance surcharge shall be set forth and approved by City Council as part of the annual fiscal budget process.

The spousal health insurance surcharge applies and continues until a completed application to waive spousal health insurance surcharge is submitted and approved by the Office of the City Administrator. If approved for the spousal health insurance surcharge waiver, should a spouse's eligibility status change and the employee or eligible retiree is no longer eligible for the surcharge waiver, the Office of the Administrator must be notified promptly, but no more than 30 days from the qualifying event.

Those individuals eligible for a spousal health insurance surcharge waiver, must renew no less than annually during health insurance open enrollment period, or spousal surcharge fees will apply.

Requests to waive spousal health insurance surcharge shall be on form prescribed by the City, which shall include certification by the eligible employee or retiree that all information is accurate, and that false statements or failure to promptly notify the Office of the City Administrator of any change in eligibility may be subject to disciplinary action up to and including termination of employment, incurring outstanding surcharge fees due to the City, and loss of group City cost-sharing health benefits.

Spousal health insurance surcharge waivers approved prior to January 1, 2021, shall be effective as of that date. Subsequently approved waivers shall be effective on the first day of the next month following receipt of the waiver request. Notice of loss of waiver eligibility status shall be effective the first day of the next month following the date of loss of eligibility.

SECTION 16 EMPLOYEE RELATIONS

16.1 EMPLOYEE SUGGESTIONS

The City Administrator, all Department Heads, and supervisory personnel shall consider all employee suggestions concerning the improvement of city services. Employees are encouraged to bring suggestions to the City Administrator through Department Heads for discussion and consideration. The City Administrator, with the approval of the City Council, may offer recognition for employee suggestions.

16.2 EMPLOYEE APPEARANCE

All employees are required to attire themselves in a fashion that will reflect a positive image. Uniforms shall be required as and when specified. Business attire for non-uniformed employees shall conform to standards of good taste.

16.3 OUTSIDE EMPLOYMENT

For all regular, full-time employees, their job with the City shall be their primary employment. No employee of the City shall use his position to gain another position outside of the city service and no employee shall, in any way, allow such additional employment to interfere with or influence his obligations and duties to the City. No employee shall accept any other employment which results in a conflict of interest, or apparent conflict of interest or the appearance of impropriety, or which adversely affects or impacts upon the functions, activities, or reputation of the City. When working with any other public or private organization, no employee shall wear uniforms or clothing purchased by the City or identified with city employment unless prior approval is granted by his Department Head and authorized by the City Administrator.

A full-time employee seeking to hold outside employment of more than forty (40) hours in one year or eight (8) hours during a given week, is required to submit a written request to his Department Head and City Administrator for approval prior to accepting such a position. This request shall include the name of the company or public agency by whom the individual will be employed, a brief description of the job and duties to be performed, plus all pertinent information regarding insurance, pension plans, other fringe benefits, hours worked per day, and per week, and other work scheduling information.

16.4 ETHICAL CONDUCT

To serve the best interests of the employees, taxpayers, and the city government, it is the policy of the City to restrict certain types of political activity without infringing upon the employees' rights to exercise their suffrage as citizens. The purpose is to safeguard the employee from political pressure to support financially or otherwise any political party, or person, and to safeguard the interest of the public whom all employees serve without regard to their political opinions or affiliations.

Restrictions on employee political activity, and other standards of ethical conduct, are set forth in the City's Code of Ordinances (130.050 and following sections). Employees should be respectful of each other's viewpoints and avoid extended political debates during working hours.

Responsibilities of employees for detecting and reporting fraud or suspected fraud, corruption, or dishonest activities are set forth in the City's Anti-Fraud and Corruption Policy.

Each new employee is required to read these policies and to sign a certification stating he has done so. The certification is made a part of the employee's personnel file.

16.5 POLICY AGAINST HARASSMENT

The City is committed to providing a work environment that is free from all forms of discrimination and conduct that can be considering harassing, coercive, or disruptive, including but not limited to sexual harassment or any hostile, aggressive or violent conduct. Harassment of a City employee will not be tolerated, and necessary action will be taken to prevent harassment and to address appropriately any reported instances of harassment, sexual or otherwise. Further, any retaliation against an individual who has filed a complaint about harassment or retaliation against individuals for cooperating with an investigation of a harassment complaint will not be tolerated.

1. Definitions

"Harassment" means unwelcome conduct that is based on race, color, sex or gender, gender identity, sexual orientation, religion, national origin, ancestry, disability, age, family or marital status, and/or any other characteristic protected by law as well as sexual harassment or any hostile, aggressive or violent conduct. Harassment becomes unlawful where enduring the offensive conduct becomes a condition of continued employment; or the conduct is severe or pervasive enough to create a work environment that a reasonable person would consider intimidating, hostile, or abusive.

"Sexual Harassment" means unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment when this conduct explicitly or implicitly affects an individual's employment, unreasonably interferes with an individual's work performance, or creates an intimidating, hostile, or offensive work environment.

2. Employee Responsibilities

a. No employee shall either explicitly or implicitly ridicule, mock, belittle or otherwise harass any person.

b. Employees encountering harassment are encouraged to tell the person that their actions are unwelcome and offensive. Timely documentation of the incident is recommended.

c. Any employee who has been harassed should report the incident(s) to the employee's Department Head or City Administrator as soon as possible to prevent further harassment and to expedite an appropriate investigation. If an employee is harassed by the City Administrator, the employee should report the incident to the Mayor. If an employee is harassed by the Mayor or a member of the City Council, the employee should report the incident to the City Administrator.

3. Supervisor's Responsibilities

a. Each supervisor shall assume responsibility for preventing acts of harassment by:

1. Monitoring the work unit for signs of harassment and taking appropriate steps to intervene and resolve the problem;

2. Limiting the work contact between employees where there has been a complaint of harassment, pending investigation.

b. Supervisors shall assist any person within the Department that comes to them with a complaint of harassment.

c. Supervisory personnel at all levels shall not be permitted to date subordinates.

4. Investigation

a. The City Administrator or his/her designee shall be responsible for investigating any complaint alleging workplace harassment that is brought to the City's attention. Employees refusing to cooperate in an investigation shall be subject to disciplinary action.

b. Any investigation will be conducted by the City in such a way as to maintain confidentiality to the extent practical under the circumstances.

However, employees shall not be precluded from discussing an investigation with each other unless expressly instructed to refrain from such discussions for such period of time as determined necessary by the city to protect witnesses, avert destruction of evidence, avert fraudulent testimony, or prevent cover-up.

If a complaint of workplace harassment is sustained, then the employee committing the harassment will be subject to disciplinary action based on the nature and severity of the

harassment. The disciplinary action may include oral reprimand, written reprimand, suspension, demotion, or dismissal.

Upon completion of the investigation, the person filing the complaint, the person alleged to have committed the conduct, and the supervisor(s) of the involved employees will be advised of the results of that investigation.

Retaliation against either the person(s) who filed the complaint or any person involved in the investigation shall be grounds for additional disciplinary action. An employee determined to have intentionally made a false allegation of harassment against another employee may be subject to disciplinary action, which is not retaliation under such circumstances.

A file of harassment complaints shall be maintained in the City Administrator's office in a secure location.

This policy does not preclude any employee from filing a complaint or grievance with an appropriate outside agency.

16.6 COMMUNITY RELATIONS

Employees should afford every citizen courtesy and consideration. It is particularly important that a full, courteous explanation be given a citizen when it is necessary to refuse a request or when the action requested is outside the jurisdiction of the City. In dealing with citizens' complaints or questions beyond the authority of the employee having direct contact with the citizen, the employee is encouraged to direct the individual to his Supervisor for explanation or assistance.

16.7 EMPLOYEE SAFETY

Employees are expected to follow safety procedures established for their respective departments and to take an active part in protecting themselves, their fellow employees, other people, city equipment and property and private property from injury or destruction at all times.

Employees are encouraged to detect and report to their Supervisors any hazardous conditions or unsafe practices in the work place and to make suggestions for their correction. All employees share the responsibility of protecting themselves, their co-workers and the public from bodily injury and property damage. Accident prevention is a policy of the City of Creve Coeur. Safety procedures shall have the primary goal of eliminating specific hazards to reduce the potential of accidents.

Department Heads and Supervisors shall be responsible for reviewing working conditions and establishing safety rules which provide some means of protection to people and property.

Emphasis shall be placed upon conditions of facilities, equipment, and machines as well as implementation of an overall safety awareness program including:

a. good housekeeping in the work area.

b. use of prescribed protective equipment as a condition of employment.

c. compliance with departmental work rules.

d. condition of tools including: mechanical, electrical, hand, and power tools.

e. proper use of a vehicle seat belt while on city business.

f. proper maintenance of electrical equipment.

g. proper guarding of open pits, ditches, tanks, etc., and powered equipment and machines

h. proper storage and handling of flammable/combustible liquids.

i. training in the use of portable fire equipment and first aid procedures.

j. reduction of sources of excessive noise and dust through proper ventilation and personal protective equipment

k. proper training in the elements of a task to identify and plan for any potentially hazardous conditions.

An employee shall report all work related accidents and injuries to his Supervisor as soon as possible after such incident. Failure to make timely reports could have serious consequences with relation to workers' compensation benefits should the injury later prove to be serious, and to claims made against the City by an individual suffering injury in the incident.

16.8 PERSONNEL RECORDS

Personnel Records of all employees shall be maintained in the Office of the City Administrator by the Personnel Officer and shall be available for an individual employee to review his personnel file upon request during normal office hours. The personnel files of Police Department employees may be maintained by the Chief of Police. A full disclosure of Police Personnel records shall be forwarded to the City Administrator's office upon request. Employees shall have the opportunity to provide written response to any adverse materials placed in their personnel file, and such written response shall be permanently attached to the adverse materials. (See 590.502.5 RSMo).

16.9 PAYROLL DEDUCTIONS

The only deductions made from an employee's payroll check are those authorized by law and those which the employee has authorized the City to make as a part of a benefit program. Any payroll deduction must be initially approved by the Personnel Officer before submission to the Finance Office.

16.10 REPORT CHANGE OF ADDRESS

An employee must report any change in address or phone number to his Department Head the next work day after such occurs. Each employee should report all changes in address or phone number to the Personnel Officer through the employee self-service portal in the City’s software system in a timely manner but in no case shall the notice be withheld longer than one week.

SECTION 17 POLICY AGAINST SUBSTANCE ABUSE

17.1 POLICY STATEMENT

The employees of the City of Creve Coeur are considered to be a valued resource and the services they provide to the community are essential to the maintenance of a high quality of life for our citizens. The City is committed to providing to its employees a safe and healthy work environment; and, to providing to its residents an organization which upholds the standards of integrity, professionalism, accountability and pride. These objectives would be compromised if substance abuse, which creates negative impacts on the work force and reduces the employee's ability to perform the requirements of his position as expected by the City, exists among employees. Improper use, abuse and/or dependency on alcohol and/or drugs can seriously affect the health of employees, jeopardize their own safety and the safety of others in the work place and the public with whom they have contact, cause damage to public and private property, erode the public trust, increase the cost of the provision of governmental services, and impair the individual's and co-worker's ability to satisfactorily perform their job duties. The City of Creve Coeur hereby adopts a policy to address this sensitive and potentially dangerous issue of substance abuse.

The policy provides a means for the City to protect itself, and others, from the negligent or irresponsible actions of an employee who is under the influence of alcohol/drugs while working as an employee of the City. The policy requires an employee to submit to alcohol/drug testing when there is reasonable basis to suspect that they are under the influence of alcohol/drugs at the workplace, and in other specified circumstances.

Additionally, as a frequent recipient of federal grants, the City is subject to the Drug-Free Workplace Act (41 USC 8101 et seq). Pursuant thereto, the City expressly states that manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace. This policy describes the actions the City will take in the event of any violation of this prohibition. It is a condition of each employee’s employment that they must abide by the terms of this statement and must notify the Personnel Officer in writing if they are convicted of a violation of a criminal drug statute occurring in the workplace within five calendar days after the conviction.

Any employee who has unapproved possession of alcohol at the workplace will be subject to discipline. Any employee who appears to have consumed or to be under the influence of alcohol shall be removed from the workplace and be required to undergo testing by a police officer and, as directed by the police officer, a blood alcohol measuring device or other medically acceptable means and depending on the outcome may be subject to discipline.

Any employee who appears to be in possession of any drug or narcotic at the workplace will be required to produce evidence that they possess the drug or narcotic lawfully, and failing same will be subject to discipline. Any employee who appears to have consumed any unlawfully possessed drug or

narcotic, or to be under the influence of any drug or narcotic will be removed from the workplace, will be tested by a police officer, and will be required to report to a designated medical facility to undergo examination as directed by the police officer, and depending on the outcome may be subject to discipline. Any employee who appears to be in possession of a controlled substance at the workplace or to have consumed or be under the influence of a controlled substance will be removed from the workplace, will be tested by a police officer, and will be required to report to a designated medical facility to undergo examination as directed by the police officer, and depending on the outcome may be subject to discipline. Any employee who is suspected of being in possession of or under the influence of marijuana shall be subject to the same discipline as for any other controlled substance including the test result standards and related discipline as referenced in Section 18.

Violation of this policy shall be deemed misconduct and may also result in suspension or termination of employment, subject to applicable law.

The refusal to submit to any required testing is a disciplinary offense and may result in disciplinary action, up to and including termination.

The policy provides employees having an abuse problem the opportunity to overcome the problem through rehabilitation and treatment.

Note: See Section 18 regarding drivers of commercial motor vehicles.

17.2 LEGAL DRUGS (excluding alcohol)

The use of any legally obtained drug or substance, to the point where such use affects the employee's job performance at the workplace (i.e., causes them to be “under the influence”) is prohibited. No employee during work hours shall be under the influence of any drug or substance which impairs the employee's ability to perform their job, including the use of prescribed or otherwise authorized drugs. In the event physician-approved use of drugs, including over-the-counter drugs or medical marijuana (away from the workplace), could influence job performance, it is in the best interest of the employee, co-workers and the City that sick leave be utilized, or leave without pay, if sick leave is not available. In the event treatment relates to disability, reasonable accommodations may be requested as discussed elsewhere in this manual, to the extent allowed by law. An employee who is lawfully using marijuana away from the workplace shall mitigate odors on and about their person to the extent practicable and shall not be under the influence of marijuana while at work.

17.3 ILLEGAL DRUGS

Definition of illegal drugs, for the purpose of this policy, includes:

1. drugs that are not legally obtainable; or,

2. drugs that are legally obtainable but have been obtained illegally.

The illegal sale, possession, purchase, transfer, or use of drugs by employees is prohibited.

No employee shall arrive on the City's premises in possession of or under the influence of any illegal drug.

Any employee engaging in the illegal sale, purchase, transfer, possession or use of drugs is subject to disciplinary action, up to and including in termination.

17.4 ALCOHOL

1. General

Employees shall not possess or consume an alcoholic beverage, have the odor of an alcoholic beverage on or about their person, or be under the influence of an alcoholic beverage during work hours to include lunch or break periods unless authorized or approved by the City Administrator or his designee. No alcoholic beverage shall be served or consumed on city premises or in vehicles owned by the city without permission of the City Administrator or his designee. The odor of an alcoholic beverage on or about any employee or other visible effects is sufficient cause to order an employee be tested for the presence of alcohol and/or to order the employee to leave the work place. Any employee engaging in the misuse of alcoholic beverages is subject to disciplinary action.

2. Employees - BAC

No employee during working hours shall report for work or be on duty when he/she has a blood alcohol level of .02% or greater.

3. Commissioned Police Officers

Commissioned police officers shall not report for work, be on duty, or act in the capacity of police officer (to include off-duty details) when he/she has a blood alcohol level of .02% or greater.

17.5 PRE-EMPLOYMENT SCREENING

In an effort to minimize the potential adverse effects of substance abuse, all individuals to whom a bona fide regular full-time, part-time, or seasonal conditional job offer has been made will be tested and the results reported prior to the acceptance of the applicant by the City (see section 17.7 Testing Procedures). Any individual receiving a positive drug test result will be disqualified from employment consideration after a confirmation test has confirmed the positive results. The applicant will not be

reconsidered for a position with the City until they produce a negative test obtained from a city-approved laboratory, at the applicant's cost. For a candidate who has lawfully consumed marijuana, a test shall be considered positive or negative in accordance with the standards referenced in Section 18.

Former employees of the City may not be required to be tested if the time between their last date of previous employment with the City and the date of rehire is less than one year, at the discretion of the City Administrator's Office.

17.6 POST-HIRING TESTING

Any employee who exhibits behaviors which are associated with potential drug and/or alcohol use or abuse or whose behavior creates a reasonable suspicion (including the odor of an alcoholic beverage on or about the person) to cause the Supervisor, based on personal observation or credible reports from others, to believe the employee may be under the influence of drugs, controlled substances and/or have consumed alcohol shall be escorted by the Supervisor for testing as outlined in Section 17.7.

The Supervisor shall as soon as practical, report the incident to the Department Head. A written report outlining the material facts of the incident shall be prepared by the Supervisor and approved by the Department Head in a form acceptable to the Office of the City Administrator.

Under no circumstances shall the employee be allowed to return to work prior to receipt of the required drug/alcohol test results and a review of the incident by the Office of the City Administrator. Until such a time as the employee is released to return to his job duties by the Office of the City Administrator, the employee shall be placed on, and shall remain on, leave with pay. The results of the test shall be held in strict confidence and shall only be released on a "need to know" basis as determined by the Office of the City Administrator. All test results and subsequent medical records, if any, shall be maintained in a separate administrative file and shall be stored in a secure location.

If the results of the test are negative, and if applicable the odor of alcohol is no longer noticeable, the employee shall be authorized to return to normal duties. The personnel file shall not reflect any information with regard to the incident.

Failure by the employee to comply with the request of the Supervisor to relinquish his/her duties and undergo testing when requested and failure by the employee to follow the procedures established herein with regard to such testing shall subject the employee to immediate termination.

All actions which affect the employment status of the employee shall be communicated to the employee in writing. Such notice shall be provided to the employee either in person, or by certified mail, promptly after the receipt of the results from the laboratory.

17.7 TESTING PROCEDURES

When a Supervisor suspects an employee may be under the influence of alcohol, drugs, and/or a controlled substance, the following substance testing procedures shall be followed:

1. The employee shall be removed from the work place immediately and tested by a police officer.

2a. If the police officer has reason to believe the employee has consumed or is under the influence of alcohol, testing may be conducted by a certified operator of a blood alcohol measuring device certified by the State of Missouri Department of Health. The employee shall not operate a motor vehicle or leave the escort of a Supervisor or police officer.

2b. If a Supervisor has reason to believe the employee is under the influence of a drug or controlled substance, or has illegally consumed or used a drug or controlled substance the employee shall be tested by a police officer and if so directed by the police officer escorted by a Supervisor or police officer to a medical facility or tested in a manner approved by the City of Creve Coeur. The employee shall not operate a motor vehicle or leave the escort of a Supervisor or police officer.

3. When a drug/controlled substance test (other than for alcohol) is required, the specimen collection shall be conducted by the medical staff in such a manner as to minimize the effects on the employee and with the employee's privacy as the primary concern, in accordance with applicable law including Section 288.045 RSMo.

4. An adequate sample will be collected at this time to ensure a second, confirmatory test may be performed, if required.

5. Proper chain of custody procedures shall be followed by the laboratory or medical facility to safeguard the integrity of the sample.

6 The results of such tests shall be provided to the Office of the City Administrator within 24 hours of obtaining test results. The Personnel Officer is authorized to receive the written test results and shall distribute such information on a "need to know basis" only. The test results are considered a closed file and shall be maintained in such a manner so as to protect the confidentiality of the employee involved.

For provisions regarding test procedures and results, see Section 18.6c.

17.8 REHABILITATION

In the event of a positive test result, or a voluntary admission of an abuse problem, the employee may be required to obtain professional assistance from a source approved by the City. Participation in a

professional assistance program will be at the employee's expense but may be covered by the group health insurance plan subject to the provisions of said plan.

If the employee is required to participate in a professional assistance program the successful completion of such a program is a prerequisite for a return to work authorization and/or continued employment.

Upon successful completion of an assistance program, the City retains the right to request that the employee undergo periodic medical examination and testing for a period of at least one year, at the employee's expense. Failure to successfully complete an assistance program; to submit to post-program testing as required; and, to avoid further incident once a rehabilitation effort has been made may result in termination of employment with the City of Creve Coeur.

a. Rehabilitation Contract

If the City decides to retain an employee, it will require the employee to sign a rehabilitation contract. The rehabilitation contract shall include the following terms and conditions to be adhered to by the employee who is granted rehabilitation assistance:

1. the employee shall agree to undertake and successfully complete the rehabilitation assistance plan established for the employee by the substance abuse professional (SAP) or by a rehabilitation professional accepted by the City, at the employee's expense; and
2. the employee shall agree to refrain from any violation of the City's alcohol and substance abuse policies and to use controlled substances and alcohol consistent with the plan of rehabilitation, the City's policies and the law; and
3. the employee shall provide a release of all medical records for use and review by the City relating to the rehabilitation assistance plan for the assistance undertaken and compliance; and
4. the employee shall agree to unannounced random testing for periods of time determined by the City subsequent to the employee's return to work consistent with the City's alcohol and substance abuse policies; and
5. the employee shall agree to submit to return-to-work testing demonstrating that the employee is compliant with controlled substance and/or alcohol test standards, at the employee's expense; and
6. the employee shall agree that any future violations of the substance abuse policy shall be considered as a resignation of the employee from City service without recourse.

17.9 VOLUNTARY DISCLOSURE

Any employee who voluntarily admits to having a substance abuse problem and seeks the assistance of the City to deal with the problem shall be expected to successfully complete an authorized rehabilitation program in order to maintain continued employment. (See Section 17.8 Rehabilitation.)

17.10 EDUCATION AND TRAINING

In order to effectively carry out the policy and procedures outlined herein, Supervisors will be trained to make the appropriate observations of the symptoms associated with drug and alcohol use and abuse. Substance abuse education is a form of prevention and early intervention. Employee health and emotional well-being are essential to the ability of the individual to perform their job duties. Education and training efforts will be designed to assist the Supervisor with fulfilling their responsibilities under this policy.

17.11 CONFIDENTIALITY OF RECORDS

All records developed and/or acquired pursuant to this policy shall be maintained under strict confidentiality by the City, the testing laboratory, the Medical Review Officer and the Substance Abuse Professional. Within the City, the records shall be maintained separately from other personnel and administrative records and shall be kept in a secured location.

Materials from these records shall not be released to others without the written consent of the affected employee, except under provisions provided for by law, as needed with regard to the rehabilitation contract, in litigation or quasi-judicial and administrative proceedings.

Applicants may request the results of pre-employment tests within sixty (60) days of learning the disposition of the employment application.

Employee alcohol and drug testing results and records are maintained as required by law.

SECTION 18 ALCOHOL & CONTROLLED SUBSTANCE USE, ABUSE & TESTING POLICY FOR DRIVERS OF COMMERCIAL MOTOR VEHICLES

18.1 PURPOSE

The purpose of federal statute 49 USC 31306 (the Act) and this policy is to establish a program designed to help prevent accidents and injuries resulting from the misuse of alcohol or drugs or use of controlled substances by drivers of commercial motor vehicles; to assure covered employee fitness for duty; and, to protect City employees and the public from the risks posed by the use of alcohol, drugs and controlled substances. It is also the purpose of this policy to comply with all applicable federal regulations governing work place alcohol, drug and controlled substance abuse programs which are mandated under the above noted Act. The Act mandates urine testing and breathalyzer alcohol tests for safety sensitive positions and prevents performance of safety sensitive functions when there is a positive test result. Federal law has also established standards for the: collection and testing of urine and breath specimens, the reporting of certain drug related offenses, protective measures, the preservation of confidentiality, and for certain reporting requirements.

18.2 APPLICABILITY

This Section 18 policy applies to all employees who perform safety sensitive functions defined in the Act and its implementing regulations including persons who are required to possess a commercial driver's license (CDL) license for the operation of a commercial vehicle as defined and regulated under state law. All city employees are governed by the policy outlined in Section 17 of this manual, which in some instances refers to parts of this Section 18.

18.3 DEFINITIONS

"Alcohol" means the intoxicating agent in beverage alcohol, ethyl alcohol, or other low molecular weight alcohols including methyl or isopropyl alcohol.

"Alcohol Concentration" means the concentration of alcohol in a person's breath expressed as in terms of grams of alcohol per 210 liters of breath as indicated by an evidential breath test.

"Alcohol Use" means the consumption of any beverage, mixture, or preparation, including any medication, containing alcohol.

"Commercial Motor Vehicle" means a motor vehicle or combination of motor vehicles used in commerce to transport passengers or property and defined as a commercial motor vehicle by state law (302.700 RSMo) and the Act:

a. has a gross combination weight rating of 26,001 or more pounds inclusive of a towed unit with a gross vehicle weight rating of more than 10,000 pounds, or
b. has a gross vehicle weight rating of 26,001 or more pounds; or
c. is designed to transport 16 or more passengers, including the driver; or
d. is of any size and is used in the transportation of materials found to be hazardous for the purposes of the Hazardous Materials Transportation Act and which require the motor vehicle to be placarded under the Hazardous Materials Regulations.

"Confirmation Test" means a second test conducted after an initial alcohol or drug test to determine the presence of alcohol or drug metabolites in an employee's system. Confirmation tests for alcohol will be conducted using an approved evidential breath testing device and for drugs by testing urine by means of gas chromatography and mass spectrometry (GC/MS).

"Controlled Substance" means the drugs and other substances, by whatever official name, common or usual name, chemical name or brand name designated for testing in 49 CFR Part 40 including: opiates, amphetamines, cocaine, marijuana and phencyclidine.

"Screening Test" (initial test) means the initial drug or alcohol test to determine whether an employee has controlled substances or prohibited concentration of alcohol in his/her system. Screening tests for alcohol are by breath test and, for controlled substances, a urine test by immunoassay, enzyme process or other method approved by 49 CFR 40.

"Commercial Driver's License" (CDL) means a license issued pursuant to state law which authorizes an individual to operate a commercial motor vehicle.

"Medical Review Officer" (MRO) means a licensed physician (medical doctor or doctor of osteopathy) responsible for receiving laboratory results generated by an employer's drug testing program who has knowledge of substance abuse disorders and has appropriate medical training to interpret and evaluate an individual's confirmed positive test result together with his or her medical history and any other relevant biomedical information.

"Substance Abuse Professional" (SAP) means a licensed physician (medical doctor or doctor of osteopathy), or a licensed or certified psychologist, social worker, employee assistance professional or addiction counselor (certified by the National Association of Alcoholism and Drug Abuse Counselors Certification Commission) with knowledge of and clinical experience in the diagnosis and treatment of alcohol and controlled substances -related disorders.

"Safety Sensitive Functions Relating to the Operation of Commercial Motor Vehicles" means all time that a commercial motor vehicle driver is performing, ready to perform, or immediately available to perform the following tasks:

1. waiting to be dispatched, unless the driver has been relieved from duty;
2. inspecting, servicing, or conditioning any commercial motor vehicle at any time;
3. driving time;

4. remaining in or upon any commercial motor vehicle, while not driving, except time spent resting in a sleeper berth;
5. loading or unloading a vehicle, supervising, or assisting in the loading or unloading, attending a vehicle being loaded or unloaded, remaining in readiness to operate the vehicle or in giving or receiving receipts for shipments loaded or unloaded.
6. performing the driver requirements relating to accidents.
7. repairing, obtaining assistance, or remaining in attendance upon a disabled vehicle.

18.4 POLICY ADMINISTRATOR

The City Administrator, or his/her designee, shall be the controlled substance, drug and alcohol policy administrator for the City. Any inquiries concerning this policy, its application, administration or its interpretation shall be made to the policy administrator or his/her designee.

The policy administrator shall maintain a current list of the City positions that are governed by this policy. This list shall be available for inspection by any individual who is applying for a position with the City, any current City employee, or the public. Current city employees shall be notified if they are subject to this policy.

The policy administrator shall develop any forms necessary to carry out the provisions of this policy, unless the forms are provided under the federal regulations. (Part 40 CFR) The forms shall be provided to appropriate persons who are responsible for the implementation and management of this policy.

18.5 ALCOHOL & CONTROLLED SUBSTANCES PROHIBITIONS

The following are prohibited acts by an employee covered by this policy:

a. Performance of Safety Sensitive Functions.

An employee is prohibited from performing any safety sensitive functions and from engaging in any work-related functions: 1) while consuming alcohol; 2) while having an alcohol concentration of 0.02 or greater; 3) within four (4) hours after consuming alcohol; and/or 4) after refusing to submit to an alcohol test. An employee is prohibited from consuming alcohol within eight (8) hours after an accident for which the employee is subject to post-accident testing as specified in this policy.

b. Unauthorized Use and/or Possession of a Controlled Substance.

An employee is prohibited from the unauthorized use and/or possession of a controlled substance at any time, whether on or off duty. In the event an employee is authorized to use a controlled substance by medical prescription, it is the employee's duty to inform any prescribing doctor that they perform safety sensitive functions while at work and to obtain

from that doctor a release to perform such work while taking or using the substance. The employee is prohibited from using the prescribed or authorized substances other than in the amount and manner prescribed or authorized and is prohibited from performing work when under the influence of any substance that impairs their ability to work safely.

c. Notification of Side Effects of Prescribed Controlled Substance.

Any employee who is consuming a prescribed or authorized controlled substance or other drug of any kind whose side effects may inhibit or impair the employee's performance shall notify the supervisor of such consumption upon reporting to work and prior to engaging in any work-related activity.

d. Unauthorized Possession of Alcohol on Duty.

An employee is prohibited from the unauthorized possession of alcohol while on duty.

e. Requirements for Employee to Notify of Violation/Conviction.

Any employee whose job performance requires the possession of a valid CDL must notify the policy administrator of any conviction for a violation of any state or local law relating to motor vehicle traffic control (other than parking violations) within thirty (30) days of the conviction. In addition, such an employee who loses the CDL for a violation of or as a consequence of the law or any administrative action shall notify the policy administrator immediately of the loss of the CDL.

f. Consequences of Testing Positive.

An employee testing positive on an alcohol and/or controlled substance test as provided herein will be removed from duty immediately. The City is not required to return employees to duty that have tested positive or otherwise violated this policy, to a safety sensitive position or to retain them as employees. A positive test will be deemed misconduct and may result in suspension or termination of employment subject to applicable law. Moreover, in accordance with federal law, an employee cannot be returned to safety sensitive duties until he or she has been evaluated by a substance abuse professional, has complied with recommended rehabilitation, and has received a negative result on the return to duty test, at the employee's expense.

An employee who violates any of these provisions or tests positive for drugs or alcohol may be subject to disciplinary action up to and including termination subject to applicable law.

18.6 CONTROLLED SUBSTANCE AND ALCOHOL TESTING PROVISIONS

a. Testing

Employees subject to this policy shall be subject to controlled substances and alcohol testing including the following types of tests: pre-employment, random, reasonable suspicion, post-accident, return-to-work, and follow-up testing.

1. Pre-Employment Testing

Pre-employment urine drug testing and alcohol testing, if mandated by federal regulations, shall be required of all applicants for positions covered by this policy as a condition of the application procedure. Receipt of satisfactory test results is required prior to commencement of employment and/or engaging in safety sensitive functions for the first time. The failure of a controlled substance or alcohol test disqualifies an applicant from appointment to City employment for a period of at least one hundred twenty (120) days. A negative controlled substance and alcohol test shall be required prior to further consideration for any employment. An applicant who tests positive will not qualify for rehabilitation services through the City.

2. Reasonable Suspicion Testing

Reasonable suspicion urine and/or breath alcohol testing shall be made on the basis of documented objective facts and circumstances which are consistent with the effects of substance use. The determination that reasonable suspicion exists must be based on specific contemporaneous, articulable observations concerning the appearance, behavior, speech and body odors of the employee. The observations for controlled substances may include indications of the chronic and withdrawal effects of controlled substances. Reasonable suspicion observations and reports can only be made by supervisory or management personnel and police officers who are trained to detect the signs and symptoms of controlled substance and alcohol use and who may reasonably conclude that an employee may be adversely affected or impaired in the employee's work performance due to the use of the controlled substance or alcohol. The observing supervisor or manager is required to involve a police officer, who shall complete the appropriate required documentation within twenty-four (24) hours of the observed behavior or before the results of a controlled substance test are released, whichever is sooner.

Reasonable suspicion testing shall be required and completed whenever possible within two (2) hours of the observation, but in any case no later than before eight (8) hours after the observation for breath alcohol testing and thirty-two (32) hours for controlled

substance testing. The City will document the reasons for not promptly conducting the required tests.

3. *Post-Accident Testing*

Federal Highway Administration regulations require alcohol and controlled substance testing following an accident for any employee who was performing safety sensitive functions if the accident involved a fatality or for any employee who receives a citation for a moving traffic violation. The City also may require testing for all employees whose performance may have contributed to the accident, as well as the employee(s) who was (were) involved in the accident when injury to a person requires transport to a medical treatment facility, or disabling damage to one or more vehicles requires towing from the accident site to occur.

Post-accident testing shall be required and completed whenever possible within two (2) hours of the accident occurrence, but in any case, no later than eight (8) hours after the accident or until the employee undergoes a post-accident alcohol test, whichever occurs first. The City will document the reasons for not promptly conducting the required tests.

Any employee who leaves the scene of an accident without appropriate authorization prior to submission to controlled substance and alcohol testing shall be considered to have refused the tests and the employee's employment may be terminated for such action. This does not require delay of medical attention or other assistance necessary in responding to the accident.

4. *Random Testing*

Random testing shall be conducted on employees performing safety sensitive functions. Random testing shall be unannounced and conducted with unpredictable frequency throughout the year using an established scientifically based selection method. Random testing shall occur no less frequently than required by federal law and shall result in the employee test rate required by federal regulation.

5. *Return to Duty Testing*

Return to duty urine drug and/or breath alcohol testing shall be required for an employee who has previously tested positive for either category of substance or who admitted alcohol or substance abuse and received treatment for such abuse, at the employee's expense. To return to work, the employee must test negative and be evaluated and released to return to work by a SAP.

6. *Follow-Up Testing*

Follow-up testing of any employee allowed to return to work will be required. The employee will be required to submit to frequent unannounced random urine drug and/or breath alcohol testing for at least six (6) times in the following twelve (12) months after return to work, at the employee's expense. Follow up testing may be continued for a period of up to sixty (60) months from the employee's return to work date, at the employee's expense.

7. Confirmatory Testing

Any employee who questions the results of a required urine drug test under this policy may request that an additional test be conducted. The test must be conducted on a split sample that was provided at the same time as the original sample, and the test analysis may be conducted at a different qualified laboratory than where the original test was conducted. All costs for employee requested testing shall be paid by the employee unless the second test invalidates the original test. An employee's request for a retest must be made to the Medical Review Officer (MRO) within seventy-two (72) hours of the notice to the employee of the initial test result. Requests made after the seventy-two (72) hour limit will only be accepted if the delay was due to documentable facts that were beyond the control of the employee.

b. Failure to Test

Any employee who:

- fails to report immediately to the test site and/or
- fails to submit to the required testing, including all required testing procedures and/or
- fails to provide an adequate sample of urine for controlled substance testing or breath for alcohol testing without medical justification and/or
- provides an altered sample of urine

is considered to have refused to test and shall be subject to disciplinary action up to and including termination. An employee who states at the time of the test that he/she is physically unable to provide an adequate urine or breath sample shall be evaluated by a licensed physician selected by the City.

c. Testing Procedures and Results

1. Alcohol

Alcohol tests are conducted on evidential breath testing devices that measure the concentration of alcohol in breath and shall be conducted under the supervision of a police officer. An initial screening test will be conducted. Any result that is less than 0.02

alcohol concentration is considered negative. If the alcohol concentration is 0.02 or greater, a second confirmatory test must be conducted. Any employee who tests with an alcohol concentration of 0.02 or greater shall be removed from safety sensitive duties for at least twenty-four (24) hours.

If the alcohol concentration is .04 or greater, the test is considered positive. Any employee who is found to have engaged in prohibited alcohol conduct under this policy shall be immediately removed from work-related activity and the employee shall not be permitted to resume work, if at all, until the employee is: (1) evaluated by a SAP, and (2) complies with the rehabilitation contract if such is required, and (3) has tested negative in the return to duty test. All costs associated with evaluation by a SAP, a rehabilitation contract and applicable testing shall be paid by the employee.

2. *Controlled Substances*

Controlled substance testing is conducted for the following controlled substances: (1) Marijuana (THC metabolite), (2) Cocaine, (3) Amphetamines, (4) Opiates (including heroin), and (5) Phencyclidine (PCP).

Individuals tested under this policy must provide a urine specimen that will be tested at a laboratory selected by the City. Adequate chain of custody methods will be followed to assure that the security, integrity and identification of each specimen is protected. The actual testing for controlled substances is a two-stage process. An initial screening test is conducted. If the screening test is positive for one or more of the controlled substances, a confirmatory test is conducted for each identified controlled substance. The confirmatory test is a gas chromatography/mass spectrometry (GS/MS) analysis.

Any employee who tests positive on the confirmatory test shall be interviewed by the City's Medical Review Officer (MRO). The MRO will attempt to determine if there is a satisfactory explanation for the test result before making a final determination as to whether the results are positive or negative. The employee will be notified of the results, whether positive or negative. As discussed above, an employee may request a confirmation test of a positive result.

18.7 EMPLOYEE ASSESSMENT

An employee who participates in testing and tests positive shall be removed from safety sensitive functions for a minimum of twenty-four hours and until evaluated by an SAP as outlined below. (Part 382.505 and 382.605 CFR) An employee who tests positive for either the presence of controlled substances or alcohol above the minimum thresholds set forth in the federal regulations shall be evaluated by a SAP. The SAP shall evaluate each employee who tests positive to determine what assistance, if any, the employee needs in resolving problems associated with the controlled substance or

alcohol abuse. All costs associated with evaluation by a SAP and employee assistance in resolving problems associated with the controlled substance or alcohol abuse shall be paid by the employee.

Assessment by a SAP does not protect an employee from disciplinary action or guarantee continued employment or reinstatement by the City. An employee violating this policy or other applicable drug and alcohol rules may be subject to disciplinary action up to and including termination and, further, an employee who is engaging in an illegal activity shall be subject to prosecution under applicable criminal law.

18.8 REHABILITATION

Section 17.6 of this manual contains the City's policy on rehabilitation and Section 17.8 contains provisions relating to the voluntary admission of an alcohol or controlled substance abuse problem.

18.9 EDUCATION AND TRAINING

The City shall provide all employees with a copy of this policy and shall display and distribute materials related to the effects of the use and/or abuse of alcohol and controlled substances. The City shall also provide information to employees regarding available treatment and rehabilitation.

All supervisors and managers who are responsible for the administration and enforcement of this policy shall receive at a minimum sixty (60) minutes of training for each topic (alcohol and substance abuse) on the physical and behavioral effects on personal health, safety and on the work environment and performance indicators on the effects of alcohol and controlled substance use and abuse, the side effects of abuse, and the consequences of prohibited work-related activity involving alcohol and controlled substance consumption. The training shall include an overview of this policy and its implementation and application to employees. Training shall also include a component related to objective observation for reasonable suspicion testing, documentation and record keeping.

18.10 CONFIDENTIALITY OF RECORDS

All records developed and/or acquired pursuant to this policy shall be maintained under strict confidentiality by the City, the testing laboratory, the MRO and the SAP Within the City, the records shall be maintained separately from other personnel and administrative records and shall be kept in a secured location.

Materials from these records shall not be released to others without the written consent of the affected employee, except under provisions provided for by law, as needed with regard to the rehabilitation contract, in litigation or quasi-judicial and administrative proceedings related to positive test results and/or matters initiated by the employee.

Applicants may request the results of pre-employment tests within sixty (60) days of learning the disposition of the employment application.

Employee alcohol and drug testing results and records are maintained as required by law.

18.11 REFERENCE

The following reference materials may be consulted for guidance in administering this policy:

1. 49 USC 31306
2. 49 CFR 40 (Testing Procedures)
3. 49 CFR 382 (Testing of CDL drivers)

SECTION 19 REPEAL AND AMENDMENT

The City Council may from time to time repeal or amend the Personnel Policies of the City as deemed necessary.

Standard policies and procedures concerning the relationship between the City and its employees will be produced in writing and will be made available to all concerned. When the need for new or revised rules and regulations is indicated, it will be referred to the City Administrator to consider the establishment of such policy. The City Administrator shall recommend changes to the City Council for review and approval.

RESOLUTION NO. 1715

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOURI, ADOPTING THE FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM FOR THE CITY OF CREVE COEUR FOR FISCAL YEARS 2025 THROUGH 2029.

WHEREAS, in accordance with the City Charter, the City Administrator submitted the proposed five-year Capital Improvement Program (CIP) to the City Council for review on February 26, 2024; and

WHEREAS, the City's Stormwater Committee, Parks and Historic Preservation Committee, and Finance Committee have each reviewed and recommend approval of the proposed CIP; and

WHEREAS, the City Council reviewed the proposed CIP at its Work Sessions on March 11, 2024 and March 25, 2024; and

WHEREAS, the Planning and Zoning Commission reviewed the proposed CIP on March 18, 2024 and recommended approval of the proposed CIP on March 18, 2024; and

WHEREAS, a public hearing was held before the City Council on Monday, April 8, 2024, for public comment and input about the proposed CIP; and

WHEREAS, Section 9.6(C) of the City Charter requires that the City adopt a Capital Improvement Program by the final day of the twelfth month of the current fiscal year.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, AS FOLLOWS:

Section 1. The City Council hereby adopts the Capital Improvement Program for Fiscal Years 2025 through 2029, which is attached hereto as "Exhibit A," which is hereby incorporated as part of this Resolution as if fully set out herein.

Section 2. The adoption of this Resolution and the Capital Improvement Program contained herein complies with requirements outlined in Section 9.4 and Section 9.6 of the Creve Coeur City Charter.

Section 3: The City Council hereby declares its current intent to proceed with the full implementation of the Capital Improvement Program that is the subject of this Resolution.

Section 4. This Resolution shall take effect immediately upon its adoption.

ADOPTED THIS 8TH DAY OF APRIL, 2024.

_____
DR. ROBERT HOFFMAN
MAYOR

ATTEST:

_____
KELLIE HENKE
CITY CLERK

DEPARTMENT OF PUBLIC WORKS
STAFF MEMORANDUM

DATE: April 2, 2024

TO: Mark Perkins, City Administrator

FROM: Steven Berecz, P.E., City Engineer

SUBJECT: Staff Recommendation for FY2025-FY2029 Capital Improvement Program (CIP)

This report summarizes the presentations of the draft CIP to several of the City's committees.

Committee and Commission Reviews
Staff presented the draft CIP to the City Council, the Planning and Zoning Commission, and several committees.

A brief summary of the presentations and reviews follows:

Stormwater Committee The Stormwater Committee reviewed the CIP with a focus on stormwater-related projects and supports the stormwater projects listed in the proposed CIP.

Parks and Historic Preservation Committee The Parks and Historic Preservation Committee reviewed the parks-related projects in the proposed CIP on March 13, 2024. The Parks and Historic Preservation Committee supports the proposed CIP and suggests that the City needs to keep maintaining the Tappmeyer House to ensure that the building remains in good condition.

Finance Committee The Finance Committee reviewed the proposed CIP on March 19, 2024. and supports the proposed CIP. The Finance Committee suggests that the City provide a cost/benefit analysis of electric vehicles over the coming months. This work is anticipated to be researched and completed by a new sub-committee with members from Finance and Energy and Environment.

Planning and Zoning Commission The Planning and Zoning Commission reviewed the proposed CIP at their meeting on March 18, 2024. On March 18th, the Commission voted and approved a recommendation to the City Council for adoption of the proposed CIP.

Staff Recommendation
The draft CIP lays out an ambitious schedule for improvements to the City's facilities, parks, streets and sidewalks, stormwater management programs and capital equipment. Considering the positive reviews from the Stormwater Committee, Parks and Historic Preservation Committee, Finance Committee, and Planning and Zoning Commission, as well as the positive ending fund balance for each of the three funds in the CIP, staff recommends that the City Council adopt the draft CIP for FY2025 to FY2029 as presented.

The current version of the draft CIP can be found on the City's website at:
http://www.creve-coeur.org/95/Capital-Improvement-Program

C

CAPITAL IMPROVEMENT PROGRAM

FISCAL YEARS 2025-2029

CAPITAL FUND

PARKS AND STORMWATER FUND

BUILDING PROJECT BOND FUND

DRAFT – FEBRUARY 23, 2024

Revised Draft March 19, 2024

Adopted by the City Council of the City of Creve Coeur through Resolution xxxx on April xx, 2024.

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EXECUTIVE SUMMARY

The Capital Improvement Program (CIP) is the City's long-range plan for improvements to infrastructure, parks, and other community facilities. The CIP is a tool to assess the long-term capital needs, values, and desires of the City and to establish funding of high-priority projects in a timely and cost-effective manner. This plan is a living document and is subject to amendment by the City Council.

The CIP is intended to ensure that policy makers are responsible to the Creve Coeur community with respect to the expenditure of City funds for capital improvements.

CIP Goals

The following are goals of the CIP:

- Provide a plan for the improvement or replacement of deteriorating infrastructure
- Improve operational or functional aspects of existing infrastructure
- Add new facilities and improve the community's infrastructure to enhance the quality of life in Creve Coeur
- Provide for the planned replacement of major equipment required for the City's operations

CIP Criteria

To be considered a capital improvement, projects or equipment must have a useful life of at least five years and have a minimum cost of $20,000.

A special set of criteria has been identified to assist in assessing and prioritizing CIP projects. Proposed projects reflect the goals of the Comprehensive Plan through their demonstration of these criteria:

- *Availability of Outside Funding*: higher priority is given to projects that are eligible for and are likely to be considered for grant funding or shared-cost programs, which would reduce the City's investment.
- *Beautification:* aesthetic improvements to natural habitats or frequently traveled or visited areas within the City for public enjoyment, such as the use of public art on public lands
- *Community Demand*: projects that have received a level of demonstrated resident support or demand, including support of City departments, boards, committees, and commissions.
- *Condition of Existing Facility*: improvements that replace or maintain the City's infrastructure, facilities, or equipment so that it remains in a serviceable, safe, and efficient condition.
- *Coordination (projects, regulations, City-adopted plans)*: projects that fit within planned coordination between multiple projects or agencies to reduce costs or minimize disruption to services, meet state or federal law requirements, or projects that are identified in other City-adopted plans.
- *Economic Growth:* projects focused on maintaining housing values and attracting businesses, residents, or visitors to the City. Projects supporting private development must include return on investment ratios or a fully documented cost/benefit analysis.
- *Operating Efficiency*: equipment or facilities improvements to streamline work processes or benefit from technological advancements. Projects that reduce the cost of operations will receive priority, but those that will increase the cost of operations must identify trade-offs to support those additional costs.
- *Protection & Conservation*: improvements to the City's park system or historical landmarks that allow these facilities to be enjoyed by future generations or projects that reduce the City's environmental impact.
- *Public Safety*: improvements that focus on preserving and protecting the general public from harm and reducing the City's risk exposure.

Relationship between the CIP and the Creve Coeur 2030 Comprehensive Plan

According to the Creve Coeur 2030 Comprehensive Plan:

> *Within the Creve Coeur 2030 Comprehensive Plan Update, many projects are identified or implied, as specific projects or as conceptual ideas. These projects and others, resulting from recommendations of the Comprehensive Plan, should be developed and incorporated in the City's annual CIP review process. Further detail and refinement of identified and conceptual projects, facilities, or infrastructure improvement needs will be required as the implementation of the Comprehensive Plan occurs.*

Development and Adoption of the CIP

According to the City Charter, a draft of the five-year CIP shall be proposed by the City Administrator to the City Council no later than the second regular meeting in February of each year. Prior to the submittal of the draft CIP to the City Council, public input is obtained through the City newsletter, website, and the City's boards, committees, and commissions.

Prior to the City Council's adoption of the CIP, and as required by City Charter, the CIP is submitted to the Finance Committee for recommendations and comments. The Planning & Zoning Commission also reviews the plan emphasizing the location, extent, and character of the proposed projects prior to City Council review, approval, and adoption. A public hearing is held each spring (typically in April) by the City Council to review the final draft of the CIP in March or April, prior to adoption.

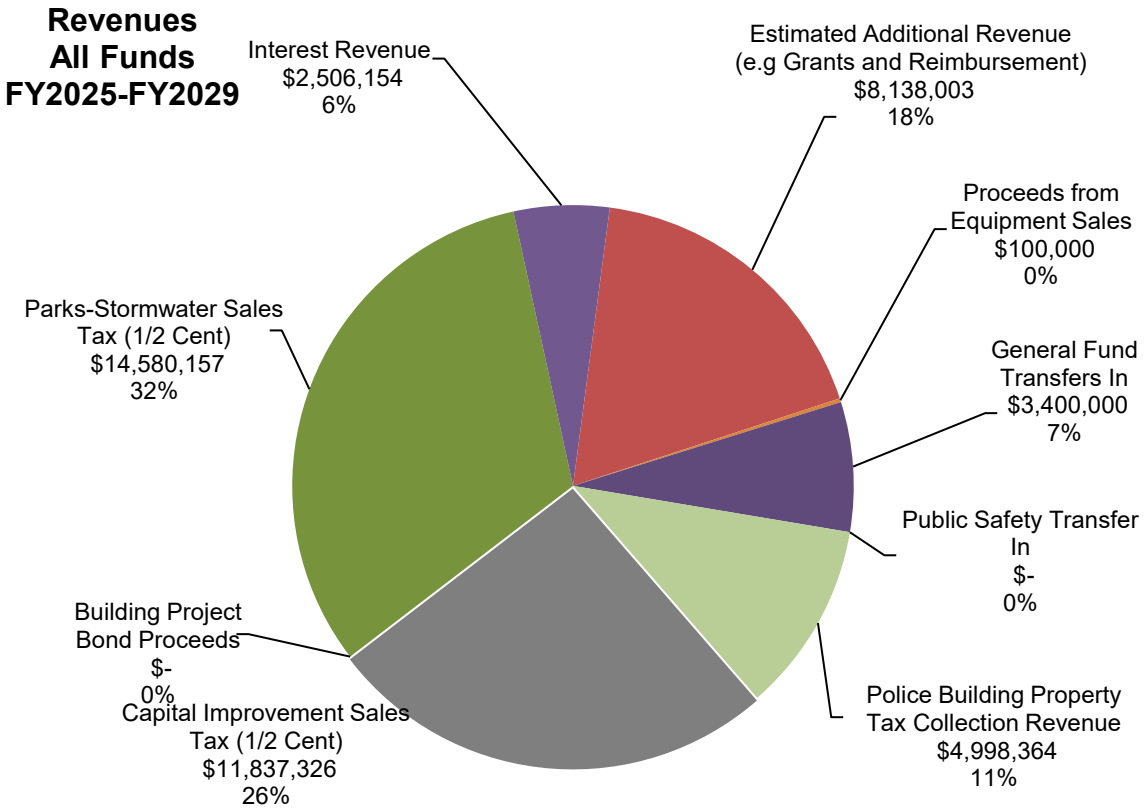
The CIP includes a description of each proposed project and equipment with details regarding justification, cost estimate, operating and maintenance budget impact, and funding sources.

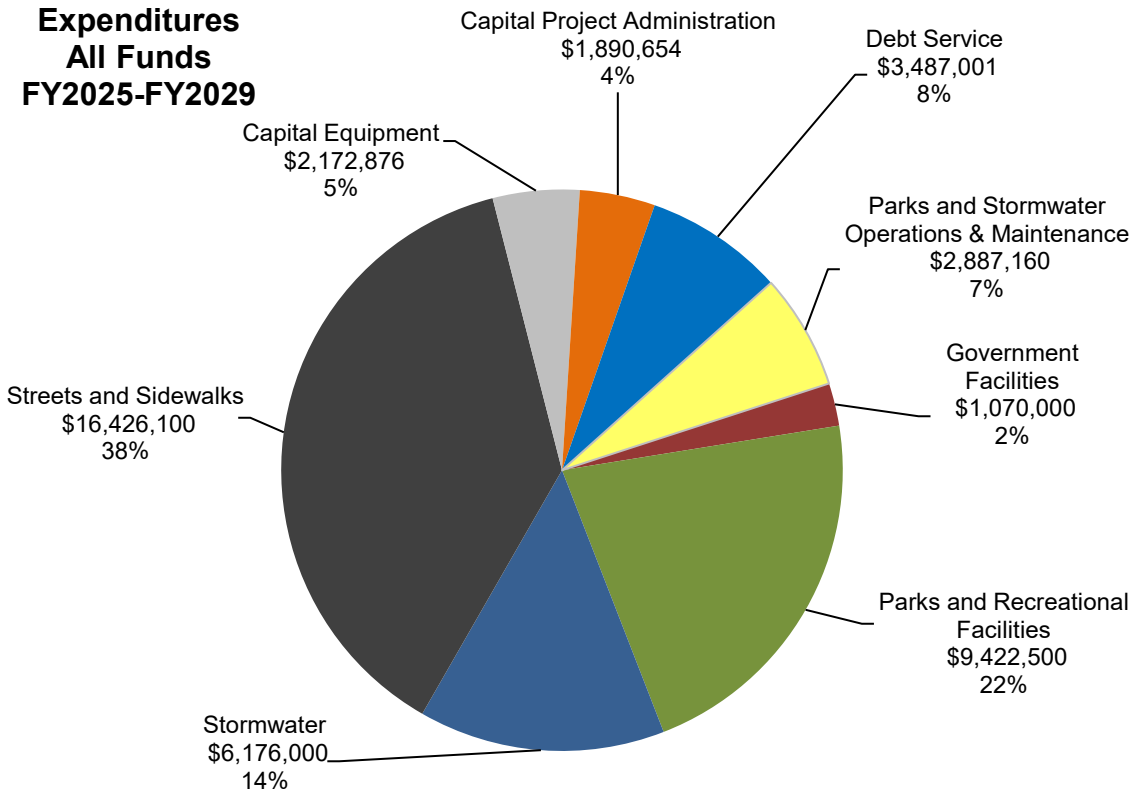
Funds in the CIP

There will be three funds that contribute to the FY2025-FY2029 CIP. These funds are:

1. Capital Fund. This fund is financed by a half-cent capital improvement sales tax, which is supplemented by annual transfers from the General Fund and project-specific grants.
    - Total Capital Fund revenues: $22.4 million
    - Total Capital Fund expenditures: $21.5 million
2. Parks and Stormwater Fund. In November 2020, voters in Creve Coeur approved a half-cent sales tax that is dedicated to finance operations, maintenance, and capital improvements for the City's parks and stormwater infrastructure. This fund will be supplemented by grants and other outside funding related to parks and stormwater.
    - Total Parks-Stormwater Tax Fund revenues: $17.8 million
    - Total Parks-Stormwater Tax Fund expenditures: $18.3 million
3. Building Project Bond Fund. In November 2016, voters in Creve Coeur approved a bond measure to build a new police station and to make security and accessibility improvements to the Creve Coeur Government Center. The police station was completed in 2020, so the majority of this fund's project-related expenses is complete. Most of the activity in the FY2025-FY2029 CIP is related to the fund's debt service.
    - Total Building Project Bond Fund revenues: $5.4 million
    - Total Building Project Bond Fund expenditures: $3.7 million

Combined, these three funds have a projected revenue of $45.6 million and projected expenditures of $43.5 million for the FY2025-FY2029 CIP. The charts below break down these revenues and expenditures into the general categories that are found in the CIP.





More detail is provided for each of the three funds in the sections that follow. Each fund is briefly described, and the revenues and expenses for each fund are summarized for the duration of the FY2025-FY2029 CIP. Project-specific summaries and financial projections are included for each line item that appears in the five-year CIP. Projects that are expected to be completed in FY2024 are not included in this report.

Appendix

This report is one of several documents that forms the CIP. Appendices to this report include:

- Appendix A: FY2025-FY2029 CIP Spreadsheets
- Appendix B: FY2020-FY2029 CIP 10-Year Summary
- Appendix C: Community Comments and Requests

The latest version of these documents can be found on the City's website at:

http://www.creve-coeur.org/95/Capital-Improvement-Program

Questions and Comments

If you have any questions or comments about the CIP, please contact Mark Perkins, City Administrator, at mperkins@crevecoeurmo.gov or (314) 872-2511.

CAPITAL FUND

The City's Capital Fund has served as the primary mechanism for funding capital projects in the CIP for many years. The Capital Fund finances investments into the City's government facilities, parks and recreational facilities, stormwater infrastructure, streets and sidewalks, capital equipment, and project administration.

Capital Fund Revenues

The City's Capital Fund has three main funding sources: a half-cent capital improvement sales tax, grants and other outside funding, and transfers from the General Fund. All funding sources combined, including interest revenue and other proceeds, are projected to generate $22.4 million over the FY2025-FY2029 CIP.

Half-Cent Capital Improvement Sales Tax. Projected sales tax revenues are approximately $11.8 million for the FY2025-FY2029 CIP, which averages out to approximately $2.37 million per year in the plan.

Sales tax revenue projections have improved significantly since the uncertainty and economic downturn associated with the COVID-19 pandemic forced the City to reduce its revenue estimates. Sales tax projections in the FY2025-FY2029 CIP include an estimated 1% increase each year, which will return the sales tax revenues to the FY2020 level by FY2025.

Grants and Outside Funding. Federal grants for roadway projects and accessibility improvements will provide approximately $6.1 million over the FY2025-FY2029 CIP.

Staff will seek additional grant funding during for this period, but applications for that funding are either in the evaluation process or not yet available. For projects that anticipate grant funding that has not yet been awarded, the City's matching funds are shown as the project costs in the fiscal years when

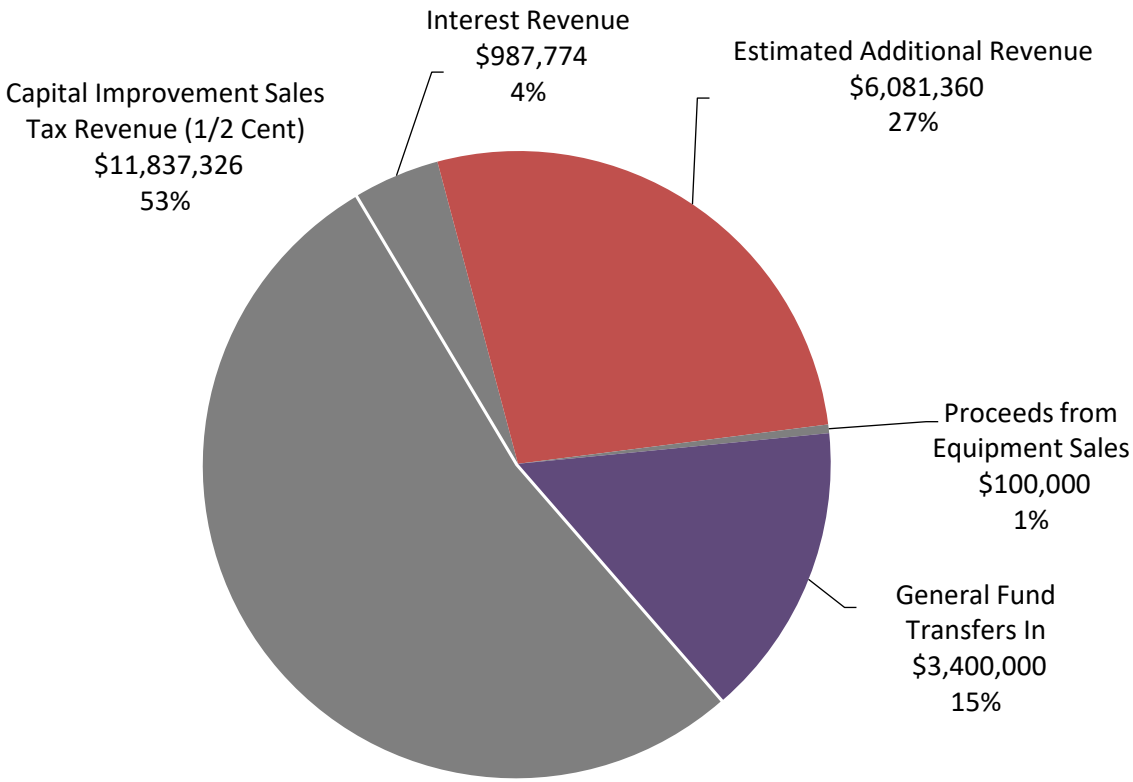
the phases of the project are planned to occur. The full cost of the project and the associated grant funding will be programmed into the CIP upon notification of award of the grant.

Transfers from the General Fund. The total transfer from the General Fund to the Capital Fund over the proposed FY2025-FY2029 CIP is $3.4 million.

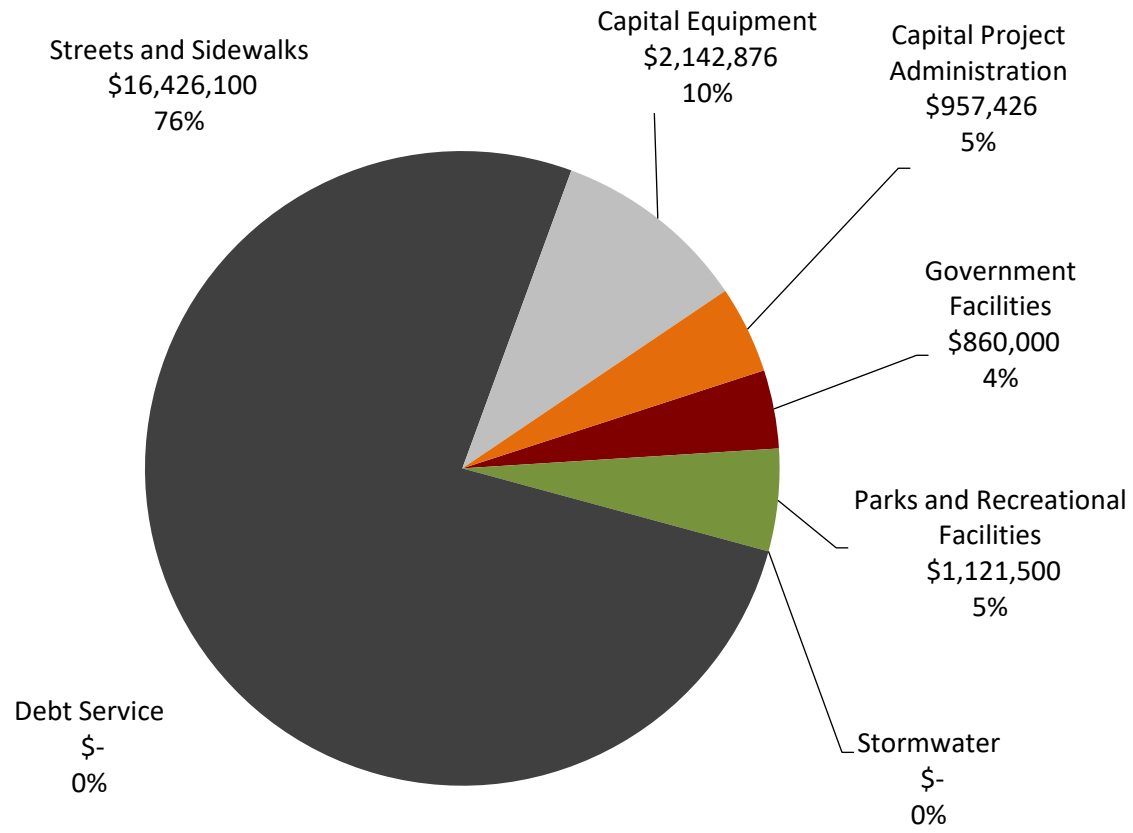
A transfer from the General Fund to the Capital Fund is proposed for each fiscal year in the proposed CIP. Annual General Fund transfers to the Capital Fund have been increased from $400,000 to $500,000, based on the transportation-oriented revenue sources of the General Fund which include the County road and bridge tax revenues. FY2028 also includes an additional transfer of $900,000 to be used for the roofing improvements to the Ice Arena and the Public Works Service Center.

Capital Fund Expenditures

Capital expenditures from the Capital Fund are projected to be approximately $21.5 million over the proposed FY2025-FY2029 CIP, with a maximum annual expenditure of $6.9 million in FY2026. Details about these expenditures can be found in the project summary sheets that follow.



FY2025-FY2029 CAPITAL FUND REVENUES



FY2025-FY2029 CAPITAL FUND EXPENDITURES

GOVERNMENT CENTER RENOVATIONS

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$113,128	$30,000	$30,000	$30,000	$30,000	$30,000	$0

Project Description:
Proposed projects in FY2025 will focus on needed repairs and renovations that will make the Government Center more inviting to residence and staff. Project will likely include improvements to the Multipurpose Room (such as new flooring); painting offices and common areas; and updating lighting to be more energy efficient with the help of an Ameren grant.

Existing Conditions:
The Creve Coeur Government Center has inadequate space for staff, meetings, archives, and storage. Renovations are also needed to make the Government Center more accommodating, helpful, and useful for both residents and staff. For example, the former Police Department and other areas of the Government Center will require extensive renovations before departments can be moved to more accessible locations.

Justification: *Operating Efficiency; Condition of Existing Facility*
The proposed projects for FY2025 will include continued lighting efficiencies that will help to lower energy cost and provide a well lite environment for various meetings and work areas. Construction of a training room that can also be used as a conference room, to provide improve learning and working conditions for staff.

Operating Budget Impact:
The proposed renovations will improve energy efficiency and replace aging systems that need frequent and costly maintenance.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 25,000
Land Acquisition	$ 0
Construction	$ 125,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025 – FY2029)	**$ 150,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 150,000
Total Funding	$
City's Contribution (FY2025 – FY2029)	**$ 150,000**

ROOFING FOR THE PUBLIC WORKS GARAGE

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$500,000	$0	$0	$0	$0

Project Description:
The Public Works garage roof was damaged during a hailstorm, and an infrared roof moisture inspection showed that water is leaking under the roof's waterproof membrane. This project proposes a tear-off and replacement of the roof. Project costs may be covered by insurance.

Existing Conditions:
The existing roof was damaged by hail. Inspections show that the roof is leaking.

Justification: *Operating Efficiency; Condition of Existing Facility*
The Public Works garage houses Public Works equipment and is where City-owned equipment is repaired and maintained. This structure is vital in keeping the Public Works fleet in good working order. Replacing the roof now will keep City-owned equipment from water damage and possibly prevent roof leaks from causing more damage in the future that may be even more costly to repair.

Operating Budget Impact:
Replacing the roof now will keep City-owned equipment from water damage and possibly prevent roof leaks from causing more damage in the future that may be even more costly to repair.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 500,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 500,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ TBD
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 500,000
Total Funding	$ (TBD)
City's Contribution	**$ 500,000**

EV CHARGING STATIONS AT THE POLICE DEPARTMENT AND GOVERNMENT CENTER

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$100,000	$0	$0	$0	$0	$0

Project Description:
The automotive market is rapidly moving towards electric vehicles (EVs). An August 8, 2022 article in *Car and Driver* states that EV registration increased by 60 percent in the first quarter of 2022 while overall new car registration dropped by 18 percent. IHS Markit estimates that by 2035, 45 to 50 percent of all passenger car sales will be EVs. Similarly, Police Departments are increasingly seeking to add EVs to fleets. Installing EV charging stations at the Police Department and Government Center would be the City's first step towards accommodating residents' changing vehicle preferences and adapting to market trends. The charging ports at the Government Center would be available for residents to use (for a fee) and, in the future, used to charge Public Works fleet EVs. The stations at the Police Department would allow the Police force to take advantage of fast accelerating vehicles that will also reduce fuel costs.

This project is eligible for rebates under an Ameren Missouri program that covers up to half the cost of EV charging station equipment and installation. Currently the Ameren Missouri program grant only covers public facing EV charging stations. Therefore, it is anticipated that EV charging station(s) at the Police Department would be installed at a later date, but the electrical underground infrastructure would be installed as part of the Government Center project.

Existing Conditions:
The City does not have public EV charging stations or stations available for City-owned fleet vehicles. Before the City can add EVs to the Police Department and Public Works fleets, EV changers need to be installed.

Justification: *Availability of Outside Funding, Coordination, Operating Efficiency, Protection & Conservation*
EVs offer many benefits including:

- Savings on fuel costs as compared to gas-powered vehicles. Savings increase when vehicles are changed during off-peak hours.
- With fewer moving parts, electric motors have lower maintenance needs, and the cost of ownership of EVs is often less than the total cost of ownership of gas-powered vehicles.
- Quick acceleration, an important performance measure for Police Department vehicles.
- Zero tailpipe (green house gases) emissions.

Operating Budget Impact:
As more EVs are added to City fleets, maintenance and fuel costs should decrease.

Comments:
None

EV CHARGING STATIONS AT THE POLICE DEPARTMENT AND GOVERNMENT CENTER

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 115,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 115,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 15,000
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 15,000**

Summary	Amount
Total Expenditures	$ 115,000
Total Funding	$ (15,000)
City's Contribution	**$ 100,000**

PUBLIC WORKS GARAGE PARKING LOT REPAIRS

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$75,000	$0	$0	$0	$0	$0

Project Description:
Sections of the Public Works Garage parking lot were installed many years ago and have experienced a high volume of traffic due to the nature of the operations required. The project proposes to repair failing asphalt and concrete sections of the parking lot to allow for the safe operation of equipment and vehicles.

Existing Conditions:
The parking lot has excessive potholing and cracking of the original asphalt and concrete pavements at numerous locations which will be rehabilitated as part of this project.

Justification: *Condition of Existing Facility & Operating Efficiency*
The Public Works garage houses Public Works equipment and is where City-owned equipment is repaired and maintained. The parking lot is vital in keeping the Public Works fleet on the streets to serve the community. Repairing the lot now will keep City-owned equipment from damage and possibly prevent further damage to the base layer of the lot in the future that may be even more costly to repair.

Operating Budget Impact:
Repairing the lot now will keep City-owned equipment from damage and possibly prevent further damage to the base layer of the lot in the future that may be even more costly to repair.

Comments:
None

PUBLIC WORKS GARAGE PARKING LOT REPAIRS

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 75,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 75,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 75,000
Total Funding	$
City's Contribution	**$ 75,000**

PUBLIC WORKS SETTLEMENT STUDY

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$35,000	$0	$0	$0	$0	$0

Project Description:
The Public Works building has experienced differential settlement over the years. A consultant has been retained in the past to conduct settlement studies at various locations within the building. The project will have the consultant to perform detailed surveys at multiple locations throughout the building to monitor the cracks in the walls, facades and other locations. The survey will occur over an eighteen to twenty-four month timeframe. The consultant will also recommend stabilization methods as/if necessary for the building.

Existing Conditions:
The Public Works building has experienced settlement in the past mainly due to the building being constructed on a fill site. Repairs to the building have been previously made due to the settlement experienced. A settlement study has been performed previously at the Public Works building and this project will be a continuation of the previous studies.

Justification: *Protection & Conservation*
New cracks are forming in the block walls at the maintenance facility. In addition, older cracks are widening causing loose blocks to fall from the walls. Safety of workers and the building structural integrity are our concerns.

Operating Budget Impact:
None

Comments:
None

PUBLIC WORKS SETTLEMENT STUDY

Expenditure Type	Amount
Planning, Design, and Engineering	$ 35,000
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 35,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 35,000
Total Funding	$
City's Contribution	**$ 35,000**

PARK OR DIELMANN COMPLEX IMPROVEMENTS (GRANT MATCH)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$30,500	$30,500	$0	$30,500	$0	$0

Project Description:
Funds listed in this account represent the City's anticipated matching funds for projects funded through Municipal Park Grants. To remain competitive, the City can only apply for Municipal Park Grants every other year. The FY2024 grant was used to assist with the costs for the Dielmann Recreation Complex including the refrigerant switchover and mechanical equipment replacement.

Existing Conditions:
Many aspects of the City's ice arena, golf course, and parks (including tennis courts, playgrounds, walking paths, pavilions, and other amenities) require maintenance, improvements, or replacement.

Justification: *Availability of Outside Funding; Condition of Ex. Facility; Others Depend Upon the Project*
By budgeting for the local match, a grant application can be completed without searching for available funds or making amendments to the program. Available grants may help to address any number of CIP criteria including, but not limited to, improving condition of existing facilities, operating efficiency, beautification, and protection and conservation of the park system or historical landmarks. These projects are supported by the needs assessments of the Dielmann Recreation Complex (FY2014) and Golf Course (FY2016) and the Parks and Recreation Master Plan (FY2019-FY2020).

Operating Budget Impact:
The improvements brought by these projects typically replace old or failing systems that require significant maintenance. These improvements should reduce operating costs.

Comments
The current maximum amount of funding that the City is eligible for through the Municipal Park Grant program is currently $525,000 per project. These grants are competitive, and the City's contribution to the project affects the project application score and likelihood of a funding award. The City plans to provide a 6% grant match for its projects in order to maximize the number of points related to the City's contribution, which would make the grant match about $30,500 for a project that receives the maximum grant funding.

PARK OR DIELMANN COMPLEX IMPROVEMENTS (GRANT MATCH) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 30,500
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025)	**$ 30,500**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ TBD
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding (FY2025)	**$ 0**

Summary	Amount
Total Expenditures	$ 30,500
Total Funding	$ (TBD)
City's Contribution (FY2025)	**$ 30,500**

ACCESSIBILITY IMPROVEMENTS (CDBG)

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0**	$0	$20,000	$20,000	$20,000	$20,000	$0

** Accessibility Improvements in Prior Years fell under 9501 Government Facilities.

Project Description:
The City of Creve Coeur is typically eligible for $20,000 each year for accessibility improvements through the Community Development Block Grant (CDBG) program. In FY2026, the City will propose a project to improve accessibility at the Dielmann Recreation Center with features like automatic opening devices for doors. For the FY2027 to FY2029 grants, several other projects will be considered for grants including improved accessibility into the Dielmann Recreation Center locker/restrooms and improved access at the ice rink.

Existing Conditions:
Projects are designed to improve facilities that are out-of-compliance with the current Americans with Disabilities Act (ADA) regulations.

Justification: *Public Safety; Coordination; Availability of Outside Funding*
Each project seeks to improve ADA compliance through accessibility improvements to government facilities and along public pedestrian routes. The focus of these projects is to provide public safety and upgrade existing facilities.

Operating Budget Impact:
None. Projects that are undertaken as part of this program are relatively small in scope, and the City typically is 100% reimbursed for the project costs through the CDBG federal grant.

Comments:
The City is designating this funding with the anticipation of receiving grant funding in the amount of $20,000 from the CDBG Commission. This annual grant is available to municipalities to address accessibility projects. Scheduling of this project is subject to a successful grant application and availability of grant funding.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 20,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 20,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 20,000
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 20,000**

Summary	Amount
Total Expenditures	$ 20,000
Total Funding	$ (20,000)
City's Contribution	**$ 0**

ROOFING FOR ICE ARENA (INSURANCE CLAIM)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$400,000	$0	$0	$0	$0

Project Description:
The Ice Arena's roofing was damaged during a hailstorm. This project proposes a tear-off and replacement of the roof. Project costs may be covered by insurance. The project will also require that the existing solar panels be removed and then reinstalled after the new roof is in place.

Existing Conditions:
The existing roof was damaged by hail, which has resulted in leaks at various locations in the building. Follow up inspections verified that the roof is leaking and will need to be replaced to prevent more expensive damage to the structure.

Justification: *Operating Efficiency; Condition of Existing Facility*
The Ice Arena houses expensive and sensitive equipment. A roof that is in good repair is essential to protect the investments the City has made at this facility.

Operating Budget Impact:
Replacing the roof in FY2026 will help prevent water damage that may add to future repair costs.

Comments:
None

ROOFING FOR ICE ARENA (INSURANCE CLAIM)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 400,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 400,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ TDB**

Summary	Amount
Total Expenditures	$ 400,000
Total Funding	$ (TBD)
City's Contribution	**$ 400,000**

GOLF COURSE IRRIGATION SYSTEM REPLACEMENT (MUNICIPAL PARK GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$550,000	$0	$0	$0	$0

Project Description:
The project will completely replace the existing golf course irrigation system in FY2026. The existing irrigation system is over 40 years old and has had many repairs over its life to maintain the high-quality course that is currently enjoyed by residents and visitors. The new system will be a state-of-the-art system and will allow greater flexibility in watering operations. The new system will include a new booster pump. The City intends to apply for the Municipal Park Grant to partially fund this construction project.

Existing Conditions:
The existing golf irrigation system is showing its age with numerous leaks and structural issues. These numerous issues lead to inefficient watering through areas of the course and increase water usage due to leaks. Also, the golf course maintenance staff needs to dedicate time to repair the breaks, which will be greatly reduced after installation of a new irrigation system.

Justification: *Condition of Ex. Facility; Availability of Outside Funding; Operating Efficiency*
The City will seek Municipal Park Grant Funding to supplement the cost associated with this construction project. The municipal part grant request is anticipated to be around $500,000 along with the City's contribution for a total project cost of approximately $1,500,000. The new state of the art system will allow golf course maintenance staff to optimize watering rates and timing throughout the entire course.

Operating Budget Impact:
The improvements brought by this project will replace an old and failing irrigation system that requires significant maintenance labor hours and material costs to keep operational. The new irrigation system will reduce operation costs related towards repairs of the irrigation system on the golf course.

Comments:
None

GOLF COURSE IRRIGATION SYSTEM REPLACEMENT (MUNICIPAL PARK GRANT)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 550,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 550,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ (TBD)
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ (TBD)**

Summary	Amount
Total Expenditures	$ 550,000
Total Funding	$ (TBD)
City's Contribution	**$ 550,000**

STREET AND SIDEWALK MAINTENANCE PROGRAM

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$3,549,000	$1,442,300	$1,463,900	$1,485,900	$1,508,200	$1,530,800	$0

Project Description:
The project includes concrete pavement replacement, asphalt pavement resurfacing, asphalt pavement maintenance, micro surfacing, roadway striping, and sidewalk replacement for the annual maintenance of the City's roadway and sidewalk networks.

Existing Conditions:
While the majority of the City's pavement network is in good condition, annual and on-going evaluation of pavement and sidewalk conditions find aging and failing pavement and sidewalks that need to be addressed.

Justification: *Public Safety; Condition of Existing Facility; Coordination; Community Demand*
The City's street and sidewalk network form the City's largest asset that serves all of the City's residents and visitors. Annual maintenance of streets and sidewalks is required to preserve their functionality and to limit future repair costs. The City uses a pavement management system to track pavement conditions, and the City aims to evaluate the condition of each street on a four-year rotation. The pavement condition data assists with the prioritization of pavement repairs and maintenance and helps the City preserve its existing infrastructure as efficiently as possible. Federal regulations require that sidewalks meet accessibility standards so that all users have an opportunity to travel safely. The City's sidewalk maintenance program follows the federal regulations and supports the City's Pedestrian Plan.

Operating Budget Impact:
Pavement and sidewalk maintenance programs will improve and preserve the infrastructure and will result in a reduction in the number of pothole repairs and other on-going maintenance needs.

Comments:
Approximately 10% of the annual street and sidewalk improvements is typically directed toward accessibility improvements to the City's sidewalk network in support of the accessibility transition plan. Larger projects, such as grant-funded improvements, are stand-alone projects that are described in separate project sheets.

Expenditure Type	Amount
Planning, Design, and Engineering	$ 30,000
Land Acquisition	$ 0
Construction	$ 1,412,300
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025)	**$ 1,442,300**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 1,442,300
Total Funding	$ 0
City's Contribution (FY2025)	**$ 1,442,300**

STREET RECONSTRUCTION / REHABILITATION

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$300,000	$0	$300,000	$300,000	TBD

Project Description:
The City plans to fully or substantially replace sections of failed residential roadways through this project. The various needs of the pavement network are evaluated each year to determine which streets need to be reconstructed. The City plans to replace the pavement on Conway Gardens Court in FY2024 and the reconstruction funds for FY2025 are planned to be used on Office Parkway as part of the Craig Road STP grant project. Later projects will be determined by future reviews of pavement conditions.

Existing Conditions:
Residential streets that are considered for reconstruction have reached the end of their useful lives and are generally in too poor of condition to gain long-term benefits from the City's typical pavement maintenance programs. Most of the streets that have been included in this program were older concrete streets that were overlaid with asphalt decades ago.

Justification: *Public Safety; Condition of Existing Facility; Community Demand*
All of the City's streets will eventually reach the end of their useful lives, fail at a structural level, and require reconstruction. This program provides the City with a tool to address some of its residential streets that are in poor or failing condition that typical maintenance programs can no longer improve.

Operating Budget Impact:
Streets with failing pavement typically require frequent maintenance in the form of pothole patching and emergency pavement repairs, which City staff often performs to address the issues as quickly as possible. Allocating funds for reconstruction also allows for more of the maintenance budget to be used for maintaining and preserving streets that are in better condition, which means more streets and sidewalks will be addressed, reducing the number of calls for City staff to make repairs.

Comments:
The City has invested more than $2 million into street reconstruction projects during the past ten years

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Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 900,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025-FY2029)	**$ 900,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source ()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 900,000
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 900,000**

FERNVIEW SIDEWALK PROJECT
PHASE 1 – OLIVE TO GALLAGHER (DESIGN & TAP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$187,724	$230,000	$645,000	$0	$0	$0	$0

Project Description:
The City developed a concept plan to add a sidewalk along Fernview Drive (between Olive Boulevard and Gallagher Road) and along the side streets to connect with the existing sidewalk networks on each side of Fernview. The result of this project would be a unified collection of subdivision sidewalks that are currently not connected. Funding in FY2025 and FY2026 represents the City's matching funding for design, easement acquisition, and construction for a federal Transportation Alternatives Program (TAP) grant. The TAP grant application was approved and will cover 80% of the right-of-way and construction cost in FY2025 & FY2026.

Existing Conditions:
Fernview Drive is a collector roadway that serves several of the residential subdivisions in Ward 4. Sidewalks were constructed throughout most of the subdivisions to the east and west of Fernview, but not along or adjacent to Fernview itself. The result is a series of sidewalks without connections to each other or to Olive Boulevard.

Justification: *Community Demand; Public Safety; Availability of Outside Funding*
Increasing the walkability of Creve Coeur is a common request from residents and a goal outlined in the City's Strategic Plan. Creating a sidewalk along Fernview that connects to the adjacent existing sidewalks will make progress toward this goal.

Operating Budget Impact:
None

Comments:
The City's anticipated portion of a grant-funded project are included in FY2025 and FY2026.

FERNVIEW SIDEWALK PROJECT

PHASE 1 – OLIVE TO GALLAGHER (DESIGN & TAP GRANT) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 187,724
Land Acquisition	$ 230,000
Construction (TAP Grant)	$ 645,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 1,062,724**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 700,000
State Cost-Share Program	$ 0
Outside Funding Source:()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 1,062,724
Total Funding	$ (700,000)
City's Contribution	**$ 362,724**

NEW BALLAS SIDEWALK EXTENSION PHASE 3 – (FEDERAL TAP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$67,037	$10,000	$550,000	$0	$0	$0	$0

Project Description:
This project involves relocating a retaining wall and underground utilities to accommodate a new sidewalk along the west side of North New Ballas Road between Magna Carta Drive and Rocky Drive. Constructing this sidewalk will connect two sections of sidewalk to create a continuous pedestrian path along the west side of New Ballas from Conway Road to Old Ballas Road. The City was awarded a federal grant for this project through the Transportation Alternatives Program (TAP), but a water main relocation will be required which caused the project to exceed the City's budget. In FY2024, the City reapplied and was approved for a TAP grant for this project, with funding to cover 80% of the right-of-way and construction cost in FY2025 & FY2026.

Existing Conditions:
No sidewalk currently exists at this site, but pedestrians commonly use the small grass strip nonetheless. The property's retaining wall has been a barrier to constructing a sidewalk here.

Justification: *Public Safety; Condition of Existing Facility; Availability of Outside Funding; Resident Request*
Completion of this sidewalk will provide a more suitable pedestrian route for those wishing to walk north along the west side of New Ballas Road.

Operating Budget Impact:
No significant maintenance is anticipated in the near future. The new retaining wall will be located outside of the right of way and will be maintained by the property owner.

Comments:
This project will complete the sidewalk improvements envisioned in a sidewalk concept study from 2008. The conceptual plans from that study provided the basis of the design for a portion of the Ladue Road Sidewalk Project in 2013 and for the New Ballas sidewalk improvements between Ladue Road and De Smet Jesuit High School in 2019.

Funding shown for "prior years" includes a preliminary design and preparation of easement documents that were completed to coordinate with the property owners and to prepare for the grant application.

NEW BALLAS SIDEWALK EXTENSION PHASE 3 – (FEDERAL TAP GRANT)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 77,037
Land Acquisition	$ 0
Construction	$ 550,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 627,037**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 448,000
State Cost-Share Program	$ 0
Outside Funding Source	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 627,037
Total Funding	$ (448,000)
City's Contribution	**$ 179,037**

LINDBERGH-OLD OLIVE INTERSECTION (STATE COST-SHARE/STP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$553,935	$2,045,500	$0	$0	$0	$0	$0

Project Description:
This project involves the partial reconstruction of the intersection of Lindbergh Boulevard and Old Olive Street Road to add a traffic signal that will provide full access in all directions. This signal will allow for a pedestrian/bicycle crossing across Lindbergh and will connect the two halves of Old Olive, both of which are critical steps toward implementation of the Old Olive Great Street plan and the 39 North Master Plan. The City will use federal Surface Transportation Program (STP) grant funding and State Cost-Share Program funding to finance approximately 83% of the project.

Existing Conditions:
The existing intersection of Lindbergh Boulevard and Old Olive Street Road allows only right-in, right-out access for Old Olive on both sides of Lindbergh. A concrete barrier along the Lindbergh median prohibits any east-west vehicular or pedestrian crossing of this intersection.

Justification: *Public Safety; Availability of Outside Funding; Coordination; Beautification*
The proposed improvements to this intersection are supported by the Comprehensive Plan Creve Coeur 2030, the 39 North Master Plan, and the Old Olive Street Road Great Street Plan. These improvements provide the best chance for a pedestrian or bicycle crossing of Lindbergh Boulevard in that area.

Operating Budget Impact:
The City will most likely need to take over the maintenance of Old Olive Street Road from the Missouri Department of Transportation in return for the funding for this project. The ongoing maintenance cost for Old Olive Street Road could be significant.

Comments:
Conceptual plans for this intersection were developed as part of the Old Olive Street Road great street plan, which was completed through a partnership of St. Louis County, the St. Louis Economic Development Partnership, and the City of Creve Coeur. Funding in “prior years” includes concept development and design costs in FY2019-FY2021 to prepare for the grant applications and to design the project. Additional funding for the project may be available through the Governor’s Transportation and MODOT Cost Share Program.

LINDBERGH-OLD OLIVE INTERSECTION (STATE COST-SHARE/STP GRANT)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 233,935
Land Acquisition	$ 320,000
Construction	$ 1,870,000
Equipment	$ 0
Other (Construction Inspections)	$ 175,000
Total Expenditures	**$ 2,598,935**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 934,360
Federal Transportation Alternative Program Grant	$ TBD
State Cost-Share Program	$ 1,024,395
Outside Funding Source	$ 0
Total Funding	**$ 1,958,755**

Summary	Amount
Total Expenditures	$ 2,598,935
Total Funding	$ (1,958,755)
City's Contribution	**$ 640,180**

OLIVE-LINDBERGH INTERCHANGE & OLIVE ENHANCEMENTS

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$302,250	$50,000	$0	$0	$0	$0	TBD

Project Description:
The City has partnered with the St. Louis Economic Development Partnership (SLEDP) and the Missouri Department of Transportation (MoDOT) to add decorative elements to the planned reconfiguration of the interchange of Olive Boulevard at Lindbergh Boulevard. The enhancements include black powder coat and illuminated street name signs to two new traffic signals on Olive and decorative median, pedestrian-scale lighting, and bridge treatments along Olive over Lindbergh. The project is managed by SLEDP and was completed in spring 2022. The funding identified in FY2025 is for the design of landscaping for the Olive-Lindbergh interchange.

Existing Conditions:
The existing cloverleaf interchange is outdated and was reconfigured to a more compact, pedestrian-friendly design. In FY2025, the design plans for landscaping will be done. The City will hire a consultant to complete the required engineering design.

Justification: *Coordination; Condition of Existing Facility; Beautification*
The Olive-Lindbergh interchange serves as one of the main entry points to the City and is located in the middle of the emerging 39 North District. Visual improvements in this area promote the City and encourage growth.

Operating Budget Impact:
The City will be responsible to maintain the signal and bridge enhancements and landscaping. The costs associated with the bridge and signal enhancements is expected to be minimal for the foreseeable future. Landscape maintenance costs could be limited if native grasses and other low-maintenance plants are used in the landscaping design and will be evaluated during landscaping design and selection.

Comments:
The cost to construct the landscaping at this interchange will not be known until the design is complete.

OLIVE-LINDBERGH INTERCHANGE & OLIVE ENHANCEMENTS CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 50,000
Equipment	$ 0
Other (Construction Inspections)	$ 0
Total Expenditures	**$ 50,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source ()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 50,000
Total Funding	$ 0
City's Contribution	**$ 50,000**

OLIVE MEDIAN ENHANCEMENT STOCK

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$59,841	$20,000	$20,000	$20,000	$20,000	$20,000	$0

Project Description:
The median on Olive Boulevard has concrete, decorative planters. If the planters are hit during a traffic accident, often the entire median planter needs to be replaced. The construction and delivery for concrete planters takes months. Rather than wait months at a time for replacement planters, the City maintains a supply. Additionally, the City pays a lower cost per unit by buying several planters at one time. The cost of the planters is reimbursed later though insurance.

Existing Conditions:
Olive Boulevard is one of the City's busiest streets, and median enhancements with well-maintained vegetation can have a traffic calming effect while promoting the City as a place that takes pride in making public-facing spaces aesthetically pleasing.

Justification: *Condition of Existing Facility; Operating Efficiency; Beautification*
In most years, the concrete decorative planters have needed to be replaced several times. By buying ahead and in bulk, the City pays less per unit and has planters ready to be installed when needed.

Operating Budget Impact:
The cost per unit is lower when the City buys median enhancements in bulk.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 20,000
Equipment	$ 0
Other (Construction Inspections)	$ 0
Total Expenditures (FY2025)	**$ 20,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source:(Insurance)	$ 20,000
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 20,000
Total Funding	$ (20,000)
City's Contribution (FY2025)	**$ 0**

CRAIG ROAD IMPROVEMENTS (STP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$179,800	$1,315,000	$0	$0	$0	$0	$0

Project Description:
The project involves improvements to the intersection layout, resurfacing pavement, and reconstructing and expanding sidewalks along Craig Road and Olde Cabin Road between Old Ballas Road and Office Parkway. The City has been awarded a federal Surface Transportation Program (STP) grant for this project. The grant will reimburse the City for approximately 60% of the total cost of the project.

Existing Conditions:
The pavement of Craig Road is currently in fair condition, but sections of the pavement have failed. The traffic flow along Craig is hampered by non-standard intersections with Olde Cabin Road and Office Parkway, and the sidewalks along Craig Road are generally inadequate and have poor accessibility at the intersections.

Justification: *Public Safety; Condition of Existing Facility; Availability of Outside Funding; Resident Request*
Portions of Craig Road are in poor condition, and the City has provided increasing attention to pavement repairs and pothole patching. Improvements to the intersections along Craig Road are recommended to improve traffic flow and safety and to provide safe and accessible sidewalk crossings at these intersections.

Operating Budget Impact:
The pavement and sidewalks of Craig Road are in increasing need of maintenance. Roadway resurfacing and sidewalk reconstruction will reduce future maintenance costs.

Comments:
Funding in “Prior Years” was for a conceptual design plan for this project, which the City used to evaluate its options and to support its application for grant funding.

CRAIG ROAD IMPROVEMENTS (STP GRANT)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 179,800
Land Acquisition	$ 75,000
Construction	$ 1,240,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 1,589,800**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 960,000
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source	$ 0
Total Funding	**$ 960,000**

Summary	Amount
Total Expenditures	$ 1,589,800
Total Funding	$ (960,000)
City's Contribution	**$ 629,800**

NEW BALLAS IMPROVEMENTS
PHASE 2 – S NEW BALLAS (DESIGN AND STP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$150,000	$50,000	$1,275,000	$0	$0	$0	$0

Project Description:
The project includes pavement resurfacing, concrete curb and sidewalk replacement, and accessibility improvements along New Ballas Road from Conway Road to Ladue Road. The project will also include a pedestrian connection to the bus stop near Mercy Hospital along the east side of New Ballas. The City has been awarded a federal Surface Transportation Program (STP) grant for this project. The grant will reimburse the City for 80% of the right-of-way and construction costs in FY2025 & FY2026.

Existing Conditions:
The asphalt pavement is generally in good condition, but many of the concrete sidewalks, curbs, and entrances are in poor condition. Although areas of the sidewalk and curbing were replaced in FY2019, areas still fall short of the current accessibility standards. South New Ballas Road was found to have an average pavement condition index (PCI) of 47 in 2023, which indicates that the pavement is generally in "marginal" condition and that is currently an appropriate candidate for pavement preservation. The pavement will be 20 years old at the time of the anticipated construction for this project, the pavement joints are cracking, and the overall pavement condition is expected to continue to decline such that repairs and resurfacing are necessary.

Justification: *Public Safety; Condition of Existing Facility; Availability of Outside Funding*
New Ballas Road is the City's largest street and one of two City-maintained streets classified as a minor arterial. Preservation of this street's pavement is a high priority, both for the traveling public and to control future costs. The deteriorating pavement joints, sidewalks, and curbs require a significant investment to correct, and grant assistance for the work will make affording these improvements much more manageable.

Operating Budget Impact:
This project will eliminate pavement patching needs and sidewalk issues that require staff attention.

Comments:
This project is the second of what is expected to be four phases of work along New Ballas Road.

NEW BALLAS IMPROVEMENTS

PHASE 2 – S NEW BALLAS (DESIGN AND STP GRANT) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 150,000
Land Acquisition	$ 50,000
Construction	$ 1,275,000
Equipment	$ 0
Other ()	$ 0
Total Expenditures	**$ 1,475,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 1,060,000
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source ()	$ 0
Total Funding	**$ 1,060,000**

Summary	Amount
Total Expenditures	$ 1,475,000
Total Funding	$ (1,060,000)
City's Contribution	**$ 415,000**

NEW BALLAS IMPROVEMENTS
PHASE 3 - LADUE TO MAGNA CARTA (DESIGN AND STP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$150,000	$20,000	$250,000	$0	$0

Project Description:
The project includes pavement resurfacing, concrete curb replacement, illuminated street name signs, traffic signal improvements, and accessibility improvements along New Ballas Road from Ladue Road to Magna Carta Drive. Staff plans to apply for federal grant assistance for this project in FY2025. The grant match for this phase includes 100% of the design (FY2026), and 80% of the land acquisition and construction costs. If the grant application is successful, construction is anticipated to occur in FY2028. The full project cost will be included in the appropriate fiscal years if the City successfully obtains a grant for this work.

Existing Conditions:
The asphalt pavement along New Ballas Road is generally in good condition, but many of the concrete sidewalks, curbs, and entrances are in poor condition. Much of the existing sidewalk falls short of the current accessibility standards. North New Ballas Road was found to have an average pavement condition index (PCI) of 53 in 2022, indicating the pavement was generally in "fair" condition at that time. New Ballas Road was last resurfaced in 2008, meaning that it will be more than 20 years old and will need to be resurfaced when project moves to construction.

Justification: *Public Safety; Condition of Existing Facility; Availability of Outside Funding*
New Ballas Road is the City's largest street and one of two City-maintained streets classified as a minor arterial. Preservation of this street's pavement is a high priority, both for the traveling public and to control future costs. The deteriorating sidewalks, curbs, and entrances require a significant investment to correct, and grant assistance for the work will make affording these improvements much more manageable.

Operating Budget Impact:
This project will eliminate pavement patching needs and sidewalk issues that require staff attention.

Comments:
This project is the third of what are expected to be four phases of work along New Ballas Road.

NEW BALLAS IMPROVEMENTS

PHASE 3 - LADUE TO MAGNA CARTA (DESIGN AND STP GRANT) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 150,000
Land Acquisition	$ 20,000
Construction	$ 250,000
Equipment	$ 0
Other ()	$ 0
Total Expenditures	**$ 420,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ TBD
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source ()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 420,000
Total Funding	$ (TBD)
City's Contribution	**$ 420,000**

NEW BALLAS IMPROVEMENTS
PHASE 4 - MAGNA CARTA TO OLIVE (DESIGN AND STP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$0	$125,000	$25,000	$250,000	$0

Project Description:
The project includes pavement resurfacing, concrete curb and sidewalk replacement, and accessibility improvements along New Ballas Road from Magna Carta Drive to Olive Boulevard. Staff plans to apply for federal grant assistance for this project in FY2026. The grant match for Phase 4 includes 100% of the design costs (FY2027) and 20% of the estimated land acquisition and construction costs. If the grant application is successful, construction is anticipated to occur in FY2029. The full project cost will be included in the appropriate fiscal years if the City is successful in obtaining a grant for the work.

Existing Conditions:
The asphalt pavement is generally in good condition, but many of the concrete sidewalks, curbs, and entrances are in poor condition. The City has improved the accessibility features at the signalized intersections, but improvements remain. This portion of North New Ballas Road was found to have an average pavement condition index (PCI) of 53 in 2022, which indicates that the pavement is generally in "fair" condition and that is currently an appropriate candidate for pavement preservation. The pavement will be more than 20 years old at the time of the anticipated construction for this project. While the pavement is currently in good condition, the age of the pavement and its heavy use are expected to continue to contribute to the pavement's rapid deterioration during the next 5-7 years.

Justification: *Public Safety; Condition of Existing Facility; Availability of Outside Funding*
New Ballas Road is the City's largest street and one of two City-maintained streets classified as a minor arterial. Preservation of this street's pavement is a high priority, both for the traveling public and to control future costs. The deteriorating sidewalks, curbs, and entrances require a significant investment to correct, and grant assistance for the work will make affording these improvements much more manageable.

Operating Budget Impact:
This project will eliminate pavement patching needs and sidewalk issues that require staff attention.

Comments:
This project is the last of what is expected to be four phases of work along New Ballas Road.

NEW BALLAS IMPROVEMENTS

PHASE 4 - MAGNA CARTA TO OLIVE (DESIGN AND STP GRANT) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 125,000
Land Acquisition	$ 25,000
Construction	$ 250,000
Equipment	$ 0
Other ()	$ 0
Total Expenditures	**$ 400,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ TBD
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source ()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 400,000
Total Funding	$ 0
City's Contribution	**$ 400,000**

LADUE ROAD IMPROVEMENTS PHASE 1 (DESIGN & STP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$175,000	$25,000	$480,000	$0	$0	$0

Project Description:
This project will include pavement resurfacing and sidewalk accessibility improvements along Ladue Road, from Emerson Road to Ladue Estates Drive and would be the first of two phases of work to repave Ladue Road. Staff applied for a federal grant for this project in FY2024. If successful, construction would be in FY2027. The grant match shown above includes 100% of the design costs (FY2025) and 20% of the estimated land acquisition and construction costs. The full project cost will be included in the appropriate fiscal years if the City is successful in obtaining a grant for the work.

Existing Conditions:
Ladue Road's pavement is fifteen years old and is beginning to show its age. Multiple utility projects and failing repairs from the previous paving project have given Ladue Road an uneven ride.

Justification: *Public Safety; Condition of Existing Facility; Availability of Outside Funding*
Ladue Road serves approximately 10,000 vehicles per day and is one of the City's most-traveled streets. Preservation of the Ladue Road pavement should be a high priority for the City. According to the proposed plan, construction of this project would take place when the pavement is 16-17 years old. At that age, Ladue Road will likely need pavement resurfacing.

Operating Budget Impact:
A newer road surface will require few (if any) repairs by the City's staff.

Comments:
None

LADUE ROAD IMPROVEMENTS PHASE 1

PHASE 1 (DESIGN & STP GRANT) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 175,000
Land Acquisition	$ 25,000
Construction	$ 480,000
Equipment	$ 0
Other ()	$ 0
Total Expenditures	**$ 680,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ TBD
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source:()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 680,000
Total Funding	$ (TBD)
City's Contribution	**$ 680,000**

OLIVE-270 OVERPASS CLEANING & PAINTING

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$20,000	$200,000	$0	$0	$0	$0

Project Description:
This project will involve nighttime cleaning and/or repainting of the exterior (i.e., facing Interstate 270) faces of the Olive Boulevard bridge over Interstate 270. Although the bridge is owned by the State of Missouri, the City of Creve Coeur is responsible for the maintenance of the decorative elements that the City added to the bridge. Among those elements are the decorative bridge faces, which have begun to show some wear. Access to these bridge faces will need to be from Interstate 270, so a significant portion of this project will be traffic control to close several lanes of the highway during each night of work.

Existing Conditions:
What appear to be water stains or peeling paint are evident in several locations along both faces of the Olive overpass. The white stains detract from the tan and beige tones of the bridge face.

Justification: *Beautification; Condition of Existing Facility*
The decorative elements of the Olive overpass promote awareness to drivers that they are in Creve Coeur. The decorative elements also promote the City as a beautiful, well-maintained place to work, shop, and live. Stains or peeling paint detract from the positive image of the City as a desirable destination.

Operating Budget Impact:
None

Comments:
None

OLIVE 270 OVERPASS CLEANING & PAINTING

Expenditure Type	Amount
Planning, Design, and Engineering (FY2025)	$ 20,000
Land Acquisition	$ 0
Construction	$ 200,000
Equipment	$ 0
Other ( )	$ 0
Total Expenditures	**$ 220,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source:()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 220,000
Total Funding	$ 0
City's Contribution	**$ 220,000**

FERNVIEW SIDEWALK
PHASE 2 GALLAGHER TO LEHAVRE (DESIGN & TAP GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$80,000	$0	$0	$0	$0

Project Description:
The City developed a concept plan to add a sidewalk along Fernview Drive (between Olive Boulevard and Gallagher Road) and along the side streets to connect with the existing sidewalk networks on each side of Fernview. This project would be a continuation of this sidewalk network along Fernview / Bellerive Estates from Gallagher to LeHavre. The result of this project would be a unified collection of subdivision sidewalks that are currently not connected. Funding in FY2026 represents the City's matching funding for design, easement acquisition, and construction for a federal Transportation Alternatives Program (TAP) grant, the application for which could become available in FY2026.

Existing Conditions:
Fernview Drive / Bellerive Estates Drive is a collector roadway that serves several of the residential subdivisions in Ward 4. Sidewalks were constructed throughout most of the subdivisions bordering Fernview and Bellerive Estates, but not along or adjacent to Fernview or Bellerive Estates. The result is a series of sidewalks without connections to each other or to Olive Boulevard.

Justification: *Community Demand; Public Safety; Availability of Outside Funding*
Increasing the walkability of Creve Coeur is a common request from residents and a goal outlined in the City's Strategic Plan. Creating a sidewalk along Fernview that connects to the adjacent existing sidewalks will make progress toward this goal.

Operating Budget Impact:
None

Comments:
The actual cost and schedule for the project will be incorporated into future capital improvement program plans if the City successfully obtains a federal grant for the project.

FERNVIEW SIDEWALK

PHASE 2 GALLAGHER TO LEHAVRE (DESIGN & TAP GRANT) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 80,000
Land Acquisition	$ TBD
Construction	$ TBD
Equipment	$ 0
Other ()	$ 0
Total Expenditures	**$ 80,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ TBD
State Cost-Share Program	$ 0
Outside Funding Source:	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 80,000
Total Funding	$ (TBD)
City's Contribution	**$ 80,000**

MASON ROAD PEDESTRIAN SIGNAL

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$25,000	$0	$0	$0	$0	$0

Project Description:
The project will include the installation of a solar powered pedestrian signal (rectangular rapid flashing beacons {RRFB}) on Mason Road near the walking path entrance for Millennium Park. With Millennium Park renovations being completed in the spring of 2025, an increase in pedestrians crossing Mason Road at this location is anticipated. Also, construction of the Duever Estates subdivision on the West side of Mason Road near this location has started and an increase of pedestrian activity is anticipated from the new homes. This project will provide a sidewalk link section to the newly construction public sidewalk along the Duever Estates frontage along Mason Road.

Existing Conditions:
Mason Road is a two-lane roadway section at this location with one travel lane in each direction. There are sidewalks generally on both sides of the road. The existing midblock crossing has pavement markings and signage at the roadway edges.

Justification: *Community Demand; Public Safety*
The solar powered RRFB at this location will provide an increase in visibility for pedestrians using this crossing, will enhance safety at this location and will increase the percentage of motorists yielding for pedestrians using the crosswalk.

Operating Budget Impact:
None

Comments:.
None

MASON ROAD PEDESTRIAN SIGNAL

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 25,000
Equipment	$ 0
Other ()	$ 0
Total Expenditures	**$ 25,000**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ 0
State Cost-Share Program	$ 0
Outside Funding Source:	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 25,000
Total Funding	$
City's Contribution	**$ 25,000**

PUBLIC WORKS CAPITAL EQUIPMENT

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$831,915	$400,258	$433,151	$428,288	$435,586	$445,593	TBD

Project Description:
This project is dedicated to replacing older equipment used by the Department of Public Works. Equipment replacement is based on a scheduled rotation that helps limit the financial impact on any one year. The focus will be on replacing equipment that will be about ten years old.

Existing Conditions:
Some Public Works equipment has reached the end of useful and dependable life. Significant maintenance costs can be expected if this equipment is kept in service.

Justification: *Public Safety; Operating Efficiency; Condition of Existing Facility*
Replacement of the equipment noted above is necessary to provide services to the residents and repair the City's infrastructure. Without replacement, it will not only have an effect on public safety, it will also affect the City's operating efficiency due to down time for equipment repairs.

Operating Budget Impact:
Replacement of older equipment helps reduce the overall annual maintenance costs of the Public Works fleet. Using older equipment can result in significant increases in repair bills and increased equipment downtime, which reduce staff's ability to operate efficiently to provide services to the residents.

Comments:
Capital equipment includes equipment costing more than $20,000 and having a useful life of at least five years. Public Works staff plans to sell the replaced equipment at auction after the new replacement vehicle arrives. The amount of revenue from the auctioned equipment helps to offset the cost of new equipment.

FY2025 FLEET REPLACEMENT PROJECTIONS

Equipment to be Purchased	Estimated Cost	Equipment for Trade/Auction
Two-ton Dump Truck with Plow	$ 174,858.00	2011 Two-ton Dump Truck
3/4-ton Pickup Truck (Asphalt flat bed)	$ 68,600.00	2013 3/4 Ton Pickup Truck
Leaf Vacuum (20 CY; Diesel Powered)	$ 104,800.00	2013 Leaf Vacuum (Diesel Powered)
Electric Pickup Truck (PW Engineering)	$ 52,000.00	New to Fleet
	$ 400,258.00	

FY2026 FLEET REPLACEMENT PROJECTIONS

Equipment to be Purchased	Estimated Cost	Equipment for Trade/Auction
Two-ton Dump Truck with Plow	$ 178,355.00	2011 Two-ton Dump Truck
One-ton Dump Truck	$ 81,600.00	2013 One-ton Dump Truck
Skid Steer	$ 66,300.00	2012 Skid Steer
Leaf Vacuum (20 CY; Diesel Powered)	$ 106,896.00	2014 Leaf Vacuum (Diesel Powered)
	$ 433,151.00	

FY2027 FLEET REPLACEMENT PROJECTIONS

Equipment to be Purchased	Estimated Cost	Equipment for Trade/Auction
Two-ton Dump Truck with Plow	$ 181,922.00	2012 Two-ton Dump Truck
One-ton Dump Truck	$ 83,232.00	2015 One-ton Dump Truck
Electric Pickup Truck (PW Engineering)	$ 54,100.00	2006 3/4-ton Project Manager Truck
Leaf Vacuum (20 CY; Diesel Powered)	$ 109,034.00	2015 Leaf Vacuum (Diesel Powered)
	$ 428,288.00	

FY2028 FLEET REPLACEMENT PROJECTIONS

Equipment to be Purchased	Estimated Cost	Equipment for Trade/Auction
Two-ton Chipper Truck	$ 158,558.00	2015 Two-ton Dump Truck
Back Hoe	$ 150,000.00	2008 John Deere 410J
3/4-ton Pickup Truck (Service Body)	$ 76,090.00	2015 3/4-ton Pickup (Sign Truck)
4 - Mobile Column Lifts for Large Trucks	$ 50,938.00	New to Fleet Maintenance
	$ 435,586.00	

FY2029 FLEET REPLACEMENT PROJECTIONS

Equipment to be Purchased	Estimated Cost	Equipment for Trade/Auction
Two-ton Dump Truck with Plow	$ 189,272.00	2016 Two-ton Dump Truck
One-ton Dump Truck	$ 86,595.00	2016 One-ton Dump Truck
Electric Pickup Truck (PW Engineering)	$ 56,287.00	2012 Colorado - Project Manager Truck
Leaf Vacuum (20 CY; Diesel Powered)	$ 113,439.00	2016 Leaf Vacuum (Diesel Powered)
	$ 445,593.00	

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 2,142,876
Other	$ 0
Total Expenditures (FY2025–FY2029)	**$ 2,142,876**

Funding Type	Amount
Outside Funding Source ()	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 2,142,876
Total Funding	$ 0
City's Contribution (FY2025–FY2029)	**$ 2,142,876**

PROJECT MANAGEMENT

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$165,081	$180,226	$185,700	$191,300	$197,100	$203,100	TBD

Project Description:
This line item includes the costs associated with the full-time salary and benefits for two engineers to help oversee the design and construction of projects outlined in the Capital Improvement Program: One engineer will be 100% funded through the Capital Fund; the second engineer will be 50% funded through the Capital Fund and 50% funded through the Parks and Stormwater Fund.

Existing Conditions:
Engineering staff assists the Director of Public Works with monitoring construction activity, preparing contract documents, performing design surveys, and the overall management of the Capital Improvement Program.

Justification: *Operating Efficiency*
The responsible and effective administration of the City's capital improvement projects, and grant-related projects in particular requires expertise and significant staff time. Projects often have similar schedules, and multiple projects can require immediate attention at the same time. The City's Public Works Administrative staff is too small to consistently accommodate the demands of these projects while also meeting the expectations for the various other services provided by the Department of Public Works.

Operating Budget Impact:
Annual costs for this position include salary and benefits plus ongoing employee training, city equipment, cell phone, and general supplies, which are anticipated to be approximately $1,000 per year.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 957,426
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 0
Other	$ 0
Total Expenditures (FY25-FY29)	**$ 957,426**

Funding Type	Amount
Outside Funding Source	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 957,426
Total Funding	$ 0
City's Contribution (FY25-FY29)	**$ 957,426**

PARKS AND STORMWATER FUND

In November 2020, Creve Coeur voters approved a half-cent sales tax, the revenue from which is dedicated to the operations, maintenance, and improvements needed for the City's parks, recreation, and stormwater infrastructure. Most of the City's projected investments into parks and stormwater are proposed to be financed through this fund.

Parks and Stormwater Fund Revenues

The City's Parks and Stormwater Fund has two main funding sources: a half-cent parks and stormwater sales tax and reimbursement from grants and other outside funding. All the funding sources, including interest revenue, are projected to generate approximately $17.8 million over the FY2025-FY2029 CIP.

Half-Cent Parks and Stormwater Sales Tax. The projected sales tax revenues are approximately $14.58 million for the FY2025-FY2029 CIP, which averages out to approximately $2.92 million per year in the plan.

Grants and Outside Funding. There are two primary outside funding sources for parks and stormwater improvements: the Municipal Park Grant and MSD OMCI reimbursement program.

- *Municipal Park Grant*. The City can seek Municipal Park Grant to supplement up to $525,000 for parks improvements about every year. This funding source will be shared with the Capital Fund and will be identified in the proper fund as projects are identified.
- *MSD OMCI Reimbursement*. The Metropolitan St. Louis Sewer District (MSD) offers a reimbursement program for stormwater-related operations, maintenance, and construction improvements (OMCI) expenses in the Deer Creek watershed, which is generally the area in Creve Coeur east of Interstate 270 and south of Olive Boulevard. In addition, there is also University City MSD OMCI District, which is a relatively small geographic area north of Olive Boulevard and east of North Lindbergh Boulevard. University City OMCI District is the watershed drainage district that generally flows into/through University City, but also flows into other municipalities including Creve Coeur. The City plans to seek approximately $1.3 million in reimbursement from this program over the five-year CIP.

Parks and Stormwater Fund Expenditures

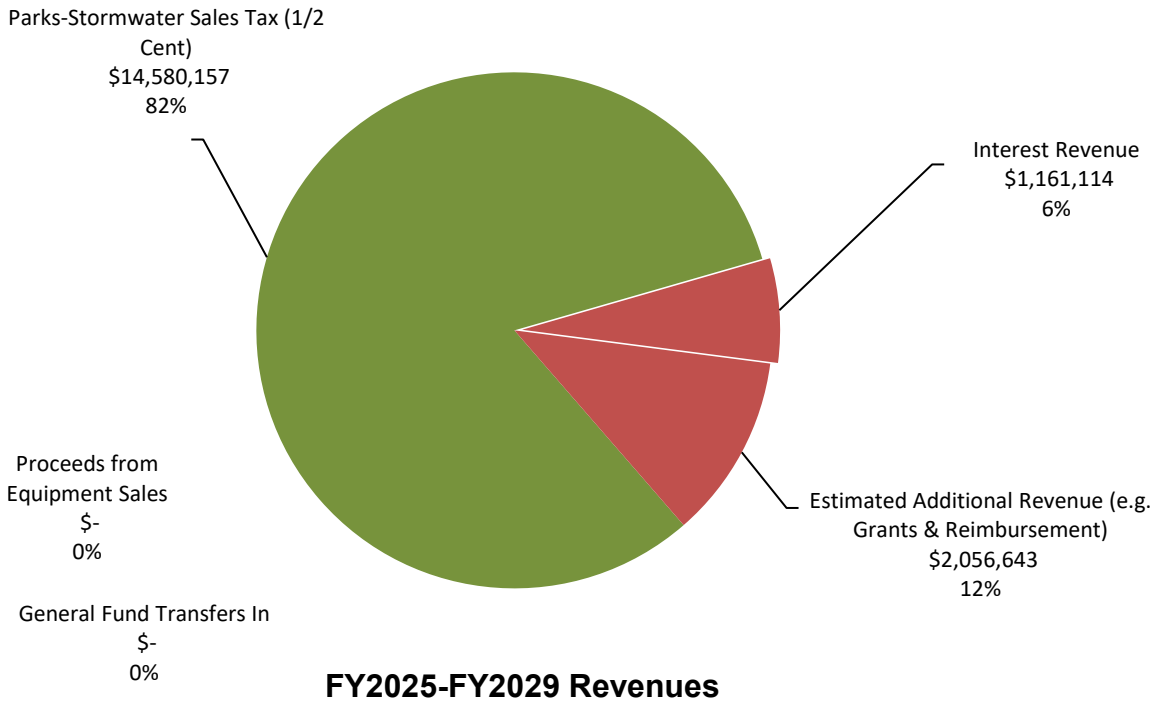
This sales tax revenue does not have a designated division of how it will be spent, but the City Council can decide to set the allocation amounts or to evaluate the division of funds through each CIP process. The proposed five-year CIP includes the following allocation of the sales tax revenue:

- Parks Projects 48%
- Stormwater Projects 31%
- Capital Project Administration 5%
- Parks and Stormwater Operations & Maintenance 16%

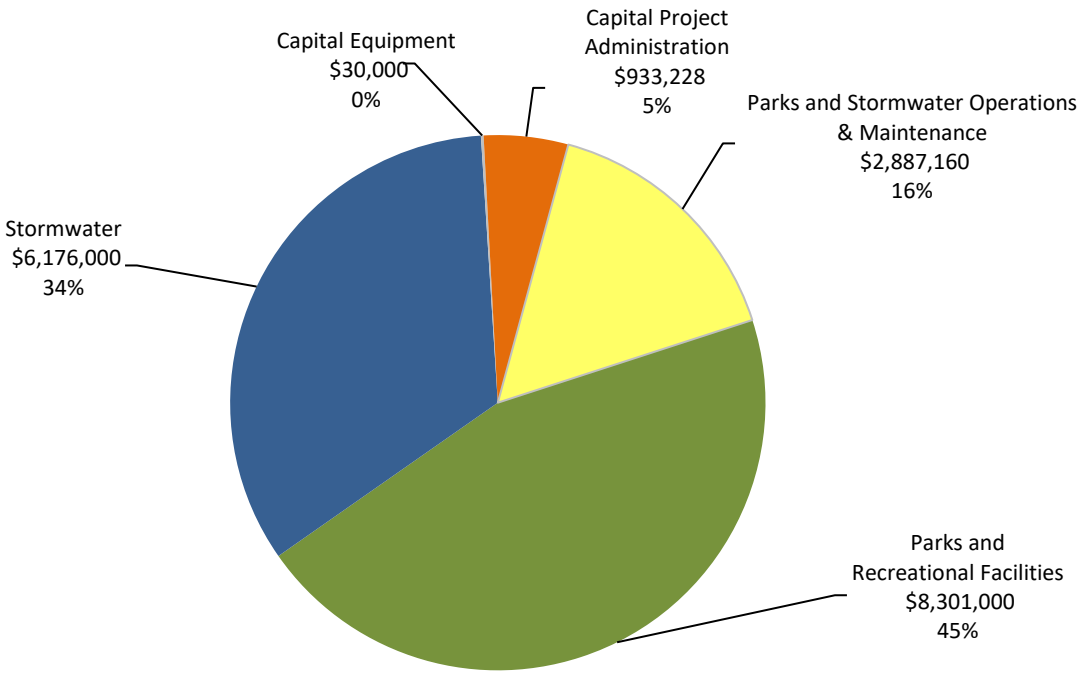
Funding for parks is proposed to be the greatest portion due a backlog of deferred parks maintenance, the improvements envisioned through the Parks and Recreation Master Plan, and the initial stormwater focus on smaller projects and the development of a Stormwater Management Plan.

At this time, the proposed CIP does not include investment into the Dielmann Recreation Complex or the Creve Coeur Golf Course though the Parks-Stormwater Tax Fund. Projects involving this property are included in the Capital Fund.

Summaries of the projected revenues and expenditures for the Parks and Stormwater Fund are included below, and details about the projects and other expenses that are proposed to be financed through this fund can be found in the project summary sheets that follow.



FY2025-FY2029 Revenues



FY2025-FY2029 Expenditures

HISTORIC BUILDING REHABILITATION AND PRESERVATION

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$69,030	$55,000	$25,000	$80,000	$25,000	$25,000	TBD

Project Description:
This project sets aside annual funding for repairs and improvements to the Lake School House at Lake School Park and to the Tappmeyer House at Millennium Park. In FY2025, the focus will be on repairing interior window sills, interior issue, lighting and removal of the exterior chair lift at Tappmeyer. Future funding years could be combined to allow for a larger project, such as Tappmeyer House exterior painting.

Existing Conditions:
The interior of the Tappmeyer House has a few conditions that need attention in the coming year. They include repairs to the interior wall from water damage, repair and reconditioning of a few interior window sills, repaint of the front porch flooring, lighting needs on 2nd floor, and the removal of the exterior ADA chair lift and repair of the railing as the same location.

Justification: *Condition of Existing Facility; Protection and Conservation*
Like any of the City's buildings and facilities, the Tappmeyer House will need regular routine maintenance and improvements to remain structurally sound and attractive.

Operating Budget Impact:
Improvements to the locally historic buildings will help reduce the maintenance needs and costs for this building.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 210,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025-FY2029)	**$ 210,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 210,000
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 210,000**

PARKING LOT SEALING

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$0	$25,000	$0	$0	$0

Project Description:
This project involves pavement repairs, crack sealing, seal coat, and restriping lines and arrows for the parking lot at Conway Park.

Existing Conditions:
Most of the asphalt pavement in the parking lot at Conway Park is in good condition, but over time, all paved surfaces begin to crack and the parking lot lines fade. Regular pavement maintenance such as sealing prolongs the life of the paved surface.

Justification: *Condition of Existing Facility; Operating Efficiency; Beautification*
Repairs, crack sealing, and a seal coat for the asphalt pavement combine to provide good preventive maintenance for asphalt pavement, and such preventive maintenance will delay more intense and more costly repairs. Newly painted lines will clearly mark the parking spaces. In addition, the parking lot is one of the first things that most park visitors see, and the sealing and repainting will have an element of park beautification to help make that first impression a good one.

Operating Budget Impact:
Sealing pavement helps prevent the need for maintenance activities such as filling pot holes.

Comments:
None.

PARKING LOT SEALING

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 25,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 25,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 25,000
Total Funding	$ 0
City's Contribution	**$ 25,000**

PARK FURNITURE REPLACEMENT

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$20,000	$20,000	$20,000	$20,000	$20,000	$0

Project Description:
This project involves the regular replacement of park furniture that is at the end of its useful life. Replacement will involve benches, trash receptacles, and picnic tables.

Existing Conditions:
The City offers dozens of benches, trash receptacles, and picnic tables. Park furniture is exposed to the elements year-round and over time, paint fades, materials degrade, and the furniture becomes unsightly and perhaps even unsafe. Further, the style of the furniture is inconsistent within the City's park network.

Justification: *Condition of Existing Facility; Operating Efficiency; Beautification*
Sharp edges and other hazards can develop on park furniture during the aging process and from normal wear and tear. Replacing park furniture that is past its useful life keeps the City's parks safer and makes them more inviting, enjoyable, and beautiful.

Operating Budget Impact:
Replacing park furniture decreases the amount of time and effort Parks staff needs to expend on repairs. New furniture will be expected to be virtually maintenance free for the next 5-10 years.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 100,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025-FY2029)	**$ 100,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 100,000
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 100,000**

MALCOLM TERRACE PARK TRAIL IMPROVEMENTS

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$25,000	$0	$0	$0	$0

Project Description:
In FY2022, the wooded trails in Malcolm Terrace Park were re-established as rock trails, trail markers were installed along each trail, protective railings were installed along areas bordering Deer Creek, and trail maps were installed at each entrance to the trail system. This project plans for rock and drainage repairs along these paths in FY2026.

Existing Conditions:
Over a mile of nature trails weave through the woods of Malcolm Terrace Park. These trails are currently in good condition.

Justification: *Community Demand; Operating Efficiency*
One of the goals set out in the City's Strategic Plan was to establish a more options for pedestrians. The Parks and Recreation Master Plan also called for the expansion of the parks trail network. Planned maintenance for the trails will help keep the trails in good condition and in service.

Operating Budget Impact:
Clearing the brush and other growth along the paths has been added to the City's annual parks mowing services contract.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 25,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025-FY2029)	**$ 25,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 25,000
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 25,000**

MILLENNIUM PARK IMPROVEMENTS

PHASE 2: TRAILS AND RIDGEMOOR FOREST CONNECTION

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$	$0	$0	$110,000	$850,000	$0

Project Description:
This project involves the design and construction for three new pedestrian bridges and a new trail through the woods along the south side of Millennium Park. One of these bridges would create a new connection between Millennium Park and the Ridgemoor Forest subdivision at the north end of Deland Drive. Additionally, this project will involve improvements around the Tappmeyer House.

Existing Conditions:
Informal, dirt trails currently exist where the proposed subdivision connection and wooded trails would be located.

Justification: *Community Demand; Condition of Existing Facility; Coordination*
The most popular improvement that residents requested during the development of the Parks and Recreation Master Plan and the Millennium Park Master Plan was expanded trails in the parks. The proposed project would replace informal, uneven, dirt trails with gravel trails and would replace the informal creek crossings with pedestrian bridges that can provide easy access to the park and its trails.

Operating Budget Impact:
Maintenance of these bridges and trails is expected to be minimal at first, but it may become necessary to routinely trim back the brush along the new trails.

Comments:
None.

MILLENNIUM PARK IMPROVEMENTS

PHASE 2: TRAILS AND RIDGEMOOR FOREST CONNECTION CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 90,000
Land Acquisition	$ 0
Construction	$ 870,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 960,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 960,000
Total Funding	$ 0
City's Contribution	**$ 960,000**

VENABLE PARK IMPROVEMENTS

PHASE 1: TRAIL, BRIDGE, TENNIS COURTS, & SPLASH PAD

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$514,270	$2,200,000	$0	$0	$0	$0	$0

Project Description:
The exact scope of this project has not yet been determined, but it will include elements from the Parks and Recreation Master Plan, such as the renovation of the restroom building for year-long operation, replacement of the tennis courts with post-tension concrete courts, replacement of pavilion, improved parking, a memorial to Dr. H. Phillip Venable, new furniture, the addition of a splash pad, and improved accessibility.

Existing Conditions:
Several of the facilities at Venable Memorial Park are aging and require updates or replacement. The asphalt tennis courts have been overlaid multiple times and can no longer be reliably repaired, and facilities like the pavilion, asphalt paths, and connector bridge have not been updated in the past ten years.

Justification: *Community Demand; Condition of Existing Facility; Coordination*
The project will coordinate with the recommendations of the Parks and Recreation Master Plan and the preliminary planning efforts for Venable Park. The tennis courts were selected as the first phase of improvements due to their popularity as the central features of Venable Park and due to their age and deteriorated condition. Additional, bridge access to the park was singled out due to its age and deteriorated condition.

Operating Budget Impact:
New facilities are expected to require less annual maintenance and fewer funds than the existing equipment.

Comments:
None

VENABLE PARK IMPROVEMENTS

PHASE 1: TRAIL, BRIDGE, TENNIS COURTS, & SPLASH PAD CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 514,270
Land Acquisition	$ 0
Construction	$ 2,200,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 2,714,270**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 2,714,270
Total Funding	$ 0
City's Contribution	**$ 2,714,270**

PLAYGROUND SAFETY SURFACE REPLACEMENT

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$125,000	$0	$0	$200,000	TBD

Project Description:
This project involves the replacement of damaged areas and rejuvenation or replacement of the rubberized safety surface beneath the City's playground at Conway Park FY2026. The project will involve the installation of a safety surface under the playground at Malcolm Terrace Park FY2029, which is currently a wood mulch surface.

Existing Conditions:
The rubberized surfaces beneath the City's playgrounds provide the required protection for children and other users against injury from a fall from the playground or swing set. These surfaces lose their flexibility over time, and generally need to be rehabilitated or replaced within 12-15 years. The safety surface at Conway Park was installed in 2011 and will be about 15 years old in FY2026. Staff will continue to evaluate the surfaces at Conway Park, Millennium Park, and Venable Park and will recommend repairs or replacement to these surfaces accordingly.

Justification: *Condition of Existing Facility; Coordination; Operating Efficiency, Public Safety*
The safety surface at Conway Park playground is nearing the end of its life cycle and will see increased operational cost to maintain safety performance. Keeping the safety surface of the City's playgrounds in good condition is required for the continuing use of the playgrounds and the safety of the playgrounds' users.

Operating Budget Impact:
Installation of a safety surface at Malcolm Terrace Park will reduce annual cost incurred by the Public Works staff to remove and reinstall mulch.

Comments:
The safety surface beneath the primary playground at Millennium Park is scheduled for replacement in FY2024 as part of the Millennium Park Phase 1 project, and the safety surface for the playground at Venable Park was replaced in FY2023.

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 325,000
Equipment	$
Other	$ 0
Total Expenditures (FY2025 – FY2029)	**$ 325,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 325,000
Total Funding	$ 0
City's Contribution (FY2025- FY2029)	**$ 325,000**

MILLENNIUM PARK IMPROVEMENTS

PHASE 3: PARK ENTRANCE & PARKING LOT IMPROVEMENTS

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$0	$0	$70,000	$400,000	$0

Project Description:
The Millennium Park Master Plan envisions several reconfiguration and improvements to the park entrance and parking lot. This project would involve the design and construction of parking lot improvements, lighting improvements, reconfiguration and improvement of the park entrance plaza.

Existing Conditions:
Access from the parking lot to the park, as well as, pedestrian connections from BJC hospital is limited. Lighting in the parking lot and in the park is non-existing and does not offer a safe environment or park visitors. The entrance plaza is dated in appearance, offers little room for social gatherings and vegetation limits view into the park.

Justification: *Beautification, Community Demand, Condition of Existing Facility*
This project will coordinate with the recommendations of the Park Master Plan and the preliminary designs for Millennium Park. Improvements to the park entrance will offer improvements to safety to park guest and provide increased accessibility. The park entrance is one of the first things that most park visitors see, and an elegant park entrance will help make a great first impression.

Operating Budget Impact:
The main impact to the operating budget will involve additional electrical cost for lighting and staff effort to maintain the lights.

Comments:
None.

MILLENNIUM PARK IMPROVEMENTS

PHASE 3: PARK ENTRANCE & PARKING LOT IMPROVEMENTS CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 70,000
Land Acquisition	$ 0
Construction	$ 400,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 470,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 470,000
Total Funding	$ 0
City's Contribution	**$ 470,000**

LAKE SCHOOL PARK RENOVATIONS

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$55,710	$11,000	$75,000	$675,000	$2,600,000	$0	$0

Project Description:
This project involves the design and construction of numerous renovations at Lake School Park. The project plan is to replace the existing tennis courts with post-tensioned concrete courts, construct new pickleball courts, construct a playground area, renovations to restroom facilities and associated work items.

Existing Conditions:
The current tennis courts are nearly 20 years old and are nearing the end of their life expectancy. Existing restroom facilities are likewise 20 years old and in need of updates to allow access year-round by visitors.

Justification: *Condition of Existing Facilities; Community Demand*
One of the primary user requests in the Parks and Recreation Master Plan was to offer year-round restroom facilities in the parks and update of tennis facilities with pickleball. Existing courts will be good candidates for replacement in 5 to 7 years, and will reduce the maintenance associate with older facilities to keep them open for public use.

Operating Budget Impact:
The main impact to the operating budget will involve additional electrical cost for lighting both the tennis and pickleball courts. We will see a reduction in staff maintenance labor hours to address cracking and tennis court related issues.

Comments:
The renovation project is in the concept design phase and public meetings will be held to review concept plans for the project.

LAKE SCHOOL PARK RENOVATIONS

Expenditure Type	Amount
Planning, Design, and Engineering	$ 130,710
Land Acquisition	$ 0
Construction	$ 3,286,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 3,416,710**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 3,416,710
Total Funding	$ 0
City's Contribution	**$ 3,416,710**

39N GREENWAY CONNECTION TO CENTENNIAL TRAIL

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$45,750	$0	$300,000	$0	$0	$0	$0

Project Description:
The Great Rivers Greenway (GRG) is a public agency connecting the St. Louis region with greenways. The concept calls for a 600-mile network of greenways connecting St. Louis City, St. Louis County and St. Charles County. The next phase of this trail network is the Centennial Trail plan, which will connect Forest Park and Creve Coeur Lake Park, coming from Warson Park in Olivette to the east, working its way through the light industrial / 39 North district before moving into unincorporated St Louis County. The money budgeted currently is for the first two or three segments of the 39 North Connector pathway.

The 39 North Connector segments of this project start at Stacy Park on the east side, head north along Warson Road, then west along Olive Blvd, then north along Corporate Square and a connection to the main Centennial Greenway path near Gateway and Research Boulevards. The 39N Connector path is divided into five segments. This project is anticipated to fund the first few segments of the 39N Connector. GRG has indicated that they will participate in a portion of the funding for the 39N Connector path. In addition, the City would likely pursue grant opportunities for construction of the path.

Existing Conditions:
GRG moved forward with preliminary design identified in the 39 North Greenway Plan in 2023 and applied for a CMAQ grant in February of 2024. If this grant application is successful construction of the Centennial Greenway from Warson Road to Baur Blvd. (along Gateway and Research) would likely be constructed in 2028.

Justification: *Community Demand; Coordination; Economic Growth; Protection & Conservation*
GRG has indicated (subject to approval of their board) to fund a significant portion of the cost in planning, design and construction of the 39N Connector path. The project will further support one of the goals set in the City's Strategic Plan to establish more options for pedestrians and provide expansion of the parks trail network. A robust trail network will attract more business to the community and make Creve Coeur a desirable place to live.

Operating Budget Impact:
None

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 45,750
Land Acquisition	$ 0
Construction	$ 300,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 345,750**

Funding Type	Amount
Federal Surface Transportation Program Grant	$ 0
Federal Transportation Alternative Program Grant	$ TBD
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ TBD**

Summary	Amount
Total Expenditures	$ 345,750
Total Funding	$ TBD
City's Contribution	**$ 345,750**

VENABLE PARK MEMORIAL (HDR FOUNDATION GRANT)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$75,000	$225,000	$0	$0	$0	$0	$0

Project Description:
This project involves creating a lasting memorial to honor Dr. Venable. The goal is to have commemorative artwork that will engage visitors in the Venable's story. Through design elements, signage and future programming, this project will help inform visitors about the life and character of Dr. Venable as well as educate generations to come on what he faced in Creve Coeur. The memorial will be woven into the park master plan so it will be part of the overall aesthetics of the park.

Existing Conditions:
The park does not currently have a memorial to honor Dr. Venable or tell of his story.

Justification: *Community Demand; Coordination; Economic Growth; Protection & Conservation*
Community demand for this project has existed for quite some time. In 2019, Dr. Venable's story was brought to light to the Mayor and City Council.

Operating Budget Impact:
None

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 75,000
Land Acquisition	$ 0
Construction	$ 225,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 300,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 300,000
Total Funding	$ 0
City's Contribution	**$ 300,000**

MALCOLM TERRACE PARK PAVILION REPLACEMENT

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$0	$0	$0	$75,000	$0

Project Description:
This project involves the replacement of the pavilion at Malcolm Terrace Park. The pavilion provides shelter to visitors to the park. This upgrade will compliment improvements made in 2022.

Existing Conditions:
In 2021, a concrete base was poured under the pavilion, which improved the structures stability. However; the pavilion roofing and support system are approaching the end of life and are in need of replacement.

Justification: *Condition of existing facility; Beautification*
The existing pavilion, associated concrete footings and flat work is in need of replacement. This replacement will serve to ensure a safe space for park visitors and provide an improvement to the park's aesthetics.

Operating Budget Impact:
None

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 75,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 75,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 75,000
Total Funding	$ 0
City's Contribution	**$ 75,000**

MILLENNIUM PARK – PARKING LOT SOLAR LIGHTING

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$25,000	$0	$0	$0	$0	$0

Project Description:
This project involves the placement of solar powered street lighting to Millennium Park parking lot. In 2024 the Creve Coeur City Council approved a new "Solar Powered Street Light Cost-Share Program", which offered residents a more cost-effective way to have street lights installed in neighborhoods. Installation of the lighting in the park will provide residents an opportunity to see the effectiveness of the lights and provide support for the program.

Existing Conditions:
Current lighting at the Millennium Parking lot is non-existent, with only residual lighting available from the nearby BJC rear parking lot.

Justification: *Public Safety; Beautification*
The lack of lighting in the Millennium Parking lot poses some safety issues for visitors to the park, both walking in the lot and driving. The Creve Coeur Police Department is planning on upgrading the camera system in the park and the additional lighting will provide improved security to protect visitors and the park amenities.

Operating Budget Impact:
None

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 25,000
Equipment	$ 0
Other	$ 0
Total Expenditures	**$ 25,000**

Funding Type	Amount
Community Development Block Grant (CDBG)	$ 0
Municipal Park Grant	$ 0
Outside Funding Source	$ 0
American Rescue Plan Act (ARPA)	$ 0
Total Funding	**$ 0**

Summary	Amount
Total Expenditures	$ 25,000
Total Funding	$ 0
City's Contribution	**$ 25,000**

LAKE DREDGING – CONWAY PARK & GOLF COURSE (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$450,000	$0	$300,000	$0	$0	TBD

Project Description:
Over time, the lakes at Conway Park and the Golf Courses have received a large volume of sediment. As a result, the lakes have become shallower. At Conway Park, the depth of the lake is no longer deep enough for a fountain to be able to property function. At the Golf Course, sediment buildup contributes to foul smells that distract golfers. At both lakes, additional suspended solids have a negative impact on water quality.

In the design phase, the depth of sediment will be measured, and then the amount of dredging required and the dredging methodology can be determined. Conway Park Lake is planned to be dredged in FY2025, and the Golf Course lakes is planned to be dredged in FY2027. Both project locations may include the installation of a forebay to settle out suspended solids, which will extend the amount of time before the lakes will likely need to be dredged again.

Existing Conditions:
Golfers have reported that the lakes at the Golf Course have a strong, unpleasant odor. Dredging the lakes will remove the organic material that is causing the odors. Currently, each of the lakes has a decreased storage capacity and are less effective at stormwater management.

Justification: *Community Demand; Condition of Existing Facility, Protection & Conservation, Beautification*
Dredging the lakes will improve stormwater management performance by slightly increasing the available storage volume. Dredging Conway Lake to a suitable depth may make it possible to stock the lake with fish. After the lakes are dredged, fountains and aeration systems can be installed, which will help improve water quality and help prevent odors.

Operating Budget Impact:
For the forebay to be effective, deposited sediment will need to be regularly removed. This regular maintenance will help prolong the amount of time until the lakes will need to be dredged again. Delaying the cost of another full dredging effort will be cost-effective in the long-term.

Comments:
None

LAKE DREDGING – CONWAY PARK & GOLF COURSE (DESIGN & CONSTRUCTION)

CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 90,000
Land Acquisition	$ 0
Construction	$ 660,000
Equipment	$ 0
Other	$ 0
Total Expenditures	$ 750,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ TBD
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ TBD

Summary	Amount
Total Expenditures	$ 750,000
Total Funding	$ TBD
City's Contribution	**$ 750,000**

STORMWATER MANAGEMENT COST-SHARE PROGRAM (GRANT PROGRAM)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$120,000	$60,000	$60,000	$60,000	$60,000	TBD

Project Description:
The Stormwater Management Cost-Share Program will help individual homeowners and homeowner associations solve stormwater issues that are unlikely to be addressed by a City-funded project or receive funding from existing programs such as the Deer Creek Watershed Rainscaping Program and the MSD Rainscaping Small Grants Program.

Existing Conditions:
Individual homeowners and homeowner associations have asked the City for assistance in solving stormwater issues. Homeowner associations report delaying maintenance because of high costs. Properly maintaining detention basins helps ensure that the basins are detaining the intended volume; flows are flowing from the basin as designed; and stormwater is being managed more effectively. Some basins receive and manage flows from other neighborhoods and nearby roadways. These basins, in particular, serve the greater public good by reducing flood risks and helping protect streambanks from erosion.

The City's Watershed Management Plan identified more than one hundred possible public projects, and more than fifty reported issues were classified as private homeowner issues. Private issues include yard flooding and erosion. While private issues will not be solved with a publicly-funded solution, the Stormwater Management Cost-Share Program will help these homeowners control stormwater.

Justification: *Community Demand; Public Safety; and Protection & Conservation*
Homeowners and homeowner associations have asked the City for assistance in solving stormwater issues. Managing stormwater helps improve public safety by reducing flood risks. Keeping more water longer onsite keeps stormwater from roadways and neighboring sites and flowing too quickly into streams and creeks. Too much water flowing too quickly into roadways can create driving safety issues. Better controlling the amount and rate at which water enters creeks during the peak of storm events helps prevent erosion.

Operating Budget Impact:
The City has no anticipated ongoing operating budget expenses with this cost-share program.

Comments:
None

STORMWATER MANAGEMENT COST-SHARE PROGRAM (GRANT PROGRAM)

CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 0
Other (five-year program cost)	$ 300,000
Total Expenditures (FY2025- FY2029)	$ 300,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 0
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 300,000
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 300,000**

WOODBRIDGE MANOR & MASON FOREST DRIVE (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$190,000	$0	$0	$0	$0	TBD

Project Description:
Woodbridge Manor and Mason Forest Drive were identified as possible public projects under the City's most recent Watershed Management Plan. With the Prioritization Ranking System, the Watershed Management Plan ranked each possible project by assigning a score based on the severity of the issues, benefits, and estimated costs. Woodbridge Manor and Mason Forest Drive were among the plan's highest scoring possible projects.

Combining two project locations into one project will provide a better opportunity for potential cost-savings in both the engineering design and construction phases.

Woodbridge Mannor is experiencing street and structural flooding in part from offsite flows. This project will provide an overland flow path for flows coming from beyond the site and direct the water to an existing onsite detention basin. Mason Forest experiences street, structural, and yard flooding. With this project, a swale will be constructed to direct flows to an existing stormwater inlet that will be modified under this project to improve performance.

Existing Conditions:
Both sites are subject to street, structural, and yard flooding.

Justification: *Community Demand; Public Safety*
The Stormwater Committee is in favor of projects that address structural and roadway flooding being an early priority of the City's Stormwater Program. Prioritization Ranking Scores support this strategy as potential projects with structural and roadway flooding score highly.

Structural and roadway flooding are public safety and public health risks. Addressing these types of issues helps protect the public and reduces the City's risk exposure.

Operating Budget Impact:
This project has no anticipated impact on the City's Operating Budget.

Comments:
None

WOODBRIDGE MANOR & MASON FOREST DRIVE (DESIGN & CONSTRUCTION)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 115,000
Land Acquisition	$ 0
Construction	$ 75,000
Equipment	$ 0
Other	$ 0
Total Expenditures	$ 190,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 0
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 190,000
Total Funding	$ 0
City's Contribution	**$ 190,000**

FERNPARK DRIVE & WARRINGTON SQUARE (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$427,000	$0	$0	$0	$0	TBD

Project Description:
Fernpark Drive and Warrington Square were identified as possible public projects under the City's most recent Watershed Management Plan. With the Prioritization Ranking System, the Watershed Management Plan ranked each possible project by assigning a score based on the severity of the issues, benefits, and estimated costs. Fernpark Drive and Warrington Square were among the plan's highest scoring possible projects.

Combining two project locations into one project will provide a better opportunity for potential cost-savings in both the engineering design and construction phases.

This project will address basement and yard flooding at Fernpark Drive by constructing a swale, curb, and inlet to direct flows to an existing stormwater inlet. Properties and yards on the south side of Warrington Square are experiencing yard and structural flooding. To alleviate the issues, this project will likely install swales that will take flows to existing stormwater inlets.

Existing Conditions:
Both sites are subject to street, structural, and yard flooding.

Justification: *Community Demand; Public Safety*
The Stormwater Committee is in favor of projects that address structural and roadway flooding being an early priority of the City's Stormwater Program. Prioritization Ranking Scores support this strategy as potential projects with structural and roadway flooding score highly.

Structural flooding is a public safety and public health risk. Addressing this issue will help to improve public health and safety.

Operating Budget Impact:
This project has no anticipated impact on the City's Operating Budget.

Comments:
None

FERNPARK DRIVE & WARRINGTON SQUARE (DESIGN & CONSTRUCTION)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 131,000
Land Acquisition	$ 0
Construction	$ 296,000
Equipment	$ 0
Other	$ 0
Total Expenditures	$ 427,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 0
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 427,000
Total Funding	$ 0
City's Contribution	**$ 427,000**

BEAVER DRIVE CROSSING (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$174,000	$345,000	$0	$0	$0	TBD

Project Description:
This project will address the public safety risks of the failing existing rusting corrugated metal roadway culvert; protect the creek by repairing rusted gabion rock baskets; and address structural flooding and erosion issues at nearby homes.

When the roadway culvert is replaced, the roadway will be raised to provide additional cover over the culvert pipe. This will improve public safety by improving the strength of the roadway. To alleviate stormwater issues, a storm sewer inlet and pipes, berm, swale, and curbing will be installed.

Existing Conditions:
The existing corrugated metal pipe is rusted and failing. The roadway above the culvert is cracking and the depth of cover over the pipe is less that recommended. Downstream of the culvert, gabion rock baskets are also failing. Homes near the culvert are experiencing structural flooding and erosion.

The roadway culvert is under the only roadway access to the four homes on Beaver Drive. Failure of the roadway would prevent any roadway access to the homes east of the culvert.

Justification: *Public Safety; Condition of Existing Facility; Community Demand; Protection & Conservation*
This project will reduce the risk of a roadway collapse by replacing a failing roadway culvert. Given the deteriorated condition of the culvert and the poor condition of the cover above the pipe, this project will protect the public from harm and reduce the City's risk exposure.

The Stormwater Committee is in favor of projects that address structural and roadway flooding being an early priority of the City's Stormwater Program. Prioritization Ranking Scores support this strategy as potential projects with structural and roadway flooding score highly.

Replacing the failing gabion rock baskets will help stabilize the creek banks, which protects an environmental asset.

Operating Budget Impact:
Roadway culverts should be regularly inspected.

Comments:
None

BEAVER DRIVE CROSSING (DESIGN & CONSTRUCTION)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 174,000
Land Acquisition	$ 0
Construction	$ 345,000
Equipment	$ 0
Other	$ 0
Total Expenditures	$ 519,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 345,000
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 345,000

Summary	Amount
Total Expenditures	$ 519,000
Total Funding	$ 345,000
City's Contribution	**$ 174,000**

SONA LANE & BELLINGTON LANE (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$160,000	$445,000	$0	$0	$0	TBD

Project Description:
This project will address structural flooding and yard erosion for the homes on the west side of Sona Lane. The project will also work towards solving basement and yard flooding at 252 Bellington Lane.

For the homes on Sona Lane, the project will install berms and swales between the homes on Sona Lane and Bellington Lane. The swales will covey flows to a new stormwater pipe and inlet system that will also be constructed as part of this project. At the home on Bellington Lane, a berm and swale with an underdrain will be installed. This system will carry flows to the street and west of the home.

Combining project locations into one project will provide a better opportunity for potential cost-savings in both the engineering design and construction phases.

Existing Conditions:
Homes along the west side of Sona Lane receive large volumes of flow from the east side of Deaver Lane. Flows are eroding yards and flooding homes.

Justification: *Community Demand; Public Safety*
The Stormwater Committee is in favor of structural and roadway flooding being an early priority of the City's Stormwater Program. Prioritization Ranking Scores support this strategy as potential projects with structural and roadway flooding score highly.

Structural and roadway flooding are public safety and public health risks. Addressing these types of issues helps protect the public and reduces the City's risk exposure.

Operating Budget Impact:
This project has no anticipated impact on the City's Operating Budget. After construction, it is likely that the stormwater conveyance system will be dedicated to MSD.

Comments:
None

SONA LANE & BELLINGTON LANE (DESIGN & CONSTRUCTION)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 160,000
Land Acquisition	$ 0
Construction	$ 445,000
Equipment	$ 0
Other	$ 0
Total Expenditures	$ 605,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 445,000
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 445,000

Summary	Amount
Total Expenditures	$ 605,000
Total Funding	$ TBD
City's Contribution	**$ 160,000**

STORMWATER PROJECTS FROM WATERSHED MANAGEMENT PLAN (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$	$	$885,000	$810,000	$600,000	TBD

Project Description:
This project will be used for design and construction costs for projects identified under the City's most recent Watershed Management Plan. With the Prioritization Ranking System, the Watershed Management Plan ranked each possible project by assigning a score based on the severity of the issues, benefits, and estimated costs. To maximize benefits to residents, higher scoring projects will be selected to be funded under this project. Higher scoring projects tend to address more severe stormwater issues such as structural flooding, roadway flooding, or erosion that threatens structures.

Staff anticipates anywhere from two to six projects will be identified. It is anticipated that during FY2026, the project listing for FY2027 will be reviewed/approved by the Stormwater Committee, and then the list will be reviewed/approved by the City Council. The same process will be followed in subsequent years.

Existing Conditions:
The Watershed Management Plan assessed existing conditions and compiled a list of known stormwater issues from resident reports, City records, past Watershed Management Plans, GIS information, existing Hydrology & Hydraulics Federal Emergency Management Agency (FEMA) models, channel condition assessments, and field visits. The data set of known conditions was used to identify possible public projects. In the FY2025—FY2029 CIP, projects with higher Prioritization Ranking Score will likely be programmed before projects with lower scores.

Justification: *Availability of Outside Funding; Community Demand; Public Safety; Condition of Existing Facilities; Protection & Conservation*

Projects with the potential for outside funding may be programmed into the CIP before projects with higher scores but no opportunity for outside funding. Residents and the Stormwater Committee have been supportive of the City undertaking stormwater projects to reduce flooding risks, improve public health and safety, and protect the City's waterways. Structural and roadway flooding issues are public safety and public health risks. Addressing these issues helps protect the public and reduces the City's risk exposure.

Stormwater projects may replace or maintain City infrastructure such as roadway culverts or a bridge. Stormwater projects may reduce the City's environmental impact by helping to improve water quality and protect streambanks from erosion.

Operating Budget Impact:
The project may impact the City's Operating Budget if City assets are installed that will require inspections and maintenance.

Comments:
None

STORMWATER PROJECTS FROM WATERSHED MANAGEMENT PLAN (DESIGN & CONSTRUCTION) CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 875,000
Land Acquisition	$ 0
Construction	$ 1,420,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025 – FY2029)	$ 2,295,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ TBD
DNR Section 319 Grant	$ TBD
Outside Funding	$ 0
Total Funding	$ TBD

Summary	Amount
Total Expenditures	$ 2,295,000
Total Funding	$ TBD
City's Contribution (FY2025 – FY2029)	**$ 2,295,000**

DEER CREEK OMCI CONSTRUCTION PROJECTS (CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$0	$0	$500,000	$200,000	TBD

Project Description:
This project will be used for construction costs for projects in the Deer Creek Watershed that were identified under the City's most recent Watershed Management Plan. With the Prioritization Ranking System, the Watershed Management Plan ranked each possible project by assigning a score based on the severity of the issues, benefits, and estimated costs. To maximize benefits to residents, higher scoring projects will be selected to be funded under this project.

Higher scoring projects tend to address more severe stormwater issues such as structural flooding, roadway flooding, or erosion that threatens structures.

Existing Conditions:
The Watershed Management assessed existing conditions and compiled a list of known stormwater issues from resident reports, City records, past Watershed Management Plans, GIS information, existing Hydrology & Hydraulics Federal Emergency Management Agency (FEMA) models, channel condition assessments, and field visits. The data set of known conditions was used to identify possible public projects. In the FY2025—FY2029 CIP, projects with higher Prioritization Ranking Score will likely be programmed before projects with lower scores.

Justification: *Availability of Outside Funding; Community Demand; Public Safety; Condition of Existing Facilities; Protection & Conservation*

Projects with the potential for outside funding may be programmed into the CIP before projects with higher scores but no opportunity for outside funding.

Residents and the Stormwater Committee have been supportive of the City undertaking stormwater projects to reduce flooding risks, improve public health and safety, and protect the City's waterways.

Structural and roadway flooding are public safety and public health risks. Addressing these issues helps protect the public and reduces the City's risk exposure. Stormwater projects may replace or maintain City infrastructure such as roadway culverts or a bridge. Stormwater projects may reduce the City's environmental impact by helping to improve water quality and protect streambanks from erosion.

Operating Budget Impact:
The project may impact the City's Operating Budget if City assets are installed that will require inspections and maintenance.

Comments:
None

DEER CREEK OMCI CONSTRUCTION PROJECTS (CONSTRUCTION)

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 700,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025 – FY2029)	$ 700,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 700,000
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 700,000

Summary	Amount
Total Expenditures	$ 700,000
Total Funding	$ 700,000
City's Contribution (FY2025 – FY2029)	**$ 0**

VARIOUS PROJECTS – UNIVERSITY CITY OMCI (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$0	$160,000	$0	$0	$0	TBD

Project Description:
This project will be used for design and construction costs for a stormwater project in the University City MSD OMCI District, a relatively small geographic area north of Olive Boulevard and east of North Lindbergh Boulevard. The project will be located within the City of Creve Coeur limits. University City OMCI District is the watershed drainage district that generally flows into/through University City, but also flows into other municipalities including Creve Coeur. This OMCI district serves the Upper River Des Peres Watershed. Staff will recommend this project in FY2025 to the Stormwater Committee for review/approval, and then the selected project would be reviewed/approved by the City Council in FY2025.

Existing Conditions:
The Watershed Management Plan did not identify any projects within the University City OMCI District. City staff is investigating options for stormwater projects in the area including improvements to roadway curb and gutters or, perhaps, stormwater best management practices to capture flows from parking lots.

Justification: *Availability of Outside Funding; Community Demand; Condition of Existing Facilities; Protection & Conservation*

This project will be completely funded with MSD OMCI funds.

Residents and the Stormwater Committee have been supportive of the City undertaking stormwater projects to reduce flooding risks, improve public health and safety, and protect the City's waterways.

This project may replace or maintain City infrastructure such as roadway curb and gutters. Stormwater projects may reduce the City's environmental impact by helping to improve water quality and protect streambanks from erosion.

Operating Budget Impact:
The project may impact the City's Operating Budget if City assets are installed that will require inspections and maintenance.

Comments:
None

VARIOUS PROJECTS – UNIVERSITY CITY OMCI (DESIGN & CONSTRUCTION)

CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 40,000
Land Acquisition	$ 0
Construction	$ 120,000
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025 – FY2029)	$ 160,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 160,000
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 160,000

Summary	Amount
Total Expenditures	$ 160,000
Total Funding	$ 160,000
City's Contribution (FY2025 – FY2029)	**$ 0**

DRAIN REPLACEMENTS – WEST RUE DE LA BANQUE & BELLERIVE MANOR (DESIGN & CONSTRUCTION)

Estimated Annual Costs						
Prior Years	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$70,000	$0	$0	$0	$0	TBD

Project Description:
The roadway trench drain near 920 Bellerive Manor Drive is failing. Stormwater inlets near 11939 West Rue De La Banque are also failing. This project will replace the City-owned roadway trench drain and stormwater inlets. Like past trench drain replacement projects, this project will use standard details, and engineering design will likely not be needed.

Existing Conditions:
The roadway trench drain at Bellerive Manor Drive is in becoming unstable. The grates are sinking and the concrete slab approach shows signs of cracking. Similarly, the stormwater inlets along West Rue De La Banque are in need of replacement. The metal inlets are sinking and the surrounding concrete is in poor condition.

Justification: *Condition of Existing Facilities; Public Safety*
The City has an obligation to keep its roadway stormwater assets in good repair. Replacing the roadway trench drain and inlets will improve public safety and make the driving experience of the roadways smoother.

Operating Budget Impact:
The roadway trench drain and inlets will require inspections and maintenance.

Comments:
None

DRAIN REPLACEMENTS – WEST RUE DE LA BANQUE & BELLERIVE MANOR (DESIGN & CONSTRUCTION)

CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 70,000
Equipment	$ 0
Other	$ 0
Total Expenditures	$ 70,000

Funding Type	Amount
MSD Operation Maintenance Construction Improvement (OMCI) District	$ 0
DNR Section 319 Grant	$ 0
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 70,000
Total Funding	$ 0
City's Contribution	**$ 70,000**

GRANT FUNDING CONSULTANT RESEARCH FOR STORMWATER PROJECTS

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$25,000	$0	$0	$0	$0	TBD

Project Description:
This line item includes the costs associated with hiring a professional consultant to research opportunities for Local, State and Federal grants that might be available to possibly help fund design and/or construction of some of the projects listed in the prioritization list contained in most recent version of the Watershed Management Plan (WMP). It is anticipated that the consultant will be able to identify numerous grants that will assist with funding and ultimately completion of numerous projects detailed in the WMP. In addition, the professional consultant might assist City Staff with making grant application submissions.

Existing Conditions:
The City's Department of Public Works typically manages the research for and submission for grants for roadway and sidewalk projects. With the newly completed WMP, it is anticipated that numerous additional grant opportunities will arise and having a professional consultant research and identify such grants will provide the best opportunity for the City to secure such grants.

Justification: *Operating Efficiency*
The responsible and effective administration of the City's parks and stormwater projects requires significant staff time. Projects often have similar schedules, and multiple projects often require immediate attention at the same time. The professional consultant costs provided for in this item will be important to identify and hopefully secure as many grants as practical for future stormwater improvement projects detailed in the WMP.

Operating Budget Impact:
None

Comments:
None

GRANT FUNDING CONSULTANT RESEARCH FOR STORMWATER PROJECTS CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 25,000
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025-FY2029)	$ 25,000

Funding Type	Amount
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 25,000
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 25,000**

VIDEO INSPECTION BALLAS STORM SEWER (OLIVE TO CONWAY) AND VIDEO OF ROADWAY CULVERTS

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$75,000	$0	$0	$0	$0	TBD

Project Description:
This line item includes the costs associated with hiring a contractor to perform a video inspection of the entire storm sewer system along New Ballas Road from Conway Road to Olive Boulevard. Currently the City owns and maintains this storm sewer system. This video inspection includes a complete analysis of the interior condition of the storm sewers along with a corresponding report of the condition of the entire system. Once the work is completed, City Staff will meet with MSD with the ultimate goal of having MSD take over ownership and maintenance of the storm sewer system along New Ballas Road.

This item also includes the costs associated with hiring a contractor to perform a video inspection of the critical roadway culvert crossing major roadways throughout the City. Currently the City owns and maintains the majority of these culvert crossings. The video inspection will assist in evaluation for future repairs and/or replacements of roadway culverts that could be in a poor structural condition. The video inspection should allow the City to proactively plan for these improvements moving forward.

Existing Conditions:
None of these storm sewers or roadway culverts have been video inspected in well over a decade. The existing structural conditions of these underground sewers is not known.

Justification: *Operating Efficiency*
Video inspection of the storm sewers on New Ballas Road along with video inspection of the roadway culverts crossing major streets will allow the City to proactively plan, design and budget for repairs and replacements that might be necessary.

Operating Budget Impact:
If MSD accepts the New Ballas Road storm sewer system, there would be a savings since future repairs of this system by the City would not be necessary.

Comments:
None

VIDEO INSPECTION BALLAS STORM SEWER (OLIVE TO CONWAY) AND VIDEO OF ROADWAY CULVERTS CONTINUED

Expenditure Type	Amount
Planning, Design, and Engineering	$ 75,000
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025-FY2029)	$ 75,000

Funding Type	Amount
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 75,000
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 75,000**

PARKS CAPITAL EQUIPMENT

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$33,271	$30,000	$0	$0	$0	$0	$0

Project Description:
The Department of Public Works proposes to purchase tractor for operation of the flail mower and various other needs required to maintain the park nature trails and surrounding grounds.

Existing Conditions:
Currently the flail mower is only available to be used with current skid steers are not needed for road work or other associate work. The tractor will be a new addition to the department and will greatly assist in nature trail and park ground maintenance.

Justification: *Condition of Existing Equipment; Operating Efficiency*
The City prides itself on the appearance of its parks, and green spaces of the parks are significant passive amenities. New tractor is needed to adequately and efficiently service these areas.

Operating Budget Impact:

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 30,000
Other	$ 0
Total Expenditures	$ 30,000

Funding Type	Amount
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 30,000
Total Funding	$ 0
City's Contribution	**$ 30,000**

PROJECT MANAGEMENT

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$160,968	$175,728	$181,000	$186,500	$192,100	$197,900	TBD

Project Description:
This line item includes the costs associated with the full-time salary and benefits for two Public Works staff members to help oversee the design and construction of projects outlined in the Capital Improvement Program. A project manager will be 100% funded through the Parks and Stormwater Fund, and a civil engineer will be 50% funded through the Capital Fund and 50% funded through the Parks and Stormwater Fund.

Existing Conditions:
The City's Department of Public Works manages the implementation of most of the Capital Improvement Program, and the Public Works staff needs the capacity to responsibly manage the additional projects and programs made possible by the parks and stormwater sales tax.

Justification: *Operating Efficiency*
The responsible and effective administration of the City's capital improvement projects requires significant staff time. Projects often have similar schedules, and multiple projects often require immediate attention at the same time. The project management and engineering staff provided for in this item will be critical for the parks and stormwater projects to be able to be completed successfully and on time.

Operating Budget Impact:
Annual costs for each position include salary and benefits plus ongoing employee training, city equipment, cell phone, and general supplies, which are anticipated to be approximately $1,000 per employee per year.

Comments:
None

Expenditure Type	Amount
Planning, Design, and Engineering	$ 933,228
Land Acquisition	$ 0
Construction	$ 0
Equipment	$ 0
Other	$ 0
Total Expenditures (FY2025-FY2029)	$ 933,228

Funding Type	Amount
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 933,228
Total Funding	$ 0
City's Contribution (FY2025-FY2029)	**$ 933,228**

BUILDING PROJECT BOND FUND

In November 2016, Creve Coeur voters approved a ballot measure that authorized the issuance of general obligation bonds of $10.69 million for the purpose of constructing, furnishing, and equipping a new police station on the existing Government Center property and making safety, security, and accessibility renovations to the existing Government Center.

Building Project Bond Fund Expenses

The expenses for the police building project began in FY2018 and continued through FY2020. This project was completed slightly below budget.

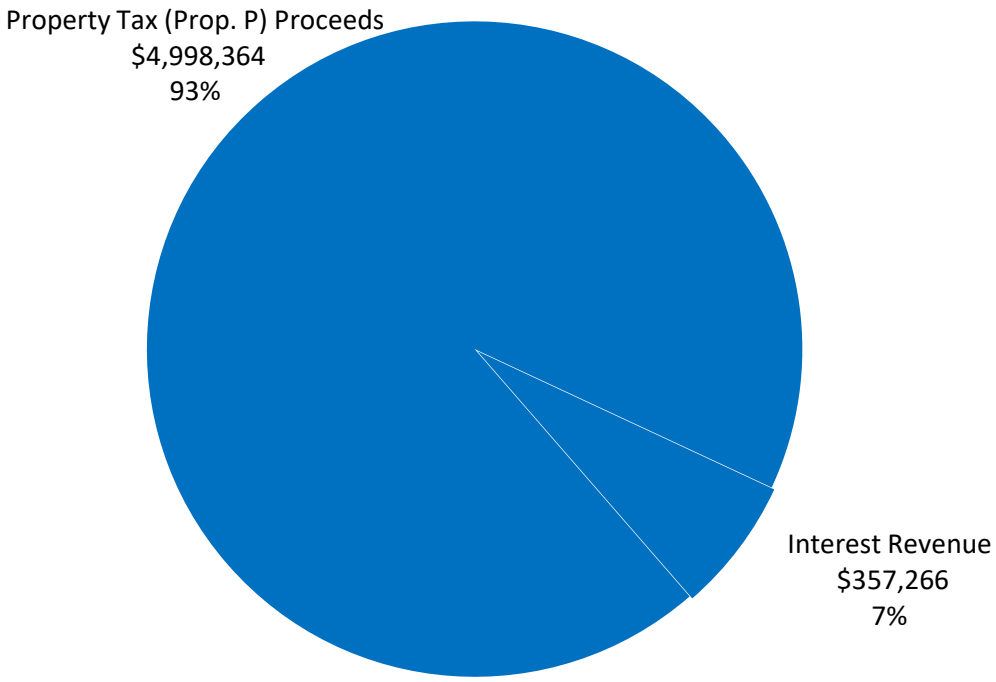
Now that the police building project is complete, the remaining balance of this fund will be allocated to safety, security, and accessibility improvements to the Creve Coeur Government Center and the Police Station. Planning and design for the renovation of the Government Center are identified as a project in the Capital Fund. The renovations of the Government Center are tentatively planned for FY2030 or FY2031. Future Capital Improvement Programs will program the contribution from the Building Project Bond Fund for the Government Center project.

Debt Service

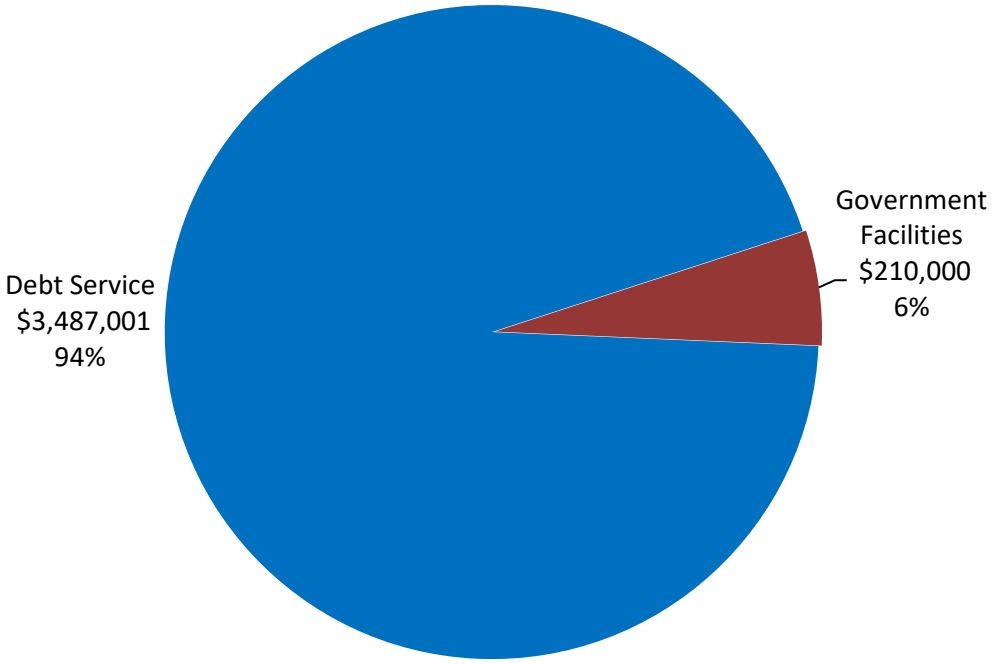
Most of the remaining revenues and expenses for the Building Project Bond Fund involve the debt service for the bonds. The debt service for the Building Project Bond Fund will be paid through a 20-year real estate and personal property tax levy, which is anticipated to sunset in 2037.

The property tax that funds the debt service was reduced by approximately 25% in FY2022 and is proposed to remain at this level through the five-year capital plan.

Summaries of the projected revenues and expenses for the Building Project Bond Fund are included on the next page, and details about the two projects that are proposed to be financed through this fund can be found in the project summary sheets that follow.



FY2025-FY2029 BUILDING PROJECT BOND FUND REVENUES



FY2025-FY2029 BUILDING PROJECT BOND FUND EXPENSES

POLICE PARKING LOT SECURITY FENCE

Estimated Annual Costs						
Prior Year	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**Future**
$0	$210,000	$0	$0	$0	$0	$0

Project Description:
The Police Department's vehicle fleet parking lot is located on the east side of the Police Building. Access to this lot is controlled along the driveways with vehicle security barriers, but the lot is otherwise open for pedestrians to enter. This project would construct a fence and automated gates to secure this parking lot.

Existing Conditions:
The parking lot for the City's police vehicles currently limits vehicular access through the use of vehicle security barriers at both entrances to the area. A pedestrian, however, would have only minimal restrictions from entering this parking lot.

Justification: *Public Safety*
The City's police vehicles need to be located in a secure area so that they are most likely to be available to respond to calls for service and emergencies. Although there are not specific CALEA requirements for the proposed fence, there are generally accepted practices in the field of security and emergency management that fencing, barriers, and other "target hardening" methods should be used to protect critical facilities, including police departments, emergency operation centers, and jails – all of which are functions of the Creve Coeur police building.

Operating Budget Impact:
The proposed gates would require electricity to operate, but the additional cost to the City is expected to be negligible.

Comments:
None.

POLICE PARKING LOT SECURITY FENCE

Expenditure Type	Amount
Planning, Design, and Engineering	$ 0
Land Acquisition	$ 0
Construction	$ 210,000
Equipment	$ 0
Other	$ 0
Total Expenditures	$ 210,000

Funding Type	Amount
Outside Funding	$ 0
Total Funding	$ 0

Summary	Amount
Total Expenditures	$ 210,000
Total Funding	$ 0
City's Contribution	**$ 210,000**

CAPITAL FUND

9501 GOVERNMENT FACILITIES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
01 Accessibility Improvements (CDBG)	20,000	-	-						
02 Government Center Renovations	400,000	38,317	30,000	15,000	30,000	30,000	30,000	30,000	30,000
04 Salt Dome Roof Repairs (Insurance Claim)	-	-	60,000	41,000	-	-	-	-	-
06 Government Center Roof Repairs (Insurance Claim)		-	255,653	250,000	-				
07 Demo of 1030 N Lindbergh Blvd Building			40,000	40,000					
08 Roofing for Public Works Garage			-			500,000			
09 EV Charging Stations at the Police Station and Government Center (Grant Match)			112,500		100,000				
10 Public Works Garage Parking Lot Repairs					**75,000**				
11 Public Works Settlement Study					**35,000**				
Subtotal (Government Facilities)	**420,000**	**38,317**	**498,153**	**346,000**	**240,000**	**530,000**	**30,000**	**30,000**	**30,000**
% of Total Capital Fund Outlay	8%	1%	5%	3%	4%	8%	1%	1%	1%

9506 PARKS AND RECREATIONAL FACILITIES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
02 Park or Dielmann Complex Improvements (Grant Match)	30,500	-	-		30,500	30,500		30,500	-
14 Ice Arena Refrigerant Switchover (Municipal & ARPA Grant)	100,000	170,423	2,412,970	2,534,553	-	-	-	-	-
16 Dielmann Recreation Complex HVAC Replacement - Phase 2 (Dielemann East)	110,000	6,853	127,259	124,769	-	-	-	-	-
17 Dielmann Recreation Complex Roof Drainage	30,000	42,962	93,000	108,334	-	-	-	-	-
18 Ice Arena Flooring Replacement	-	-	200,000	104,215	-	-	-	-	-
21 Ice Arena Dehumidification System Repair (ARPA)	-	-	68,704	68,704	-	-	-	-	-
23 Dielmann Complex Concessions Area Renovation (Planning & Design)	30,000	-	-	15,500	-	-	-	-	-
24 Dielmann Recreation Complex Fire Alarm Repair (Insurance Claim)	-	9,007	-		-	-	-	-	-
25 Golf Course Perimeter Fencing Replacement	-	-	40,000	17,968	-	-	-	-	-
26 Golf Course Maintenance Bridge	-	-	-		-	-	-	-	-
27 Dielmann Structural Repairs	-	-	20,000	20,000					
28 Accessibility Improvements (CDBG)			20,000		-	20,000	20,000	20,000	20,000
29 Roofing for Ice Arena (Insurance Claim)						400,000			
30 Dielmann Compressor Repairs (ARPA)		70,448							
32 Golf Course Maintenance Building Replacement (Planning)			30,000	30,000					
33 Golf Course Irrigation System Replacement (Municipal Park Grant)						**550,000**	-	-	
Subtotal (Parks and Recreational Facilities)	**300,500**	**299,693**	**3,011,933**	**3,024,043**	**30,500**	**1,000,500**	**20,000**	**50,500**	**20,000**
% of Total Capital Fund Outlay	6%	9%	29%	29%	0%	15%	1%	2%	1%

9510 STREETS AND SIDEWALKS	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
01 Street and Sidewalk Maintenance Program	1,400,000	699,304	2,732,527	3,549,000	1,442,300	1,463,900	1,485,900	1,508,200	1,530,800
02 Street Reconstruction/Rehabilitation	300,000	419,240	300,000	-	-	300,000	-	300,000	300,000
04 Fernview Sidewalk - Phase 1 Olive to Gallagher (Design & TAP Grant)	-	5,092	50,000	120,000	230,000	645,000	-	-	-
05 New Ballas Median Plantings	-	-	50,000	40,000	-	-	-	-	-
09 Mosley Road Improvement Project (STP Grant)	-	1,124,717			-	-	-	-	-
10 N Ballas Road Improvements - Phase 1 - Olive to Craig (STP Grant)	1,136,600	153,816	-	1,161,000	-	-	-	-	-
11 N Ballas Sidewalk - Phase 3 (TAP Grant)	210,000	4,688	29,751	50,000	10,000	550,000	-	-	-
12 Lindbergh-Old Olive Intersection (State Cost-Share; STP Grant)	460,000	122,177	2,045,500	345,000	2,045,000	-	-	-	-
13 Olive-Lindbergh Interchange & Olive Enhancements	-	-	30,000		50,000	-	-	-	-
14 Pavement Condition Ratings Update	-	27,962	-		-	-	-	-	-
15 Olive Median Enhancement Stock	-	59,841	20,000	59,841	20,000	20,000	20,000	20,000	20,000

16 Craig Road Improvements (STP Grant)	150,000	-	225,600	225,600	1,315,000	-	-	-	-
17 N Ballas Road Improvements - Phase 2 S. New Ballas (Design & STP Grant)	-	-	150,000	150,000	50,000	1,275,000	-	-	-
18 N Ballas Road Improvements - Phase 3 - Ladue to Magna C (Design & STP Grant)	-	-	-			150,000	20,000	250,000	-
19 N Ballas Road Improvements - Phase 4 - Magna C to Olive (Design & STP Grant)	-	-	-		-		125,000	25,000	250,000
20 Ladue Road Improvements - Phase 1 (Design & STP Grant)	-	-	-		175,000	25,000	480,000	-	-
21 Olive-270 Overpass Cleaning & Painting	-	-	80,000		20,000	200,000	-	-	-
22 Old Olive Sidewalk Extension (Design & Construct)			34,159	34,487					
23 Fernview Sidewalk - Phase 2 Gallagher to LeHavre (Design & TAP Grant)						80,000			
24 Mason Road Pedestrian Signal					**25,000**				
Subtotal (Streets and Sidewalks)	**3,656,600**	**2,616,837**	**5,747,537**	**5,734,928**	**5,382,300**	**4,708,900**	**2,130,900**	**2,103,200**	**2,100,800**
% of Total Capital Fund Outlay	73%	76%	55%	55%	86%	69%	76%	75%	75%

9516 CAPITAL EQUIPMENT	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
01 Public Works Capital Equipment	331,000	223,029	814,265	831,915	400,258	433,151	428,288	435,586	445,593
02 Golf Course Capital Equipment	-	1,270	55,000	52,000	-	-	-	-	-
03 Police Department Capital Equipment	42,000	71,714							
06 Permitting Software	70,000	42,112	114,537	59,858	-	-	-	-	-
07 Meeting Management Software	20,000	17,000	-		-	-	-	-	-
09 Capital Equipment Back Order		-	123,042	123,042	-	-			
10 Olympia Zamboni Repair				35,479					
Subtotal (Capital Equipment)	**463,000**	**355,125**	**1,106,844**	**1,102,294**	**400,258**	**433,151**	**428,288**	**435,586**	**445,593**
% of Total Capital Fund Outlay	9%	10%	11%	11%	6%	6%	15%	15%	16%

CAPITAL PROJECT ADMINISTRATION	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
01 Project Management	145,258	138,789	163,104	165,081	180,226	185,700	191,300	197,100	203,100
Subtotal (Administration)	**145,258**	**138,789**	**163,104**	**165,081**	**180,226**	**185,700**	**191,300**	**197,100**	**203,100**
% of Total Capital Fund Outlay	**3%**	**4%**	**2%**	**2%**	**3%**	**3%**	**7%**	**7%**	**7%**

TOTAL CAPITAL FUND OUTLAY	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
	4,985,358	**3,448,761**	**10,527,571**	**10,372,346**	**6,233,284**	**6,858,251**	**2,800,488**	**2,816,386**	**2,799,493**

9514 DEBT SERVICE	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
N/A	-	-	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
% of Total Year End Figures	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

TOTAL YEAR END FIGURES (Capital Outlay & Debt Service)	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
	4,985,358	**3,448,761**	**10,527,571**	**10,372,346**	**6,233,284**	**6,858,251**	**2,800,488**	**2,816,386**	**2,799,493**

CAPITAL FUND REVENUES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
Beginning Fund Balance (estimated Cash Basis as of July 1)	2,620,094	2,620,094	1,764,724	3,432,544	212,247	734,554	75,675	399,953	733,981
Estimated Capital Improvement Sales Tax Revenue (Half-Cent Sales Tax)	2,206,608	2,291,905	2,470,850	2,297,611	2,320,587	2,343,793	2,367,231	2,390,903	2,414,812
Estimated Interest Revenue	2,150	63,112	8,997	129,095	193,643	195,579	197,535	199,511	201,506
Estimated Additional Revenue (Grants, Reimbursement, and Other)	1,448,346	1,489,193	5,561,190	4,304,344	3,721,360	2,240,000	40,000	40,000	40,000
Proceeds from Equipment Sales	10,000	17,000	10,000	21,000	20,000	20,000	20,000	20,000	20,000
General Fund Transfers In	800,000	400,000	400,000	400,000	500,000	1,400,000	500,000	500,000	500,000
Total Revenues & General Fund Transfers In - Capital Fund	**4,467,104**	**4,261,210**	**8,451,037**	**7,152,050**	**6,755,590**	**6,199,372**	**3,124,766**	**3,150,414**	**3,176,318**
Total Anticipated Year End Expenditures	**4,985,358**	**3,448,761**	**10,527,571**	**10,372,346**	**6,233,284**	**6,858,251**	**2,800,488**	**2,816,386**	**2,799,493**
Ending Fund Balance (Cash Basis) - Capital Fund	**2,101,840**	**3,432,544**	**(311,810)**	**212,247**	**734,554**	**75,675**	**399,953**	**733,981**	**1,110,806**

ESTIMATED ADDITIONAL REVENUE (FUNDING SOURCES)	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
ADA Improvements (Community Development Block Grant)	20,000	-	20,000		20,000	20,000	20,000	20,000	20,000
Mosley Road Improvements - North Phase (STP Grant)	705,306	680,014	-		-	-	-	-	-
New Ballas Improvements - Phase 1 (STP Grant)	144,000	56,048	816,000		904,000	-	-	-	-
Lindbergh-Old Olive Intersection (State Cost-Share Program)	95,200	93,021	875,050	56,374	875,000	-	-	-	-
Lindbergh-Old Olive Intersection (STP Grant)	229,840	-	934,360		934,360	-	-	-	-
New Ballas Sidewalk - Phase 3 (TAP Grant)	4,000	-			8,000	440,000	-	-	-
Ice Arena Refrigerant Switchover (Municipal Park Grant)	-	-	-	525,000	-	-	-	-	-
Craig Road Improvements (STP Grant)	-	-	80,000		960,000	-	-	-	-
Olive TDD Closeout	250,000	-	-	115,000	-	-	-	-	-
Misc.	-	-	-	63,134	-	-	-	-	-
Olive Median Enhancement Stock (Insurance Proceeds)		-	20,000	59,841	20,000	20,000	20,000	20,000	20,000
Ice Arena Refrigerant Switchover & dehumidification (ARPA)		141,480	1,670,535	1,830,879					
Dielmann Compressor Repairs (ARPA)		99,390							
Street and Sidewalk Maintenance Program (ARPA)		419,240	**1,145,245**	**1,145,245**					
Golf Course Irrigation System Replacement (Municipal Park Grant possible $500,000)						-			
New Ballas Improvements - Phase 2 (STP Grant)						**1,060,000**	-		
Fernview Sidewalk - Phase 1 (TAP Grant)						**700,000**	-		
Missouri American Water Concrete Reiumbursement				**508,870**					
Subtotal	**1,448,346**	**1,489,193**	**5,561,190**	**4,304,344**	**3,721,360**	**2,240,000**	**40,000**	**40,000**	**40,000**

PARKS AND STORMWATER FUND

9501 GOVERNMENT FACILITIES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
Subtotal (Government Facilities)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
% of Total Parks-Stormwater Tax Fund Outlay	0%	0%	0%	0%	0%	0%	0%	0%	0%

9506 PARKS AND RECREATIONAL FACILITIES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
03 Historic Building Rehabilitation and Preservation	25,000	12,490	100,000	22,030	55,000	25,000	80,000	25,000	25,000
04 Conway Park Cabins Relocation	75,000	65,012	-	-	-	-	-	-	-
05 Park Restroom Renovations	40,000	22,088	120,000	152,927				-	-
06 Park Path Improvements (Municipal Park Grant)	-	168,952	-	-	-	-	-	-	-
09 Park Parking Lot Sealing	-	-	-	-	-	-	25,000		
10 Park Furniture Replacement	-	-	20,000	-	20,000	20,000	20,000	20,000	20,000
11 Malcolm Terrace Park Trail Improvements	-	22,459	-	-	-	25,000	-	-	-
14 Millennium Park Improvements - Phase 1	1,590,000	56,655	2,300,000	2,575,460	-	-	-	-	-
15 Millennium Park Improvements - Phase 2 - Trails & Ridgemoor Forest Connection	100,000	-	-	-	-	-	-	110,000	850,000
17 Venable Park Improvements - Phase 1 - Trail, Bridge, Tennis Courts & Splash pad	-	-	125,000	514,270	2,200,000	-	-	-	-
18 Conway Park Parking Lot Expansion	-	-	-	20,500	-	-	-	-	-
19 Playground Safety Surface Replacement (Conway 2026 & MTP 2029)		133,597		-	-	125,000	-	-	200,000
21 Millennium Park - Phase 3 - Park Entrance & Parking Lot Improvements							-	70,000	400,000
22 Lake School Park Renovations	30,000	30,710	9,000	8,552	11,000	75,000	675,000	2,600,000	
23 39N Greenway Connection to Centennial Trail			33,750	45,750		300,000		-	-
24 Venable Park Memorial (HDR Foundation Grant)		-	288,500	75,000	225,000				-
25 Malcolm Terrace Park Pavilion Replacement									**75,000**
26 Millennium Park - Parking Lot Solar Lighting					**25,000**				
Subtotal (Parks and Recreational Facilities)	**1,860,000**	**511,962**	**2,996,250**	**3,414,489**	**2,536,000**	**570,000**	**800,000**	**2,825,000**	**1,570,000**
% of Total Parks and Stormwater Fund Outlay	67%	42%	66%	72%	57%	32%	36%	64%	60%

9509 STORMWATER	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
01 Watershed Management Plan	448,026	158,393	289,633	225,000	-	-	-	-	-
04 Hibler Roadside Drainage	25,000	58,853	339,000	493,309	-	-	-	-	-
05 Alden Lane Drain Replacement (Deer Creek OMCI)	20,000	20,630	67,000	97,557	-	-	-	-	-
06 Ballas Culvert Erosion Rehabilitation (Deer Creek OMCI)	50,000	76,686	380,000	281,643	-	-	-	-	-
07 Golf Course Pond Aeration	25,000	12,350	64,000	69,034	-	-	-	-	-
08 Hibler Woods Drain Replacement	20,000	26,800	30,000	33	-	-	-	-	-
09 Stormwater Concept Plans (Design)	175,000	-	150,000	-					
11 Lake Dredging - Conway Park & Golf Course			40,000	-	450,000		300,000		
12 Millennium Park Detention Emergency Repair		241,656	-	-					
13 Stormwater Management Cost-Share Program				**-**	**120,000**	**60,000**	**60,000**	**60,000**	**60,000**
14 Woodbridge Manor & Mason Forest Drive				**-**	**190,000**	**-**			
15 Fernpark Drive & Warington Square				**-**	**427,000**	**-**			
16 Beaver Drive Crossing (Deer Creek OMCI)					**174,000**	**345,000**			
17 Sona Lane (Deer Creek OMCI) & Bellington Lane					**160,000**	**445,000**			
18 Stormwater Projects from Watershed Management Plan							**885,000**	**810,000**	**600,000**
19 Deer Creek OMCI Construction Projects								**500,000**	**200,000**
20 Various Projects - University City (OMCI)						**160,000**			

21 Drain Replacements - West Rue De La Banque & Bellerive Manor					**70,000**				
22 Grant Funding Consultant Research for Stormwater Projects					**25,000**				
23 Video Inspection Ballas storm sewer (Olive to Conway) Video of Roadway Culverts					**75,000**				
Subtotal (Stormwater)	**763,026**	**595,369**	**1,359,633**	**1,166,576**	**1,691,000**	**1,010,000**	**1,245,000**	**1,370,000**	**860,000**
% of Total Parks and Stormwater Fund Outlay	28%	48%	30%	24%	38%	57%	56%	31%	33%

9510 STREETS AND SIDEWALKS	**FY2023 BUDGETED**	**FY2023 ACTUAL**	**FY2024 BUDGETED**	**FY2024 PROJECTED**	**FY2025 PROJECTED**	**FY2026 PROJECTED**	**FY2027 PROJECTED**	**FY2028 PROJECTED**	**FY2029 PROJECTED**
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
Subtotal (Streets and Sidewalks)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
% Total Parks-Stormwater Tax Fund Outlay	0%	0%	0%	0%	0%	0%	0%	0%	0%

9516 CAPITAL EQUIPMENT	**FY2023 BUDGETED**	**FY2023 ACTUAL**	**FY2024 BUDGETED**	**FY2024 PROJECTED**	**FY2025 PROJECTED**	**FY2026 PROJECTED**	**FY2027 PROJECTED**	**FY2028 PROJECTED**	**FY2029 PROJECTED**
01 Parks Capital Equipment	30,000	-	30,000	30,000	30,000	-	-	-	-
		-	-	-	-	-	-	-	-
Subtotal (Capital Equipment)	**30,000**	**-**	**30,000**	**30,000**	**30,000**	**-**	**-**	**-**	**-**
% of Total Parks and Stormwater Fund Outlay	1%	0%	1%	1%	1%	0%	0%	0%	0%

CAPITAL PROJECT ADMINISTRATION	**FY2023 BUDGETED**	**FY2023 ACTUAL**	**FY2024 BUDGETED**	**FY2024 PROJECTED**	**FY2025 PROJECTED**	**FY2026 PROJECTED**	**FY2027 PROJECTED**	**FY2028 PROJECTED**	**FY2029 PROJECTED**
01 Project Management	120,896	121,624	137,795	160,968	175,728	181,000	186,500	192,100	197,900
Subtotal (Administration)	**120,896**	**121,624**	**137,795**	**160,968**	**175,728**	**181,000**	**186,500**	**192,100**	**197,900**
% of Total Parks and Stormwater Fund Outlay	4%	10%	3%	3%	4%	10%	8%	4%	8%

CAPITAL OUTLAY SUMMARY	**FY2023 BUDGETED**	**FY2023 ACTUAL**	**FY2024 BUDGETED**	**FY2024 PROJECTED**	**FY2025 PROJECTED**	**FY2026 PROJECTED**	**FY2027 PROJECTED**	**FY2028 PROJECTED**	**FY2029 PROJECTED**
Total Parks-Stormwater Tax Fund Outlay	2,773,922	1,228,955	4,523,678	4,772,033	4,432,728	1,761,000	2,231,500	4,387,100	2,627,900
% of Total Annual Expenses	85%	71%	89%	89%	89%	75%	79%	88%	82%

OPERATIONS AND MAINTENANCE	**FY2023 BUDGETED**	**FY2023 ACTUAL**	**FY2024 BUDGETED**	**FY2024 PROJECTED**	**FY2025 PROJECTED**	**FY2026 PROJECTED**	**FY2027 PROJECTED**	**FY2028 PROJECTED**	**FY2029 PROJECTED**
Transfer Out - General Fund (Parks and Stormwater Operations and Maintenance)	492,198	492,198	582,434	582,434	565,998	571,658	577,375	583,149	588,980
Subtotal	**492,198**	**492,198**	**582,434**	**582,434**	**565,998**	**571,658**	**577,375**	**583,149**	**588,980**
% of Total Annual Expenses	15%	29%	11%	11%	11%	25%	21%	12%	18%

9514 DEBT SERVICE	**FY2023 BUDGETED**	**FY2023 ACTUAL**	**FY2024 BUDGETED**	**FY2024 PROJECTED**	**FY2025 PROJECTED**	**FY2026 PROJECTED**	**FY2027 PROJECTED**	**FY2028 PROJECTED**	**FY2029 PROJECTED**
N/A	-	-	-	-	-	-	-	-	-
Subtotal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
% of Total Annual Expenses	0%	0%	0%	0%	0%	0%	0%	0%	0%

TOTAL ANNUAL EXPENSES (Capital Outlay, Transfers Out, and Debt Service)	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
	3,266,120	**1,721,153**	**5,106,112**	**5,354,467**	**4,998,726**	**2,332,658**	**2,808,875**	**4,970,249**	**3,216,880**

PARKS AND STORMWATER FUND REVENUES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
Beginning Fund Balance (estimated Cash Basis as of July 1)	2,988,692	2,988,692	4,106,102	4,138,823	2,278,049	646,881	1,590,998	2,720,066	1,429,239
Estimated Parks-Stormwater Tax Revenue (Half-Cent Sales Tax)	2,485,601	2,685,791	2,970,411	2,829,991	2,858,291	2,886,874	2,915,743	2,944,900	2,974,349
Estimated Interest Revenue	100	93,435	25,049	151,750	227,624	229,901	232,200	234,522	236,867
Estimated Additional Revenue (Grants, Reimbursement, and Other)	140,000	92,059	215,000	511,952	281,643	160,000	790,000	500,000	325,000
Capital Fund Transfers In		-	-	-	-	-	-	-	-
General Fund Transfers In		-	-	-	-	-	-	-	-
Proceeds from Equipment Sales		-	-	-	-	-	-	-	-
Total Revenues & Transfers In - Parks and Stormwater Fund	**2,625,701**	**2,871,285**	**3,210,460**	**3,493,693**	**3,367,558**	**3,276,775**	**3,937,943**	**3,679,422**	**3,536,216**
Total Anticipated Year End Expenditures	**3,266,120**	**1,721,153**	**5,106,112**	**5,354,467**	**4,998,726**	**2,332,658**	**2,808,875**	**4,970,249**	**3,216,880**
Ending Fund Balance (Cash Basis) - Parks and Stormwater Fund	**2,348,273**	**4,138,823**	**2,210,450**	**2,278,049**	**646,881**	**1,590,998**	**2,720,066**	**1,429,239**	**1,748,575**

ESTIMATED ADDITIONAL REVENUE (FUNDING SOURCES)	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
ADA Improvements (Community Development Block Grant)	-	-	-	-	-	-	-	-	-
Stormwater Improvements (Deer Creek OMCI)	680,034	-	65,000	61,952	281,643	-	790,000	500,000	200,000
Park Path Improvements (Municipal Park Grant)		91,959	-	-	-	-	-	-	-
Venable Park Memorial (HDR Foundation Grant)	-	-	100,000	100,000	-	-	-	-	-
Venable Park Memorial (Private Donations)	-	100	50,000	50,000	-	-	-	-	-
Venable Park Master Plan (HDR Foundation Grant)				**300,000**					
Various Projects - (University City OMCI)			-	-	-	160,000	-	-	125,000
Annual Total	**680,034**	**92,059**	**215,000**	**511,952**	**281,643**	**160,000**	**790,000**	**500,000**	**325,000**

BUILDING PROJECT BOND FUND (PROP P)

BUILDING PROJECT BOND FUND REVENUES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
Beginning Fund Balance (estimated Cash Basis as of July 1)	1,123,984	1,123,984	1,159,121	1,159,121	1,209,466	1,050,314	1,101,671	1,153,542	1,205,931
Estimated Bond Proceeds	-	-	-	-	-	-	-	-	-
Estimated Interest Revenue	850	35,137	33,000	50,345	50,848	51,357	51,871	52,389	52,913
Reimbursement from Smoke Evacuation System Settlement	-	-	-	-	-	-	-	-	-
Transfers In	-	-	-	-	-	-	-	-	-
Total Revenues & Transfers In	**850**	**35,137**	**33,000**	**50,345**	**50,848**	**51,357**	**51,871**	**52,389**	**52,913**

9501 BUILDING DESIGN AND CONSTRUCTION	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
01 Police Building Professional Services	-	-	-	-	-	-	-	-	-
02 Police Building Site Work and Building Construction	-	-	-	-	-	-	-	-	-
03 Government Center Accessibility & Security Improvements	-	-	-	-	-	-	-	-	-
04 Government Center Electrical Switchgear Replacement	-	-	-	-	-	-	-	-	-
05 Government Center Renovations	-	-	-	-	-	-	-	-	-
06 Police Parking Lot Security Fence	-	-	80,000	-	210,000	-	-	-	-
Transfers Out	-	-	-	-	-	-	-	-	-
Total Anticipated Year End Expenditures & Transfers	**-**	**-**	**80,000**	**-**	**210,000**	**-**	**-**	**-**	**-**
Ending Fund Balance (Cash Basis) - Building Project Bond Fund	**1,124,834**	**1,159,121**	**1,112,121**	**1,209,466**	**1,050,314**	**1,101,671**	**1,153,542**	**1,205,931**	**1,258,844**

9514 DEBT SERVICE	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED	FY2029 PROJECTED
DEBT SERVICE (PROP P) REVENUES									
Beginning Fund Balance (estimated Cash Basis as of July 1)	817,964	817,964	462,792	462,792	740,984	1,028,466	1,344,778	1,662,647	2,008,392
Estimated Property Tax Collection Revenue	670,000	939,484	964,600	964,600	964,600	993,538	993,538	1,023,344	1,023,344
Estimated Interest Revenue	500	13,014	9,500	19,000	19,190	19,382	19,576	19,771	19,969
Total Anticipated Revenues	**670,500**	**952,499**	**974,100**	**983,600**	**983,790**	**1,012,920**	**1,013,114**	**1,043,115**	**1,043,313**
DEBT SERVICE (PROP P) EXPENSES									
Estimated Expenditures	600,320	598,999	320	320	320	320	320	320	320
Estimated Interest Expenses	247,657	238,672	215,588	215,588	205,988	191,288	179,925	167,050	151,150
Estimated Principal Expenses	470,000	470,000	480,000	480,000	490,000	505,000	515,000	530,000	550,000
Total Anticipated Expenditures	**1,317,977**	**1,307,671**	**695,908**	**695,908**	**696,308**	**696,608**	**695,245**	**697,370**	**701,470**
Ending Cash Balance - Debt Service	**170,487**	**462,792**	**740,984**	**750,484**	**1,028,466**	**1,344,778**	**1,662,647**	**2,008,392**	**2,350,235**

9501 GOVERNMENT FACILITIES ACCOUNT SUMMARY

CAPITAL FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Accessibility Improvements (CDBG)	20,000	-	-					
02 Government Center Renovations	400,000	38,317	30,000	15,000	30,000	30,000	30,000	30,000
04 Salt Dome Roof Repairs (Insurance Claim)	-	-	60,000	41,000	-	-	-	-
06 Government Center Roof Repairs (Insurance Claim)		-	255,653	250,000	-			
07 Demo of 1030 N Lindbergh Blvd Building			40,000	40,000				
08 Roofing for Public Works Garage			-			500,000		
09 EV Charging Stations at the Police Station and Government Center (Grant Match)			112,500		100,000			
10 Public Works Garage Parking Lot Repairs					**75,000**			
11 Public Works Settlement Study					**35,000**			
Subtotal - Government Facilities Expenses - Capital Fund	**420,000**	**38,317**	**498,153**	**346,000**	**240,000**	**530,000**	**30,000**	**30,000**

PARKS AND STORMWATER FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Subtotal - Government Facilities Expenses - Parks and Stormwater Fund	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

BUILDING PROJECT BOND FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Police Building Professional Services	-	-	-	-	-	-	-	-
02 Police Building Site Work and Building Construction	-	-	-	-	-	-	-	-
03 Government Center Accessibility & Security Improvements	-	-	-	-	-	-	-	-
04 Government Center Electrical Switchgear Replacement	-	-	-	-	-	-	-	-
05 Government Center Renovations	-	-	-	-	-	-	-	-
06 Police Parking Lot Security Fence	-	-	80,000	-	210,000	-	-	-
Transfers Out	-	-	-	-	-	-	-	-
Subtotal - Government Facilities Expenses - Building Project Bond Fund	**-**	**-**	**80,000**	**-**	**210,000**	**-**	**-**	**-**

TOTAL CAPITAL EXPENSES (ALL FUNDS) GOVERNMENT FACILITIES	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Total Capital Expenses - Government Facilities	**$ 420,000**	**$ 38,317**	**$ 578,153**	**$ 346,000**	**$ 450,000**	**$ 530,000**	**$ 30,000**	**$ 30,000**

9506 PARKS AND RECREATIONAL FACILITIES ACCOUNT SUMMARY

CAPITAL FUND	FY2023 ACTUAL	FY2023 PROJECTED	FY2024 BUDGETED	FY 2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
02 Park or Dielmann Complex Improvements (Grant Match)	30,500	-	-		30,500	30,500		30,500
14 Ice Arena Refrigerant Switchover (Municipal & ARPA Grant)	100,000	170,423	2,412,970	2,534,553	-	-	-	-
16 Dielmann Recreation Complex HVAC Replacement - Phase 2 (Dielemann East)	110,000	6,853	127,259	124,769	-	-	-	-
17 Dielmann Recreation Complex Roof Drainage	30,000	42,962	93,000	108,334	-	-	-	-
18 Ice Arena Flooring Replacement	-	-	200,000	104,215	-	-	-	-
21 Ice Arena Dehumidification System Repair (ARPA)	-	-	68,704	68,704	-	-	-	-
23 Dielmann Complex Concessions Area Renovation (Planning & Design)	30,000	-	-	15,500	-	-	-	-
24 Dielmann Recreation Complex Fire Alarm Repair (Insurance Claim)	-	9,007	-		-	-	-	-
25 Golf Course Perimeter Fencing Replacement	-	-	40,000	17,968	-	-	-	-
26 Golf Course Maintenance Bridge	-	-	-		-	-	-	-
27 Dielmann Structural Repairs	-	-	20,000	20,000				
28 Accessibility Improvements (CDBG)			20,000		-	20,000	20,000	20,000
29 Roofing for Ice Arena (Insurance Claim)						400,000		
30 Dielmann Compressor Repairs (ARPA)		70,448						
32 Golf Course Maintenance Building Replacement (Planning)			30,000	30,000				
33 Golf Course Irrigation System Replacement (Municipal Park Grant)						**550,000**	-	-
Subtotal - Parks and Recreational Facilities Expenses - Capital Fund	**300,500**	**299,693**	**3,011,933**	**3,024,043**	**30,500**	**1,000,500**	**20,000**	**50,500**

PARKS AND STORMWATER FUND	FY2023 ACTUAL	FY2023 PROJECTED	FY2024 BUDGETED	FY 2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
03 Historic Building Rehabilitation and Preservation	25,000	12,490	100,000	22,030	55,000	25,000	80,000	25,000
04 Conway Park Cabins Relocation	75,000	65,012	-	-	-	-	-	-
05 Park Restroom Renovations	40,000	22,088	120,000	152,927				-
06 Park Path Improvements (Municipal Park Grant)	-	168,952	-	-	-	-	-	-
09 Park Parking Lot Sealing	-	-	-	-	-	-	25,000	
10 Park Furniture Replacement	-	-	20,000	-	20,000	20,000	20,000	20,000
11 Malcolm Terrace Park Trail Improvements	-	22,459	-	-	-	25,000	-	-
14 Millennium Park Improvements - Phase 1	1,590,000	56,655	2,300,000	2,575,460	-	-	-	-
15 Millennium Park Improvements - Phase 2 - Trails & Ridgemoor Forest Connection	100,000	-	-	-	-	-	-	110,000
17 Venable Park Improvements - Phase 1 - Trail, Bridge, Tennis Courts & Splash pad	-	-	125,000	514,270	2,200,000	-	-	-
18 Conway Park Parking Lot Expansion	-	-	-	20,500	-	-	-	-
19 Playground Safety Surface Replacement (Conway 2026 & MTP 2029)		133,597		-	-	125,000	-	-
21 Millennium Park - Phase 3 - Park Entrance & Parking Lot Improvements							-	70,000
22 Lake School Park Renovations	30,000	30,710	**9,000**	8,552	11,000	75,000	675,000	2,600,000
23 39N Greenway Connection to Centennial Trail			33,750	45,750		300,000		-
24 Venable Park Memorial (HDR Foundation Grant)		**-**	**288,500**	**75,000**	**225,000**			
25 Malcolm Terrace Park Pavilion Replacement								
26 Millennium Park - Parking Lot Solar Lighting					**25,000**			
Subtotal - Parks and Rec. Facilities Expenses - Parks and Stormwater Fund	**1,860,000**	**511,962**	**2,996,250**	**3,414,489**	**2,536,000**	**570,000**	**800,000**	**2,825,000**

BUILDING PROJECT BOND FUND	FY2023 ACTUAL	FY2023 PROJECTED	FY2024 BUDGETED	FY 2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Subtotal - Parks and Rec. Facilities Expenses - Building Project Bond Fund	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

TOTAL CAPITAL EXPENSES (ALL FUNDS) PARKS AND RECREATIONAL FACILITIES	FY2023 ACTUAL	FY2023 PROJECTED	FY2024 BUDGETED	FY 2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Total Capital Expenses - Parks and Recreational Facilities	**$ 2,160,500**	**$ 811,656**	**$ 6,008,183**	**$ 6,438,532**	**$ 2,566,500**	**$ 1,570,500**	**$ 820,000**	**$ 2,875,500**

9509 STORMWATER ACCOUNT SUMMARY

CAPITAL FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-		-	-	-	-
Subtotal - Stormwater Expenses - Capital Fund	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

PARKS AND STORMWATER FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Watershed Management Plan	448,026	158,393	289,633	225,000	-	-	-	-
04 Hibler Roadside Drainage	25,000	58,853	339,000	493,309	-	-	-	-
05 Alden Lane Drain Replacement (Deer Creek OMCI)	20,000	20,630	67,000	97,557	-	-	-	-
06 Ballas Culvert Erosion Rehabilitation (Deer Creek OMCI)	50,000	76,686	380,000	281,643	-	-	-	-
07 Golf Course Pond Aeration	25,000	12,350	64,000	69,034	-	-	-	-
08 Hibler Woods Drain Replacement	20,000	26,800	30,000	33	-	-	-	-
09 Stormwater Concept Plans (Design)	175,000	-	150,000	-				
11 Lake Dredging - Conway Park & Golf Course			40,000	-	450,000		300,000	
12 Millennium Park Detention Emergency Repair		241,656	-	-				
13 Stormwater Management Cost-Share Program				**-**	**120,000**	**60,000**	**60,000**	**60,000**
14 Woodbridge Manor & Mason Forest Drive				**-**	**190,000**	**-**		
15 Fernpark Drive & Warington Square				**-**	**427,000**	**-**		
16 Beaver Drive Crossing (Deer Creek OMCI)					**174,000**	**345,000**		
17 Sona Lane (Deer Creek OMCI) & Bellington Lane					**160,000**	**445,000**		
18 Stormwater Projects from Watershed Management Plan							**885,000**	**810,000**
19 Deer Creek OMCI Construction Projects								**500,000**
20 Various Projects - University City (OMCI)						**160,000**		
21 Drain Replacements - West Rue De La Banque & Bellerive Manor					**70,000**			
22 Grant Funding Consultant Research for Stormwater Projects					**25,000**			
23 Video Inspection Ballas storm sewer (Olive to Conway) Video of Roadway Culver					**75,000**			
Subtotal - Stormwater Expenses - Parks and Stormwater Fund	**763,026**	**595,369**	**1,359,633**	**1,166,576**	**1,691,000**	**1,010,000**	**1,245,000**	**1,370,000**

BUILDING PROJECT BOND FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Subtotal - Stormwater Expenses - Building Project Bond Fund	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

TOTAL CAPITAL EXPENSES (ALL FUNDS) STORMWATER	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Total Capital Expenses - Stormwater	**$ 763,026**	**$ 595,369**	**$ 1,359,633**	**$ 1,166,576**	**$ 1,691,000**	**$ 1,010,000**	**$ 1,245,000**	**$ 1,370,000**

9510 STREETS AND SIDEWALKS ACCOUNT SUMMARY

CAPITAL FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Street and Sidewalk Maintenance Program	1,400,000	699,304	2,732,527	3,549,000	1,442,300	1,463,900	1,485,900	1,508,200
02 Street Reconstruction/Rehabilitation	300,000	419,240	300,000	-	-	300,000	-	300,000
04 Fernview Sidewalk - Phase 1 Olive to Gallagher (Design & TAP Grant)	-	5,092	50,000	120,000	230,000	645,000	-	-
05 New Ballas Median Plantings	-	-	50,000	40,000	-	-	-	-
09 Mosley Road Improvement Project (STP Grant)	-	1,124,717			-	-	-	-
10 N Ballas Road Improvements - Phase 1 - Olive to Craig (STP Grant)	1,136,600	153,816	-	1,161,000	-	-	-	-
11 N Ballas Sidewalk - Phase 3 (TAP Grant)	210,000	4,688	29,751	50,000	10,000	550,000	-	-
12 Lindbergh-Old Olive Intersection (State Cost-Share; STP Grant)	460,000	122,177	2,045,500	345,000	2,045,000	-	-	-
13 Olive-Lindbergh Interchange & Olive Enhancements	-	-	30,000		50,000	-	-	-
14 Pavement Condition Ratings Update	-	27,962	-		-	-	-	-
15 Olive Median Enhancement Stock	-	59,841	20,000	59,841	20,000	20,000	20,000	20,000
16 Craig Road Improvements (STP Grant)	150,000	-	225,600	225,600	1,315,000	-	-	-
17 N Ballas Road Improvements - Phase 2 S. New Ballas (Design & STP Grant)	-	-	150,000	150,000	50,000	1,275,000	-	-
18 N Ballas Road Improvements - Phase 3 - Ladue to Magna C (Design & STP Grant)	-	-	-			150,000	20,000	250,000
19 N Ballas Road Improvements - Phase 4 - Magna C to Olive (Design & STP Grant)	-	-	-		-		125,000	25,000
20 Ladue Road Improvements - Phase 1 (Design & STP Grant)	-	-	-		175,000	25,000	480,000	-
21 Olive-270 Overpass Cleaning & Painting	-	-	80,000		20,000	200,000	-	-
22 Old Olive Sidewalk Extension (Design & Construct)			34,159	34,487				
23 Fernview Sidewalk - Phase 2 Gallagher to LeHavre (Design & TAP Grant)						80,000		
24 Mason Road Pedestrian Signal					**25,000**			
Subtotal - Streets and Sidewalks - Capital Fund	**3,656,600**	**2,616,837**	**5,747,537**	**5,734,928**	**5,382,300**	**4,708,900**	**2,130,900**	**2,103,200**

PARKS AND STORMWATER FUND	FY2023 BUDGETED		FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Subtotal - Streets and Sidewalks - Parks and Stormwater Fund	-	-	-	-	-	-	-	-

BUILDING PROJECT BOND FUND	FY2023 BUDGETED		FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Subtotal - Streets and Sidewalks - Building Project Bond Fund	-	-	-	-	-	-	-	-

TOTAL CAPITAL EXPENSES (ALL FUNDS) STREETS AND SIDEWALKS	FY2023 BUDGETED		FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Total Capital Expenses - Streets and Sidewalks	**$ 3,656,600**	**$ 2,616,837**	**$ 5,747,537**	**$ 5,734,928**	**$ 5,382,300**	**$ 4,708,900**	**$ 2,130,900**	**$ 2,103,200**

9516 CAPITAL EQUIPMENT ACCOUNT SUMMARY

CAPITAL FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Public Works Capital Equipment	331,000	223,029	814,265	831,915	400,258	433,151	428,288	435,586
02 Golf Course Capital Equipment	-	1,270	55,000	52,000	-	-	-	-
03 Police Department Capital Equipment	42,000	71,714						
06 Permitting Software	70,000	42,112	114,537	59,858	-	-	-	-
07 Meeting Management Software	20,000	17,000	-		-	-	-	-
09 Capital Equipment Back Order		-	123,042	123,042	-	-		
10 Olympia Zamboni Repair				35,479				
Subtotal - Capital Equipment - Capital Fund	**463,000**	**355,125**	**1,106,844**	**1,102,294**	**400,258**	**433,151**	**428,288**	**435,586**

PARKS AND STORMWATER FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Parks Capital Equipment	30,000	-	30,000	30,000	30,000	-	-	-
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Subtotal - Capital Equipment - Parks and Stormwater Fund	**30,000**	**-**	**30,000**	**30,000**	**30,000**	**-**	**-**	**-**

BUILDING PROJECT BOND FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Subtotal - Capital Equipment - Building Project Bond Fund	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

TOTAL CAPITAL EXPENSES (ALL FUNDS) CAPITAL EQUIPMENT	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Total Capital Expenses - Capital Equipment	**$ 493,000**	**$ 355,125**	**$ 1,136,844**	**$ 1,132,294**	**$ 430,258**	**$ 433,151**	**$ 428,288**	**$ 435,586**

Adopted by the Creve Coeur City Council through Resolution XXXX on April XXX.
New or Substantially Modified Projects are in Bold

CAPITAL PROJECT ADMINISTRATION ACCOUNT SUMMARY

CAPITAL FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Project Management	145,258	138,789	163,104	165,081	180,226	185,700	191,300	197,100
Subtotal - Capital Project Administration - Capital Fund	**145,258**	**138,789**	**163,104**	**165,081**	**180,226**	**185,700**	**191,300**	**197,100**

PARKS AND STORMWATER FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
01 Project Management	120,896	121,624	137,795	160,968	175,728	181,000	186,500	192,100
Subtotal - Capital Project Administration - Parks and Stormwater Fund	**120,896**	**121,624**	**137,795**	**160,968**	**175,728**	**181,000**	**186,500**	**192,100**

BUILDING PROJECT BOND FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Subtotal - Capital Project Administration - Building Project Bond Fund	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

TOTAL CAPITAL EXPENSES (ALL FUNDS) CAPITAL PROJECT ADMINISTRATION	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Total Capital Expenses - Capital Project Administration	**$ 266,154**	**$ 260,413**	**$ 300,899**	**$ 326,049**	**$ 355,954**	**$ 366,700**	**$ 377,800**	**$ 389,200**

CAPITAL IMPROVEMENT PROGRAM SUMMARY

CAPITAL FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Beginning Fund Balance (Estimated Cash Basis as of July 1)	2,620,094	2,620,094	1,764,724	3,432,544	212,247	734,554	75,675	399,953
Total Anticipated Annual Revenues	4,467,104	4,261,210	8,451,037	7,152,050	6,755,590	6,199,372	3,124,766	3,150,414
Total Anticipated Annual Expenses	(4,985,358)	(3,448,761)	(10,527,571)	(10,372,346)	(6,233,284)	(6,858,251)	(2,800,488)	(2,816,386)
Total Anticipated Debt Service Revenues	-	-	-	-	-	-	-	-
Total Anticipated Debt Service Expenses	-	-	-	-	-	-	-	-
Ending Cash Balance - Capital Fund	**2,101,840**	**3,432,544**	**(311,810)**	**212,247**	**734,554**	**75,675**	**399,953**	**733,981**

PARKS-STORMWATER TAX FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Beginning Fund Balance (Estimated Cash Basis as of July 1)	2,988,692	2,988,692	4,106,102	4,138,823	2,278,049	646,881	1,590,998	2,720,066
Total Anticipated Annual Revenues	2,625,701	2,871,285	3,210,460	3,493,693	3,367,558	3,276,775	3,937,943	3,679,422
Total Anticipated Annual Expenses	(3,266,120)	(1,721,153)	(5,106,112)	(5,354,467)	(4,998,726)	(2,332,658)	(2,808,875)	(4,970,249)
Total Anticipated Debt Service Revenues	-	-	-	-	-	-	-	-
Total Anticipated Debt Service Expenses	-	-	-	-	-	-	-	-
Ending Cash Balance - Parks-Stormwater Tax Fund	**2,348,273**	**4,138,823**	**2,210,450**	**2,278,049**	**646,881**	**1,590,998**	**2,720,066**	**1,429,239**

BUILDING PROJECT BOND FUND	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Beginning Fund Balance (estimated Cash Basis as of July 1)	1,941,948	1,941,948	1,621,913	1,621,913	1,950,450	2,078,780	2,446,449	2,816,189
Total Anticipated Annual Revenues	850	35,137	33,000	50,345	50,848	51,357	51,871	52,389
Total Anticipated Annual Expenses	-	-	(80,000)	-	(210,000)	-	-	-
Total Anticipated Debt Service (Prop P) Revenues	670,500	952,499	974,100	983,600	983,790	1,012,920	1,013,114	1,043,115
Total Anticipated Debt Service (Prop P) Expenses	(1,317,977)	(1,307,671)	(695,908)	(695,908)	(696,308)	(696,608)	(695,245)	(697,370)
Ending Cash Balance - Building Project Bond Fund	**1,295,321**	**1,621,913**	**1,853,105**	**1,959,950**	**2,078,780**	**2,446,449**	**2,816,189**	**3,214,323**

TOTAL COMBINED CAPITAL IMPROVEMENT PROGRAM (CAPITAL, PARKS-STORMWATER, AND BUILDING PROJECT BOND FUNDS)	FY2023 BUDGETED	FY2023 ACTUAL	FY2024 BUDGETED	FY2024 PROJECTED	FY2025 PROJECTED	FY2026 PROJECTED	FY2027 PROJECTED	FY2028 PROJECTED
Total Combined Beginning Fund Balance	7,550,734	7,550,734	7,492,739	9,193,280	4,440,746	3,460,215	4,113,122	5,936,208
Total Combined Revenues & Transfers In	7,764,155	8,120,131	12,668,597	11,679,688	11,157,786	10,540,424	8,127,694	7,925,340
Total Combined Anticipated Year End Expenditures & Transfers	(9,569,455)	(6,477,585)	(16,409,591)	(16,422,721)	(12,138,318)	(9,887,517)	(6,304,608)	(8,484,005)
Ending Fund Balance (Cash Basis) - All Capital Funds	**5,745,434**	**9,193,280**	**3,751,745**	**4,450,246**	**3,460,215**	**4,113,122**	**5,936,208**	**5,377,543**

APPENDIX B
TEN-YEAR CAPITAL IMPROVEMENT PROGRAM
(COMBINDED CAPITAL FUND, PARKS AND STORMWATER FUND, AND BUILDING PROJECTS FUND)

BEGINNING FUND BALANCE	Actual FY2020	Actual FY2021	Actual FY2022	Actual FY2023	Projected FY2024	Projected FY2025	Projected FY2026	Projected FY2027	Projected FY2028	Projected FY2029
Cash Basis (as of July 1)	$ 5,289,205	$ 3,919,027	$ 4,417,442	$ 7,550,734	$ 9,193,280	$ 4,440,746	$ 3,460,215	$ 4,113,122	$ 5,936,208	$ 5,377,543

REVENUES	Actual FY2020	Actual FY2021	Actual FY2022	Actual FY2023	Projected FY2024	Projected FY2025	Projected FY2026	Projected FY2027	Projected FY2028	Projected FY2029
City Capital Improvement Sales Tax	$ 2,025,908	$ 1,950,326	$ 2,195,653	$ 2,291,905	$ 2,297,611	$ 2,320,587	$ 2,343,793	$ 2,367,231	$ 2,390,903	$ 2,414,812
Building Project Bond Fund (Prop P)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Building Project Property Tax Collection	$ 934,040	$ 875,714	$ 779,721	$ 939,484	$ 964,600	$ 964,600	$ 993,538	$ 993,538	$ 1,023,344	$ 1,023,344
Parks-Stormwater Sales Tax	$ -	$ 485,907	$ 2,564,852	$ 2,685,791	$ 2,829,991	$ 2,858,291	$ 2,886,874	$ 2,915,743	$ 2,944,900	$ 2,974,349
Interest on Investments	$ 64,375	$ 9,277	$ 15,899	$ 204,699	$ 350,190	$ 491,305	$ 496,219	$ 501,182	$ 506,193	$ 511,255
Other Agency Funding	$ 460,692	$ 198,490	$ 1,198,720	$ 1,581,252	$ 4,816,296	$ 4,003,003	$ 2,400,000	$ 830,000	$ 540,000	$ 365,000
Proceeds from Equipment Sales	$ -	$ 16,100	$ 3,100	$ 17,000	$ 21,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000
Transfers In from Other Funds	$ 593,826	$ 400,000	$ 1,149,533	$ 400,000	$ 400,000	$ 500,000	$ 1,400,000	$ 500,000	$ 500,000	$ 500,000
TOTAL REVENUES	**$ 4,078,841**	**$ 3,935,814**	**$ 7,907,478**	**$ 8,120,131**	**$ 11,679,688**	**$ 11,157,786**	**$ 10,540,424**	**$ 8,127,694**	**$ 7,925,340**	**$ 7,808,760**

EXPENDITURES	Actual FY2020	Actual FY2021	Actual FY2022	Actual FY2023	Projected FY2024	Projected FY2025	Projected FY2026	Projected FY2027	Projected FY2028	Projected FY2029
Government Facilities	$ 2,016,979	$ 69,820	$ 104,705	$ 38,317	$ 346,000	$ 450,000	$ 530,000	$ 30,000	$ 30,000	$ 30,000
Parks and Recreational Facilities	$ 158,169	$ 254,338	$ 970,008	$ 811,656	$ 6,438,532	$ 2,566,500	$ 1,570,500	$ 820,000	$ 2,875,500	$ 1,590,000
Stormwater	$ 11,587	$ 287,721	$ 28,040	$ 595,369	$ 1,166,576	$ 1,691,000	$ 1,010,000	$ 1,245,000	$ 1,370,000	$ 860,000
Streets and Sidewalks	$ 2,268,246	$ 1,994,743	$ 2,171,189	$ 2,616,837	$ 5,734,928	$ 5,382,300	$ 4,708,900	$ 2,130,900	$ 2,103,200	$ 2,100,800
Capital Equipment	$ 210,895	$ 18,433	$ 267,982	$ 355,125	$ 1,132,294	$ 430,258	$ 433,151	$ 428,288	$ 435,586	$ 445,593
Capital Project Administration	$ 90,283	$ 92,183	$ 135,636	$ 260,413	$ 326,049	$ 355,954	$ 366,700	$ 377,800	$ 389,200	$ 401,000
Debt Service	$ 713,006	$ 710,742	$ 716,626	$ 1,307,671	$ 695,908	$ 696,308	$ 696,608	$ 695,245	$ 697,370	$ 701,470
Transfers Out	$ -	$ -	$ 380,000	$ 492,198	$ 582,434	$ 565,998	$ 571,658	$ 577,375	$ 583,149	$ 588,980
TOTAL CAPITAL EXPENDITURES	**$ 5,469,165**	**$ 3,427,980**	**$ 4,774,186**	**$ 6,477,585**	**$ 16,422,721**	**$ 12,138,318**	**$ 9,887,517**	**$ 6,304,608**	**$ 8,484,005**	**$ 6,717,843**

ENDING FUND BALANCE (CASH BASIS)	**$ 3,898,881**	**$ 4,426,862**	**$ 7,550,734**	**$ 9,193,280**	**$ 4,450,246**	**$ 3,460,215**	**$ 4,113,122**	**$ 5,936,208**	**$ 5,377,543**	**$ 6,468,460**

APPENDIX C
COMMUNITY REQUESTS AND STAFF RESPONSES
CAPITAL IMPROVEMENT PROGRAM
FISCAL YEARS 2025-2029

Each request is summarized below, generally in the order that the request was received. Each request and the corresponding response from City staff are attached.

Page

1. Mike Robinson (148 Royal Manor Court) 2
   - *Create a City Center area, build a community center and net at golf course.*

2. Melissa Inkley (12958 Ferntop Lane) 3
   - *Retaining wall and creek repairs along Fernview Drive.*

3. Rasmaa Vissa (no address given) 4
   - *Request for new sidewalks at two locations in the City.*

4. Carolyn Bower (349 Magna Carta Drive) 5
   - *Request for nature-based stormwater solutions and new bike lanes.*

Mike Robinson (148 Royal Manor Court)

Request

I have three suggestions although one may be more of a zoning issue.

1. Create a city center with mixed use residential and commercial on Ballas Rd from Olive Blvd to something just north of Ladue Rd. Like a downtown Kirkwood or the development off highway 70 and 5th St. at the Streets of St. Charles. Ample parking, all very walkable with shops, restaurants, and residential. Making Creve Coeur more of a destination, especially at night.
2. In addition to or as part of #1, build a community center the includes a gym, basketball courts, meeting rooms, racquetball courts, maybe even an indoor pool like the one in Des Peres.
3. Add proper golf ball deflecting landscaping or netting at the golf course along Golfview on the green condominiums. I own a rental on Sarah Lane and my windows keep getting broken out by golfers!

The first two suggestions are community driven. Creve Coeur means “Broken Heart”, but the city doesn’t seem to have that heart or center like other municipalities. I very much appreciate your consideration.

Staff Response

Thank you for submitting your suggestions. The City does not have any current plans to build a new community center, however we have noted your request and have shared such with Jason Valvero, Director of Recreation.

Your idea regarding creating a “City Center” would most likely occur by individual private redevelopments as they occur. The City reviews all new private development plans/ideas as they arise and all such developments would need to comply with all applicable City, State and Federal requirements.

The golf ball net and/or deflecting landscape on the West side of Hole #8 has been brought to the attention of Jason Valvero. At this time, the City does not anticipate making any improvements in this area.

Melissa Inkley (12958 Ferntop Lane)

Request

We saw the request for ideas for the CIP in the recent city newsletter. We would like to request the city to consider improving an open creek bed storm drain area.

There is an area behind our home and about 4 other homes and also under Fernview drive that is eroding very badly. It's a well known problem that was brought up as early as 1999 to the city. My neighbors and I have spoken to the stormwater committee several times about this, as well. I think we are on a "list" to have it addressed, but we don't know when this will be. I assume it's sadly still years away, and we are running out of time. One neighbor has lost about a third of his yard, including a backyard fence. Another neighbor has deep sinkholes and several trees with big roots about to fall into the creek and/or on our homes. We are about to lose our retaining wall. We have also had MSD fill at least 4 sinkholes over the last few years. This area needs to be addressed soon, so I don't know if that's via the CIP plan or the sales tax park/stormwater improvement funds plans, but we wanted to bring it up again.

I know this is an area that is behind individual homeowners, but it does come up against an open common ground area (managed by the city, I believe, and not a subdivision), and also runs under Fernview drive, which is a main street in our Fernwood neighborhood. Thanks for the opportunity to comment.

Staff Response

Thank you for your suggestion. On February 26, 2024, the final draft of the Watershed Master Plan was presented in front the City Council at a workshop meeting. Currently the draft final plan is under the public review comment period, which is anticipated to close in April of 2024. The project you referenced is identified in the prioritization list of projects in this Plan, but the project does not have any definitive date of when design and/or construction could occur.

The stormwater committee will annually or semi-annually review projects on the prioritization list and anticipates making recommendations to the City Council for projects to enter design phase and hopefully ultimately into construction. The City Council reviews and approves which project(s) can begin design phase and ultimately into construction.

Rasmaa Vissa (no address given)

Request

My suggestions:

1) To extend the existing sidewalk in areas that is non - existent or broken, from the Bellerive Manor Dr. towards the Bellerive elementary school in Creve Coeur, to enable kids/parents to walk/bike safely to the Bellerive Elementary school. In addition, this sidewalk will also enable early morning walking communities to keep away from traffic and be safe on the sidewalk. This ongoing maintenance of the sidewalk should be partly covered by Creve Coeur and any other parties involved.
(Detail map - Bellerive Manor Rd to Bellerive elementary School via Ambois Dr.)

2) The road from Gallagher Rd/Fern view Dr/Olive Blvd lacks proper sidewalk, this sidewalk could be new construction to connect to Olive Blvd both sides, east towards the Fee Fee Rd and west towards the Mallard Lake to enable cycle/walk/enthusiasts a safe way to healthy lifestyle.
(Detail map - Gallagher Rd, Fernview Dr,Olive Blvd, Creve Coeur Mill Rd)

Staff Response

Thank you for reaching out and sharing your concerns. The City has limited funding to construct new sidewalks, however the City does actively research and apply for applicable grant funding for sidewalk improvement programs on a regular basis. Currently the funding for such grant programs is very limited.

On a very positive note, the City was recently awarded a Transportation Alternative Program (TAP) grant for new sidewalk construction on Fernview Drive from Gallagher Road to Olive Boulevard. The process from preliminary engineering to final engineering design and ultimately to construction of the actual sidewalk does take a considerable amount of time. It is anticipated that construction of this new sidewalk would occur in the summer of 2026.

In addition, the City has a second phase for new sidewalk along Fernview Drive from Gallagher Drive to Le Havre Drive in the planning stages. The City anticipates applying for TAP funding for this project likely in 2025 or 2026. If the City is successful in securing funding for this project, then likely the new sidewalk would be constructed in 2029.

The City has added your request for new sidewalk along Ambois Drive (west of Bellerive Elementary School) to our master list of possible future projects.

Carolyn Bower (349 Magna Carta Drive)

Request

1. I would like to see Creve Coeur do what Milwaukee has done with a nature-based solution to deal with stormwater and climate change issues. Creve Coeur is in the Deer Creek watershed, which has led to stormwater runoff and flooded basements in neighborhoods downhill from increased development east of Ballas and south of Olive. In addition, Creve Coeur got 10 inches of rain in one day last year. People have installed costly basement sump pumps but even that will not be enough. Climate change is expected to cause more and stronger rains. I have attached a copy of Milwaukee's plan for how plants can help slow down and absorb storm water runoff on private and public property. Hope this could be used in the future through a City Council ordinance so that the city's public works and capital improvements team could help the city adapt to the expensive damage of flooding worsened by climate change.

2. I would like to see Creve Coeur invest like Clayton, St. Louis and cities around the world in separated bike lanes that are safe enough for 12-year-olds to use. That might mean one lane of Ballas or a Mosley sidewalk as a north-south corridor for bikes. And Ladue, Olive and Conway could be the east-west corridors for bikes. The bike lanes would be asphalt and foot high poles or another separation device would separate the path from traffic lanes. I would be willing to get rid of the grassy median to make room for a bike lane on one side of Ballas. In addition, traffic on Ballas needs to be slowed to 35 mph. I would like to see Creve Coeur Connect its bike lanes to those that lead to Maryland Heights and Olivette as well as south along Deer Creek to Frontenac and the library and west along Ladue to Parkway Northeast Middle School.

3. If the Creve Coeur Golf Course becomes no longer viable, I would like to see much if not all of the property returned to park land with prairie grass, sedges, leaves and no grass to mow and a community garden for people in the condos and apartments. I would like to see the golf paths become walking and biking paths. People who live south of Olive would walk and bike to the grocery stores and restaurants on Olive if the walking/biking infrastructure were in place. Also, it would encourage less use of cars and be better for the climate.

Staff Response

Thank you for all your detailed suggestions. On February 26, 2024, the final draft of the Watershed Master Plan was presented in front the City Council at a workshop meeting. Currently the draft final plan is under the public review comment period, which is anticipated to close in April of 2024. Over the coming years, the City anticipates that possibly some of the solutions you mentioned in point #1 will be implemented.

Additions of bike lanes along the routes you mentioned would be a very costly endeavor. Currently there is no funding allocated for such improvements. For the Golf Course, the City's current position is that this will remain a golf course for the long-term future.

RESOLUTION NO. 1716

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOURI, ADOPTIONING THE CITYWIDE WATERSHED MANAGEMENT PLAN.

WHEREAS, the City of Creve Coeur strives to protect the public's safety, heath, and investments in homes and property by managing stormwater and mitigating flood risks when feasible;

WHEREAS, the Watershed Management Plan was developed by an engineering firm with expertise and experience in stormwater management, channel condition assessments, and watershed management planning; and

WHEREAS, the Watershed Management Plan identified stormwater issues across the City and consistently ranked them according to risk, estimated costs, and benefits; and

WHEREAS, the Watershed Management Plan will help City Staff, the Stormwater Committee, and City Council make informed, engineering-based, and equitable decisions about projects for the City's five-year Capital Improvement Plan; and

WHEREAS, City staff and the Stormwater Committee recommend that the City adopt the Watershed Management Plan and use it to guide the City's Stormwater Program.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, AS FOLLOWS:

Section 1. The April 2024 Watershed Management Plan and appendices, attached hereto as "Exhibit A," which is hereby incorporated as part of this Resolution as if fully set our herein is hereby adopted by the City Council.

Section 2. The City Administrator and his designated representatives are hereby authorized and directed to take any and all actions necessary, desirable, convenient, or proper actions in order to carry out the intent of this Resolution and the matters herein authorized.

Section 3. This Resolution shall take effect immediately upon its adoption.

ADOPTED THIS 8TH DAY OF APRIL, 2024.

_____
DR. ROBERT HOFFMAN
MAYOR

ATTEST:

_____
KELIE HENKE
CITY CLERK

DEPARTMENT OF PUBLIC WORKS
STAFF MEMORANDUM

DATE: April 2, 2024

TO: Mark Perkins, City Administrator

CC: Jim Heines, Director of Public Works
Steve Berecz, P.E., City Engineer and Assistant Public Works Director

FROM: Dione Garson, P.E., Civil Engineer

SUBJECT: Recommendation for Adoption of the Watershed Management Plan

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The Watershed Management Plan will guide the City's Stormwater Program
The Watershed Management Plan (WMP) is a planning tool that will help City staff, the Stormwater Committee, and the City Council make informed, engineering-based decisions for selecting the projects that will be included in the City's five-year Capital Improvement Plan (CIP).

During the nearly year-long planning process, stormwater issues were discovered and analyzed. Then possible publicly-funded projects were identified and ranked. Every step of the planning process was collaborative, transparent, and inclusive.

The following is a brief overview of the project and key steps.

Planning process
The planning process began in January 2023.

Phase 1: Selecting an engineering firm to lead planning efforts
The first step was the selection of an engineering firm to lead planning efforts. After a thorough review of qualifications from several experienced engineering firms, City staff and representatives of the Stormwater Committee recommended Intuition & Logic (I&L) lead the City's planning process with EDM as I&L's primary subcontractor.

The engineering team of I&L and EDM has a wealth of watershed planning and watercourse experience. Before working on this project, I&L completed 53 watershed management plans. In total, I&L and EDM have assessed more than 1,000 miles of creeks and streams.

City Staff and the Stormwater Committee's recommended choice of I&L was approved by the City Council.

Phase 2: Discovery
The planning process began by gathering known information about the City's stormwater issues from sources such as:

- City records of reported stormwater issues.

- Past Watershed Management Plans.
- GIS information.
- Exiting Hydrology & Hydraulics Federal Emergency Management Agency (FEMA) models.

After information was gathered, focus shifted to uncovering new stormwater issues and assessing the condition of watercourses within Creve Coeur's two watersheds: the Deer Creek Watershed and the Creve Coeur Watershed.

Resident involvement and reporting was essential to the discovery phase. Public outreach and engagement included:

- An online map-based tool used by residents to report stormwater issues. In the first six months of the planning process, more than four hundred issues were reported.
- Four Open House events where residents had an in-person opportunity to:
    - Learn about the planning process at various stages of the plan's development.
    - Share feedback, suggestions, and new information directly with City Staff and I&L and EDM engineers.
- Articles in the City's newsletter, online social media posts, and a dedicated Stormwater page on the City's website encouraged residents to attend events and learn more about the plan's development.
- I&L met with the Stormwater Committee and the City Council to provide updates and hear feedback.
- An interactive informational public outreach table at the City's 2023 Arbor Day Event.

To understand the condition of the City's watercourses, I&L lead stream bank assessments using an engineering-based methodology. In this process:

- I&L engineers field-collected geomorphic data points across fourteen data categories.
- Data from the fourteen categories were weighted and scored to provide an overall indication of a creek's stability at each data collection point.
- Engineers used observations and data to formulate an engineering opinion of the dominant process for each creek reach.
- Additional field data was collected that can be used to develop engineering design concepts for future streambank restoration projects.

Phase 3: Analysis

The next phase of planning focused on understanding the data and then developing a plan for how the data would be used to make informed and equitable decisions about funding stormwater projects.

- Criteria was developed to determine if an identified stormwater issue would possibly qualify for a publicly-funded solution or if solving the issue is the private owner's responsibility.
    - The public versus private criteria was reviewed by the Stormwater Committee and residents at Open House events.
    - Using this criteria, approximately 50 reported issues were classified as private issues, and 102 issues were classified as possible public projects.
- A Priority Ranking System was created. This system will be used as a consistent, equitable, and defensible methodology for ranking possible future publicly-funded projects and important factor in selecting projects for inclusion in the City's CIP.

- With a defined scoring system, every potential public project has an equal chance of being funded because every possible project is scored under the same system.
- The City's system is based on the Metropolitan St. Louis Sewer District's (MSD) Stormwater Prioritization System. Some modifications were made that tailored the system to the City's conditions and needs.
- Scores are based on problem solved and solution-benefit categories.
- The problem solved category is subdivided into stream and storm sewer/overland flow subcategories. More severe problems are given more points.
- The solution-benefit category is subdivided into regional, environmental/water quality, and miscellaneous subcategories. More benefits results in more points.
- The total, the final score for each possible public project is essentially a cost-to-benefit ratio that considers the sum of the problem solved and solution-benefit category points as well as the estimated cost of solving the problem.
- A guidance document was written to help ensure consistency with scoring.
- Scored potential public projects are further categorized by type.
    - Project Type 1 describes solutions to stormwater threats to roadway culverts or structures.
    - Project Type 2 is used for creek bank stabilization projects.
    - Project Type 3 is for projects that seek to address overland flooding issues, including home flooding.

Phase 4: Identifying and ranking possible public projects
The plan lists 102 possible publicly-funded stormwater projects. Each of these possible publicly-funded projects was scored, grouped into category type, and then ranked highest to lowest score.

In total, possible public projects are estimated to cost of more than $30 million in engineering design and construction costs (2023 dollars). With so many possible projects, the WMP will help guide the City's Stormwater Program for decades. The scored and classified possible public projects are shown in Appendix E – Potential Projects and Appendix F – Cost and Prioritization Summary.

The list of scored possible projects is dynamic, and rankings may change over time as new issues arise or known issues become more severe. Rankings do not consider how long a stormwater issue has existed or if an issue was included in a past WMP. Higher scores do not guarantee that an issue will have a publicly-funded solution. City Staff, the Stormwater Committee, and the City Council make final decisions about projects that are programmed into the City's Stormwater Program and CIP.

Phase 5: Public review and comment period
A draft of the plan was posted to the City's website on February 20, 2024. The public comment period was open from February 20, 2024 until March 29, 2024. No public comments were received.

Summary
The WMP gives the Stormwater Committee and City Council members an engineering-based decision-making tool. The future of the City's Stormwater Program will be based on best judgment guided by engineering-based tools and input from engineering professionals.

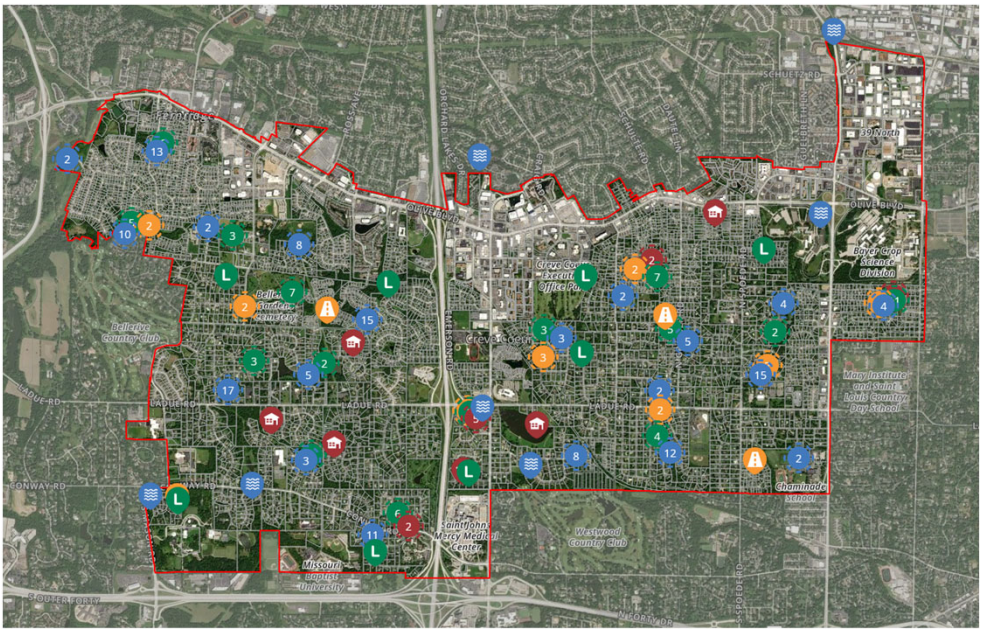
The City's Stormwater Committee was actively involved in selecting the engineering design firm, reviewing progress, attending outreach events, and offering suggestions and feedback. City Staff is grateful for the extra time and effort members contributed to the project.

The Stormwater Committee recommends adoption of the WMP.

Recommendation
City-staff recommends that the City Council adopt the Watershed Management Plan dated April 2024.

Attachments: Watershed Management Plan
Watershed Management Plan Appendix A – Glossary of Terms and References
Watershed Management Plan Appendix B – Public Participation Materials
Watershed Management Plan Appendix C – Stormwater Problem Sites
Watershed Management Plan Appendix D – Channel Condition Assessment Field Data
Watershed Management Plan Appendix E – Potential Projects
Watershed Management Plan Appendix F – Cost and Prioritization Summary
Watershed Management Plan Appendix G – Cost Prioritization Methodology
Watershed Management Plan Appendix H – Meeting Notes

City of Creve Coeur Watershed Management Plan









INTUITION & LOGIC

In Association With: EDM Incorporated

AMPM AMPM Consulting, LLC

April 2024

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City of Creve Coeur Watershed Management Plan



Timothy Patrick Dean
MO# E-2008019536

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AMPM Consulting, LLC

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Table of Contents

Executive Summary ES-1

Section 1 – Data Collection and Coordination

1.1 Watershed Inventory 1-1
1.2 Study Methodology 1-2
1.2.1 Public Involvement 1-3
1.2.2 Stormwater Issues & Site Investigations 1-3
1.2.3 Channel Condition Assessment 1-4

Section 2 – Public Involvement

2.1 Public Participation Process 2-1
2.1.1 Open House Events 2-1
2.1.2 Website and Newsletter 2-3
2.1.3 Online Survey 2-4
2.1.4 Social Media Posts 2-5
2.1.5 Community Outreach 2-7

Section 3 – Stormwater Problem Site Investigation

3.1 Introduction 3-1
3.2 Methodology 3-1
3.3 Summary 3-4
3.3.1 Overland Flow Issues 3-4
3.3.2 Channel Issues 3-5

Section 4 – Channel Condition Assessment

4.1 Introduction 4-1
4.2 Methodology 4-3
4.3 Channel Condition Results 4-10
4.3.1 Deer Creek Watershed 4-10
4.3.2 Creve Coeur Creek Watershed 4-12
4.4 Reach Summary Results 4-15
4.4.1 Deer Creek Watershed 4-15
4.4.2 Creve Coeur Creek Watershed 4-17
4.5 Stream Recommendations 4-20

Section 5 – Potential Projects

5.1 Introduction 5-1
5.2 Evaluation Approach 5-1
5.2.1 Typical Problem Solutions 5-2
5.3 Cost Development Approach 5-4

5.4 Results 5-5
5.5 Private Issues 5-8

Section 6 – Prioritization Methodology

6.1 Introduction..... 6-1
6.2 Prioritization Approach..... 6-1
6.2.1 MSD Stormwater Project Prioritization System 6-1
6.2.2 Creve Coeur Prioritization Methodology 6-2
6.3 Results 6-3

Section 7 – Implementation

7.1 Introduction..... 7-1
7.2 Potential Project Implementation 7-1
7.3 Project Funding 7-2
7.4 Coordination Efforts 7-3
7.5 Stormwater Ordinance Review for Mitigation BMPs..... 7-3
7.5.1 Mitigation BMP Criteria Comparison 7-3
7.5.2 Mitigation BMP Modeling Approach 7-4
7.5.3 Mitigation BMP Modeling Results 7-5
7.5.4 Mitigation BMP Conclusions 7-6
7.5.5 Stormwater Ordinance Recommendations 7-6

Appendices

Appendix A - Glossary and References
Appendix B - Public Materials
Appendix C - Stormwater Problem Sites
Appendix D - Channel Condition Assessment Field Data
Appendix E - Potential Projects
Appendix F - Cost & Prioritization Summary
Appendix G - Cost & Prioritization Methodology
Appendix H - Meeting Notes

Figures

ES-1 Channel PPs ES-2
ES-2 Stormwater PPs ES-3
1-1 Creve Coeur Study Reaches 1-4
2-1 Open House #1 2-1
2-2 Open House #1 2-1
2-3 Open House #2 2-2
2-4 Open House #3 2-2
2-5 Open House #4 2-2
2-6 City Newsletter 2-3
2-7 City Website Project Page 2-3
2-8 Online Survey Tool 2-4
2-9 Arbor Day Celebration 2-7
4-1 Channel Evolution Stages 4-2
4-2 Creve Coeur Study Reaches 4-4
4-3 Creve Coeur Study Reach Names 4-8
4-4 Straightened Channel 4-11
4-5 Bank Cutting Near Roadway 4-11
4-6 Mass Wasting Threatening Transmission Tower 4-13
4-7 Creve Coeur Channel Condition Scores 4-14
4-8 Creve Coeur Stream Channel Dominant Process 4-19
4-9 Rectangular Concrete Channel With Grade Control Drops 4-20
5-1 Rock Grade Control Structure Detail 5-2
5-2 Bank Stabilization Structure Detail 5-2
5-3 Rock Armor and Scour Protection Detail 5-3
5-4 Channel PPs 5-6
5-5 Stormwater PPs 5-7
5-6 Private Issues 5-8

Tables

4.1 Stream Naming Convention....4-6
4.2 Average Field Score Per Channel Condition Rating Category 4-10
4.3 Number of GOOD, FAIR and POOR Field Scores 4-11
4.4 Average Field Score Per Channel Condition Rating Category 4-12
4.5 Number of GOOD, FAIR and POOR Field Scores 4-12
4.6 Deer Creek Watershed Reach Summary....4-15
4.7 Creve Coeur Creek Watershed Reach Summary....4-17
5.1 PP Results....5-5
6.1 PP Priority List....6-4
7.1 Flows for Drainage Area A6 That Contains the Single Lot Redevelopment Site..7-5
7.2 Watershed Redevelopment Flowrate Results for the 15-year Storm (cfs) 7-5

Executive Summary

Introduction

The City of Creve Coeur (City) has updated its citywide Watershed Management Plan. Watershed Management Plans are one of the tools that the City Staff, the Stormwater Committee, and the City Council use as a guide for planning future stormwater projects and determining the direction of the Stormwater Program. This plan will help ensure that City funds are used effectively and wisely in delivering stormwater management benefits to residents across the City.

The City's first Watershed Management Plan was developed in 1999. The management plan was updated in 2012. This report represents the third update of the City's Watershed Management Plan. The purpose of the Watershed Management Plan is to identify needed Potential Projects (PPs) for flood reduction and stream stability.

The project team was led by the City. The City retained the consultant team of Intuition & Logic Engineering, Inc. (I&L), in association with EDM Incorporated and AMPM Consulting.

Public Participation

As part of the Watershed Management Plan development, a public participation process was used to solicit input from area residents and other interested parties. The public participation process included the following:

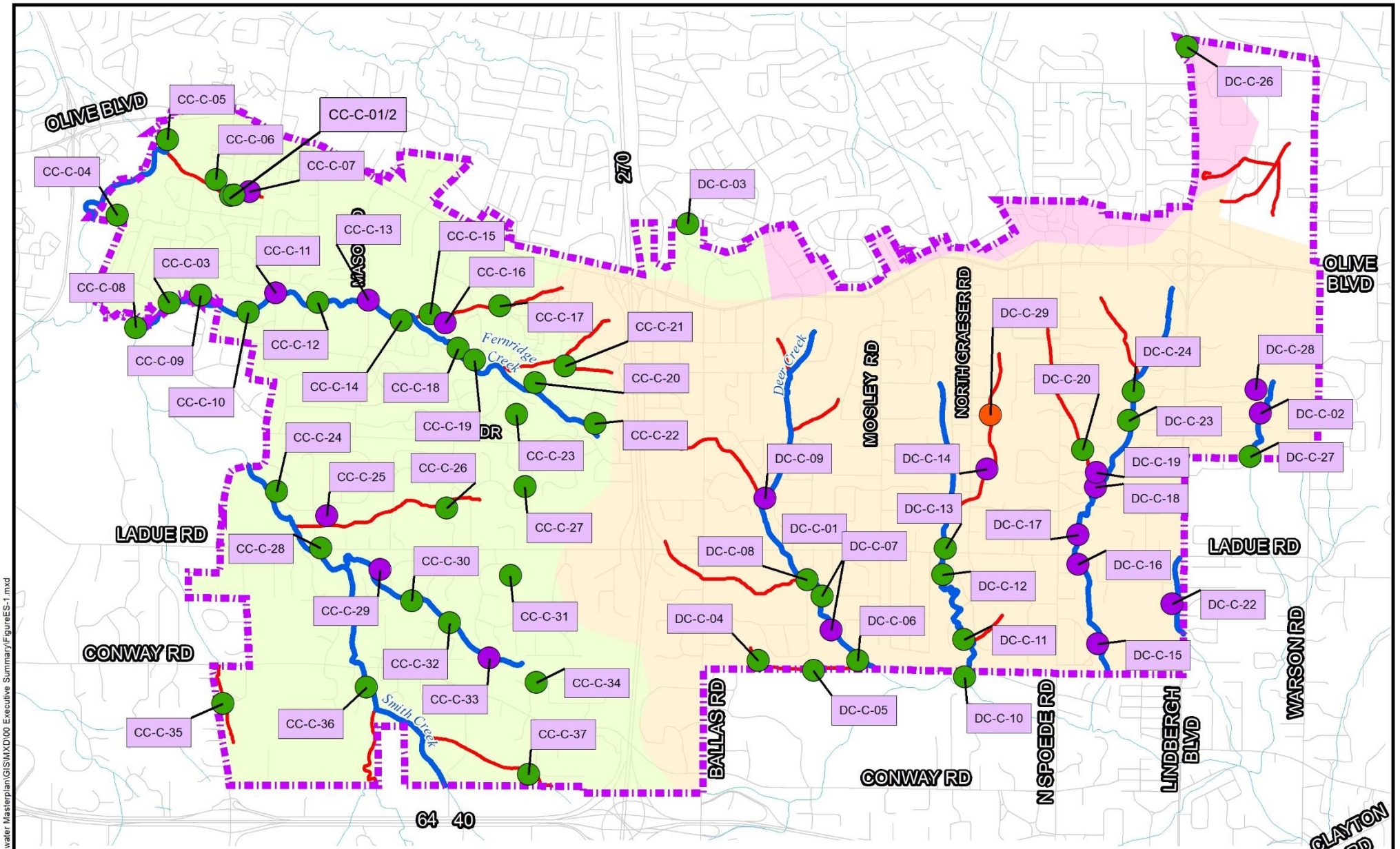
- Four open houses in March 2023, May 2023, September 2023, and January 2024.
- Project updates and information on the City's website and social media to post preliminary results and upcoming events
- Use of Social Pinpoint to collect data on stormwater issues from property owners

The public input and feedback received during this process was used by the project team to formulate and refine the watershed management plan recommendations. Section 2 provides further details regarding the public participation process.

Potential Projects

The results of the geomorphic, hydraulic, and hydrologic analyses formed the foundation for identifying problem areas in the watershed. Potential improvement projects addressing each problem area were evaluated based on design considerations, economic feasibility, and overall efficiency.

The Watershed Management Plan includes 102 total projects further divided into 20 structure/culvert projects, 48 bank stabilization projects, and 34 overland flooding projects. The general locations of the projects are shown in Figures ES-1 and ES-2. The total cost for all 102 projects is estimated to be approximately $33.9 million using 2023 material and construction costs. Funding for these Potential Projects may include, but not be limited to, the City's one half-cent capital improvement sales tax, one half-cent parks and stormwater sales tax, transfers from the City's general fund, and grants from local, state, and federal aid programs.


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LADUE RD
WARSON RD
CONWAY RD
CLAYTON RD
BALLAS RD
N SPOEDE RD
LINDBERGH BLVD
MOSLEY RD
NORTH GRAESER RD
Fernridge Creek
Deer Creek
Smith Creek
Figure ES-1
Channel PPs
Project_Type
Culverts/Structures
Bank Stabilization
Overland Flooding
Mainstem
Tributaries
Streams
Creve Coeur Creek Watershed
Deer Creek Watershed
Fee Fee Creek Watershed
Creve Coeur City Limits
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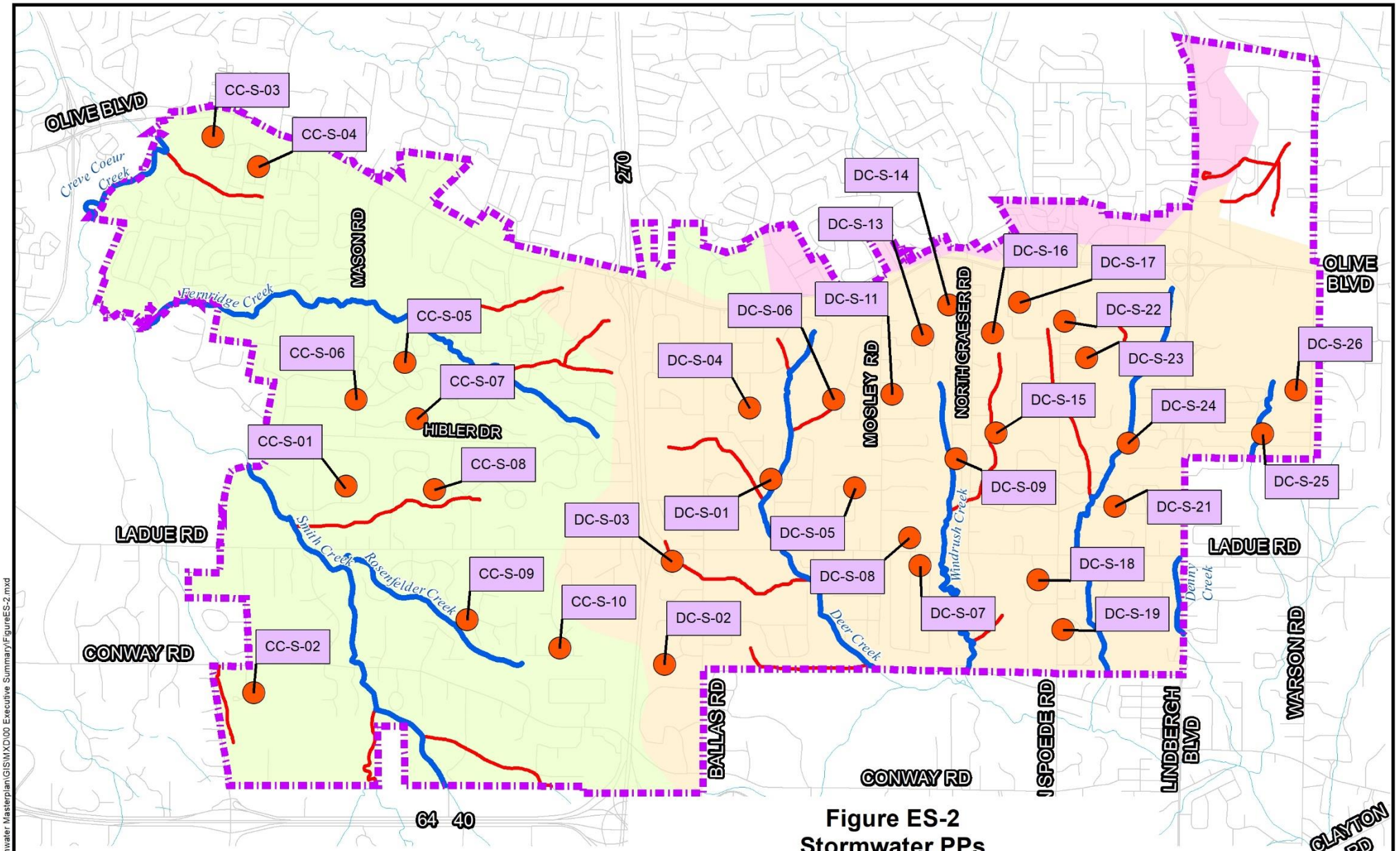


Figure ES-2
Stormwater PPs

INTUITION LOGIC

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The City modified MSD's Prioritization Methodology to establish a consistent, defensible methodology for ranking Potential Projects for implementation. The Prioritization Methodology divides projects into problem solved and solution benefit categories. For each project, a ranking worksheet is used to assign points under each category, with the goal of developing an overall cost/benefit ratio. The projects with the higher ratios are considered a higher priority. A priority list and further detail on each project are found in Section 6.

Summary

The Watershed Management Plan provides the necessary planning tools and improvement projects to address potential stormwater issues in the City. By using the detailed study information and applying the Management Plan elements described above, multiple goals will be achieved including:

- An engineering-based tool to guide the City in choosing projects for the Stormwater program
- Maximized benefits to residents
- Reduction of risks to public safety, public health, and damage to public infrastructure and private property
- Allows the City to secure grant funding which will allow the City to complete more projects in a shorter period of time

Section 1
Data Collection and Coordination

1.1 Watershed Inventory

The watershed inventory consisted of collecting, compiling, and evaluating existing data applicable to the development of both the Watershed Management Plan and new data sets. A data search was conducted to identify existing information that could be used by the project team throughout the development of the Watershed Management Plan. Below is a general list of existing data collected:

Geographic Information System (GIS) data files:

- Addresses
- Aerial imagery
- Basin boundaries
- Census blocks
- City limits
- Contours
- Federal Emergency Management Agency (FEMA) Data
- Fire districts
- Floodplain data
- Impervious areas
    - Bridges
    - Buildings
    - Driveways
    - In-ground pools
    - Parking
    - Patios
    - Recreation areas
    - Sheds
- Lakes, streams, and waterbodies
- Light Detection and Ranging (LiDAR)
- MO 2018 Public Land Survey System (PLSS)
- Metropolitan St. Louis Sewer District (MSD) data
    - Sanitary
    - Storm
- National Hydrography Dataset (NHD) Data
- Parcels
- Parking islands
- Parks
- Paved drainageways
- School districts
- St. Louis County GIS Data
- Subdivisions
- Transportation
    - Islands
    - Metrolink
    - Railroads
    - Roads
    - Sidewalks
        - Ramps
- Wards
- Watershed boundaries
- Zoning

Hydrology & Hydraulics (H&H) Models:

- Creve Coeur Creek FEMA
- Fernridge Creek FEMA
- Smith Creek FEMA
- Monsanto-Sunswept Creek FEMA
- Deer Creek FEMA

- Westwood Creek FEMA

Reports:

- City of Creve Coeur 1999 Stormwater Evaluation Final Report
- City of Creve Coeur 2012 Stormwater Master Plan Update

Websites:

- City of Creve Coeur Stormwater Information
  - https://www.crevecoeurmo.gov/stormwater
- St. Louis County GIS Viewer
  - https://data-stlcogis.opendata.arcgis.com/apps/property-lookup/explore
- Deer Creek Watershed Alliance
  - https://www.deercreekalliance.org/
- East-West Gateway Council of Governments
  - https://www.ewgateway.org/

The above data and data sources may not be directly utilized or referenced in this Watershed Management Plan, but rather represent the body of data available for our reference and use as we developed the plan.

During the study, new data sets were developed using GIS technology including:

- Geomorphic and channel data
- Resident reports about stormwater issues on Social Pinpoint, the online map-based reporting tool
- Potential projects/areas of concern
- Other information obtained from the field investigation

New data generated consist of:

- GIS files
- The watershed report in PDF and Microsoft Word formats
- Images/photos
- Any subsequent supplemental data

1.2 Study Methodology

This Creve Coeur Watershed Management Plan includes:

- Public involvement
- Hydraulic and hydrology data summary
- Stormwater issues site investigations
- Channel condition assessments.

Each of these study components was then considered in the development of potential capital improvement projects. A summary of each component is provided below.

1.2.1 Public Involvement

Public involvement consisted of newsletter and email notifications, an online, map-based stormwater questionnaire, four open house events, and a table at the City's Arbor Day Celebration.

The online questionnaire was used to identify the location and nature of stormwater issues throughout the City. The questionnaire link was posted on the City's website, promoted on the City's social media accounts, and in the City's newsletters. Responses from Creve Coeur residents were compiled into a database and engineering teams visited each site as part of the evaluation process.

Four public open house events were held to seek input from residents and to present findings from the Watershed Management Plan. The first public meeting served to:

- Present historically known issues
- Familiarize residents with the website and help residents use the online map-based reporting tool
- Solicit reporting of other flooding or erosion issues from the residents

The second public open house event served to present the data collection results to the residents.

At the third public meeting, residents learned about identified Potential Project (PP) approaches to the stormwater problems.

The fourth public meeting focused on the compiled and prioritized list of PPs by category and the implementation strategy. See Section 2 of this report for detailed information.

1.2.2 Stormwater Issues & Site Investigations

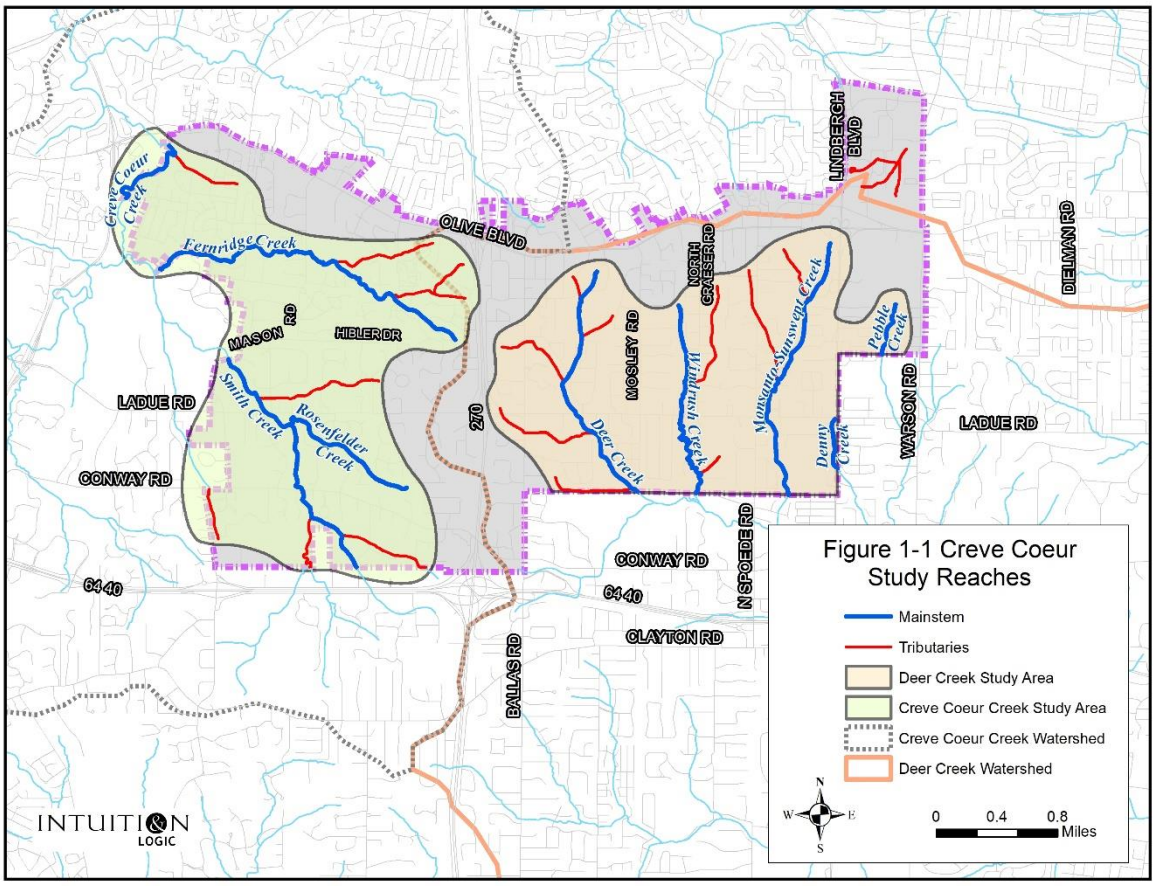
The analysis of stormwater concerns was conducted to identify flooding or erosion issues within the City. Under the plan, identified issues are evaluated and considered for the possibility of becoming a project in the City's future Capital Improvement Programs. The following methodology was used for site investigations:

- Coordinate with the City and MSD to identify and locate historical stormwater issues
- Evaluate stormwater questionnaire online survey results to locate additional stormwater concerns
- Review existing GIS data and previous reports containing information regarding the previously identified stormwater issues
- Develop GIS maps of the identified stormwater issues
- Perform site visits to determine the nature and scope of the problem, identify public and private infrastructure affected, and develop a potential solution with project extents

See Section 3 of this report for a detailed description of site investigations, evaluations, and results.

1.2.3 Channel Condition Assessment

The geomorphic evaluation is based on field reconnaissance of about 20 miles of channel as shown in Figure 1-1.



The Creve Coeur Creek Watershed fieldwork limits included:

- Smith Creek
- Rosenfelder Creek
- Fernridge Creek
- Creve Coeur Creek
- And the above creeks' respective tributaries

The Deer Creek Watershed fieldwork limits included:

- Deer Creek
- Windrush Creek
- Monsanto-Sunswept Creek
- Denny Creek
- Pebble Creek
- And the above creeks' respective tributaries

A small tributary in the upper River Des Peres Watershed was also included in the study limits. The tributary fieldwork limits were developed by focusing on the higher stream order reaches (the larger channels). The tributary upstream fieldwork limits began where there was one mile or more of identified drainage way contributing to the tributary. Typically, the upstream stopping point was set to the nearest roadway or confluence. Some exceptions to the contributing stream length were made where the tributary was fed by a development or where known issues were present.

Along each reach, geomorphic data points were collected in GIS during the field investigation. This data enabled reconnaissance-level analysis of reach stability. Field data was collected using the following data categories:

1) Bank soil texture and coherence per Uniform Soil Classification using the visual-manual procedures (ASTM D 2488-00)
2) Average bank slope angle as measured where obvious breaks in slope create a top of bank and toe of slope
3) Average bank height as measured from the lowest point in the channel cross section to the top of bank
4) Vegetative bank protection
5) Bank cutting
6) Mass wasting (wedge or slide slope failure)
7) Bar development
8) Debris jam potential
9) Obstructions, flow deflectors, and sediment traps
10) Channel bed material consolidation and armoring
11) Percentage of channel cross section constriction
12) Sediment movement
13) Sinuosity
14) Opinion of dominant process

For each data point, the data categories are weighted and scored to provide an overall indication of stability. The data points were then summarized to provide an overall reach score. Each reach is also given an opinion of dominant process that is based on field staff's observations.

Field data was also collected at potential project locations including:

- Project type (Bed stabilization and/or bank stabilization)
- Project length
- Brief problem description
- Brief recommended solution description
- Additional notes as needed

See Section 4 for a detailed description of the channel condition assessments and results of the geomorphic data points and indicators as listed above.

Section 2
Public Involvement

2.1 Public Participation Process

Residents and stakeholders were offered a variety of ways to provide input to the study and to contribute to the development of alternative concepts and solutions. Each public involvement activity provided the project team with ideas for presenting and refining its recommendation. The following is a summary of the various components of the public participation process.

2.1.1 Open House Events

Four open house events for the Creve Coeur Watershed Management Plan were held during the study to solicit input, update the public on the status of the study, and to present preliminary results. The events were advertised by a direct mail newsletter, advertising through the City's social media, and advertising on the City's website. The open house events followed the same general format consisting of information stations at which the attendees could inquire more about the study and discuss their concerns with representatives from the project team. The open houses were held at the Creve Coeur Government Center, 300 N New Ballas Road on March 22, 2023, May 17, 2023, August 20, 2023, and January 17, 2024. A summary of the open house events is provided below.



Figure 2-1: Open House #1

Over 30 residents participated in the first open house held on March 22, 2023. The first open house was designed to present historically known issues, watershed management plan study components, resident comment tools, and to solicit reporting of flooding or erosion issues from the residents. Participants were encouraged to visit information stations set up around the room that provided specific information on the Channel Condition Assessment, Stormwater Problem Site Investigation, and Prioritization Ranking Methodology. Tablets were also provided for the residents to provide feedback through the City's online survey tool.



Figure 2-2: Open House #1

15 residents participated in the second open house held on May 17, 2023. The second open house was designed to be a continuation of the first open house. At the second open house, the residents were provided with an update on the watershed management plan process and



Figure 2-3: Open House #2

an overview of the watershed management plan findings, including: channel condition assessment, stream dominant process, and identified flooding, stormwater, and erosion issues throughout the City. I&L gave a short presentation to highlight the findings to date and reviewed the next steps. Participants were then encouraged to visit information stations set up around the room that provided specific information on the various findings.



Figure 2-4: Open House #3

9 residents participated in the third open house held on September 20, 2023. The third open house was designed to be a continuation of the first two open houses. At the third open house, the draft Potential Projects to address the identified problems were presented to the residents along with the methodology for prioritization and implementation. This meeting was also used to give the residents a chance to review the project locations and present any additional sites or feedback on the project extents. Participants were encouraged to visit information stations set up around the room that provided specific information on the project approaches, prioritization, and implementation.



Figure 2-5: Open House #4

10 residents participated in the fourth open house held on January 17, 2024. The fourth open house was designed to be a continuation of the first three open houses. I&L gave a short presentation to run through the overall watershed management plan process, findings, and next steps. The residents were presented with the compiled and prioritized list of PPs. Participants were encouraged to visit information stations set up around the room that provided specific information on the PPs.

In addition to the Open Houses, presentations were made to City Council on June 26, 2023 and February 26, 2024. The first City Council meeting presented the Channel Condition Assessment, Stream Dominant Process, and identified flooding, stormwater, and erosion problems. The second City Council meeting presented the proposed Potential Projects, Implementation Program, and Watershed Management Plan Report.

2.1.2 Website and Newsletter

A series of monthly newsletters (City of Creve Coeur Newsletter) and a project website were used to supply information about the study process and Watershed Management Plan recommendations. Each newsletter edition provided an effective means of informing the public about key aspects of the project. The newsletters were sent to all residents of the City of Creve Coeur. See Appendix B for a copy of each Newsletter.


City of CREVE COEUR Newsletter
the heart of community & commerce
March 2023
Citizens to Vote on Proposition M on Tuesday, April 4
Fast Facts About Creve Coeur's Proposition M
This Issue
Residents Invited to Watershed Management Open House
Wednesday, March 22, 2023 • 6:30–8:00 p.m. • Creve Coeur Government Center

Figure 2-6: City Newsletter

The project website was another mechanism used to inform the public about the progress of the study. The website contains general background information, an online survey link, open house dates, preliminary study results, and handout materials that were distributed at the open houses. The website was regularly updated throughout the study process and was used to advertise upcoming events.

A copy of the public participation materials including newsletters, presentations, and exhibits are provided in Appendix B.

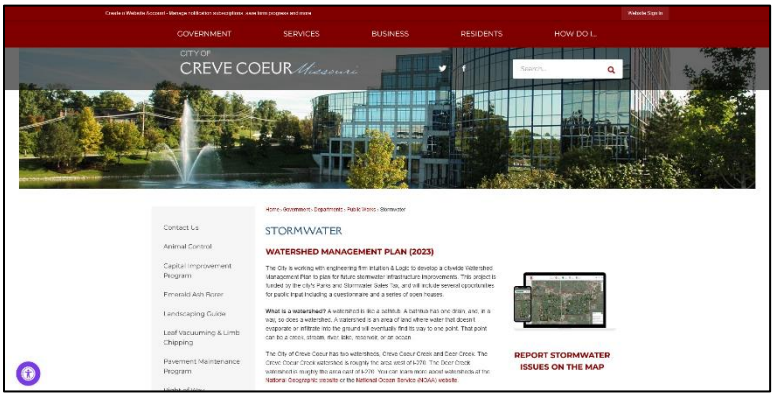


Figure 2-7: City Website Project Page

2.1.3 Online Survey

An online survey tool was used to collect resident feedback/stormwater issues. The online survey was advertised on the City's newsletters and a link was provided on the City's

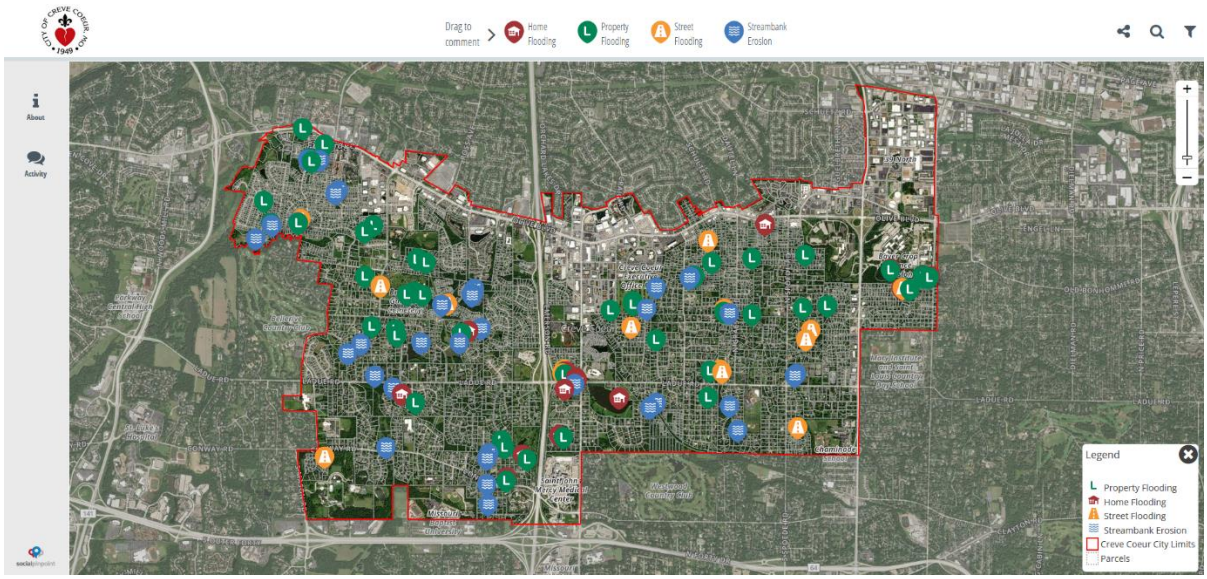


Figure 2-8: Online Survey Tool

website. Residents were able to drop points for stormwater issues such as home flooding, property flooding, street flooding, and streambank erosion. Further information could be provided such as a description of the problem, a photo of the problem, and survey questions related to the problem itself. Each stormwater issue was reviewed and followed up with a site visit to gather additional information and identify potential approaches to address the problem. Refer to Section 3 for more information on the site investigations.

2.1.4. Social Media Posts

During Phase I, the online survey and Open House events were promoted on the City's social media accounts.

From Twitter:







From Facebook:







From Instagram:



2.1.5 Community Outreach

Stormwater Committee Members and City Staff met in-person with residents at the Creve Coeur Arbor Day Celebration & Art Contest on Sunday, April 30th, 2023. Approximately 25 residents learned about the Watershed Management Plan and were invited to report known stormwater issues to the online survey tool using an iPad. Residents were also encouraged to take and then share an informational flyer that had been also used at Open House events and is available at the City's Government Center and the Dielmann Recreation Center.



Figure 2-9: Arbor Day Celebration

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Section 3
Stormwater Problem Site Investigation

3.1 Introduction

The Stormwater Problem Site Investigation is a crucial component of the Watershed Management Plan. The investigation aims to review stormwater issues reported by residents within the City and determine if the issues meet the City's criteria for being addressed as a Potential Project. This section contains the review methodology, a summary of each problem area, and general recommendations or follow-up analysis needed to develop a project approach. The investigations use a systematic process to review and document each reported stormwater issue. The process involves review of available information, site visits, and discussions with the residents to identify the scope of the reported issue. A methodical investigation process ensures that each reported stormwater issue is understood and the public was heard.

3.2 Methodology

Stormwater site investigations followed a structured approach to review reported issues. Issues reviewed were reported by residents via the web on the Social Pinpoint Map (See Public Involvement Section), previously reported issues listed in the 2012 Stormwater Master Plan Update, or identified in the field as part of this study. The following steps were taken as part of the structured review approach:

A. Step 1: Consolidate Issues

   All identified issues were cataloged into a single map-based database. The database included the project location, contact information for the reporting party, issue type, and notes on the reported issue. It was not uncommon for residents who had reported issues to the City in the past to also post the issue on the Social Pinpoint Map. It is also not uncommon for the same issue to be reported on the Social Pinpoint Map multiple times either by the same person or by neighbors.

B. Step 2: Identify Project Areas

   The issues were laid out on a map, grouped into project areas, and given a project name and identification number. The project areas consist of two main types.

   1. Individual Issues

      Individual issues affect an isolated property. For individual issues, property addresses are used as the project name.

2. Group Issues

   Group issues that are geographically clustered together or have a similar source were grouped as one project area. Group issues are typically located in a single subdivision or in a linear fashion along a channel or storm sewer line. For group issues, the project name is typically the name of a central property address.

C. Step 3: Categorize Issues

Issues were categorized as either Overland Flow or Channel. Overland Flow issues typically consist of yard erosion, yard ponding, structural flooding, or other issues of a similar nature. Channel issues typically consists of creek erosion or bank instability.

D. Step 4: Investigate Issues

The purpose of the investigation is to gather enough basic background information about each issue to determine if the issue meets the City's criteria to potentially become a public project.

1. Overland Flow

   The investigation of the overland flow issues begins as a desktop investigation using submitted descriptions of the problem, including photos and video data. Available background information is collected at each site to determine the scope of the problem. The desktop review included LiDAR DEM terrain data for the entire City, MSD basemap data of the storm sewer system and two-foot contours, and current aerial imagery. If needed, information was used including: historical aerial photos, MSD review plans (if available through the Accela online portal), and Google Street view. Lastly, some sites were visited to confirm the desktop review of the information. If additional information was still needed to adequately define the scope of the problem, a follow up was performed by phone or email if the homeowner's contact information was available.

   The LiDAR DEM terrain data is a one-meter by one-meter grid of elevation data. This data was processed using TauDEM (**T**errain **A**nalysis **U**sing **D**igital **E**levation **M**odels). TauDEM is a suite of Digital Elevation Model (DEM) tools for the extraction and analysis of hydrologic information from topography as represented by a DEM. The primary extracted hydrologic information was flowpaths and accumulated drainage areas. The DEM data was processed to fill in the low spots so that the entire contributing area drains and does not pond in localized low areas. Flow paths were then developed along with the accumulated drainage area. This allows for an estimated drainage area anywhere in the City. An estimated drainage area was identified for the majority of the problem areas (typically not needed for the channel erosion sites). These drainage area estimates are based on how the surface terrain drains without any storm sewers and without buildings.

Ground surface slopes were also determined as part of the review for overland sites with yard erosion issues.

Flows were estimated for those areas where the storm sewer may be a contributing factor to flooding. Watersheds from the TauDEM were used along with MSD impervious areas to estimate the percent impervious of each watershed. Flows were calculated based on the MSD P.I. factors where P = .35 + .0042 x %IMP for the 20-min storms with I_{15} = 4.6 and I_{100} = 6.2.

2. Channel Investigations

Similiarly to the process for investigating overland flow, channel investigations began with a desktop review. Problem areas outside of the channel condition assessment reaches were followed up on with a site visit. As part of the desktop investigation, the FEMA Flood Insurance Study report, Flood Insurance Rate Map, and hydrologic/hydraulic models (where available) were reviewed for the channel sites.

E. Step 5: Potential Project Criteria Review

The City developed the following criteria to provide guidelines for a problem area to be considered for a Potential Project. Problem areas that do not meet the criteria may still be considered for the City's Stormwater Grant Program. If one or more of the following are applicable, then a publicly-funded solution might be considered.

- Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue? If yes, then a publicly-funded solution might be considered.
- Does the stormwater issue threaten public or private structures? If yes, then a publicly-funded solution might be considered.
- Does the stormwater issue threaten public or private roadways? If yes, then a publicly-funded solution might be considered.
- Does the stormwater issue threaten public infrastructure or publicly-funded improvements? If yes, then a publicly-funded solution might be considered.
- Is the issue caused by an undersized stormwater conveyance infrastructure? If yes, then a publicly-funded solution might be considered.
- Does the proposed project address regional or systematic channel instability? If yes, then a publicly-funded solution might be considered.
- Would a solution protect water quality or natural resources? If yes, then a publicly-funded solution might be considered.
- Was the issue caused by altered upstream conditions? If yes, then a publicly-funded solution might be considered.
- Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations? If yes, then a publicly-funded solution might be considered.

- Was the issue caused by inadequate maintenance of a public system? If yes, then a publicly-funded solution might be considered.
- Will the project improve public safety? If yes, then a publicly-funded solution might be considered.
- Has the stormwater issue been identified as a monitor project? If yes, then a publicly-funded solution might be considered.
- Is the focus of the project utility work? If no, then a publicly-funded solution might be considered.
- Does the work focus on privately-owned infrastructure? If no, then a publicly-funded solution might be considered.

3.3 Summary

There were 406 issues in total that were reviewed, 93 previously reported to the City, 198 via the Social Pinpoint Map, and 115 field identified. The following results from Social Pinpoint were observed:

- 24 home flooding issues reported mainly consisting of basement flooding, sanitary sewer backups, garage flooding, and general home flooding.
    - Reported sewer backups were referred to MSD.
- 87 property flooding issues reported mainly consisting of general property flooding from overland flow issues, ponding in the yard, yard erosion, and inadequate capacity of the storm system.
- 60 streambank erosion issues reported mainly consisting of yard erosion, threatened structures or roads/trails, outfall erosion, and drainage way erosion.
- 26 street flooding issues reported mainly consisting of ponding, inadequate capacity of the storm system, and general overland flow flooding.

The 115 field identified issues mainly consisted of knickpoints, threatened structures or roads/trails, exposed utilities, scour holes, and failing grouted riprap/armament/grade controls.

The reported issues were grouped into 132 problem areas based on location and anticipated construction access. See Appendix C for further details of each problem area.

3.3.1. Overland Flow Issues

The Overland Flow issues can generally be grouped into one of the following sub-categories listed below. The list is in order from high to low severity on the spectrum of stormwater issues.

1. Structural Flooding

   Structural flooding is water entering a structure through doors or windows.

2. Street Flooding

Street flooding happens when water exceeds the capacity of the curb or covers more than half a lane.

3. Yard Flooding

   Yard flooding has its own spectrum ranging from water that causes damage or enters a pool (most severe) to water spreading out from an overflowing swale or water that flows without a well-defined flow path (less severe).

4. Yard Erosion

   Yard erosion happens when water forms rills and gullys.

5. Street Ponding

   Street ponding is water that does not drain and remains standing on the street more than a day after a rain event.

6. Yard Ponding

   Yard ponding is water that does not drain and remains standing in the yard more than a day after a rain event.

7. Wet Yard

   A wet yard is a yard that remains wet or soggy, primarily due to groundwater, when adjacent areas are dry several days after a summer rain event.

3.3.2. Channel Issues

Channel issues can generally be classified by the effects of erosion. The following sub-categories are listed in order of high severity to low severity on the spectrum issues created by erosion.

1. Threatening structures
2. Threatening public roads
3. Threatening infrastructure (pipes, culverts, etc.)
4. Threatening private driveways
5. Bank erosion/yard erosion
6. Bank erosion in common ground
7. Gully erosion on the channel bank

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Section 4
Channel Condition Assessment

4.1 Introduction

The conditions of the channels in the watershed were assessed using fluvial geomorphology principles. Fluvial geomorphology is the science of how moving water shapes the land. It is the fundamental discipline of river science and provides a quantitative description of stream behavior now and reasonable predictions of future behavior under specified conditions. Fluvial geomorphology and the related disciplines of hydrology and hydraulic engineering, geology and soil science together provide the technical underpinnings for sound watershed management. A more thorough discussion of the basic principles of Fluvial Geomorphology is presented in Appendix D.

The purpose of the channel condition assessment is to determine the basic geomorphic conditions of the main stem and selected tributaries. Understanding the geomorphic conditions of these streams will help determine the locations and prioritizations of interventions for managing the main stem and tributaries. Following is a brief overview of geomorphic principles with an emphasis on their application to stream and watershed management.

Streams exist in a state of dynamic equilibrium in which the forces driving channel form are balanced by the resisting forces. The driving force is gravity, acting on a stream by determining the rate at which water and sediment move through the channel while the resisting forces are the strength of the channel boundary materials and friction expressed as the channel shape. When the driving forces exceed the resisting forces, the stress applied by water or sediment exceeds the channel strength. The stream channel responds by altering its shape in plan, profile, and cross-section to accommodate the change in flow volume and applied shear. Once disturbed, the processes by which streams respond are (in order):

1) Incision or degradation
2) Widening
3) Aggradation or deposition and
4) Plan form adjustments

Through these processes, disturbed streams eventually re-establish equilibrium. Determining which process is dominant and the likely progression of stream processes is one of the principal challenges of stream management. Schumm (1984) and Simon (2001) have described the process by which streams reacquire equilibrium after a disturbance in the watershed. Simon separates changes in channel morphology into six stages:

Stage I Pre-disturbance

- Bed and bank materials balanced with erosive forces
- Permanent woody vegetation near the water line
- Two-stage channel shape evident at about 1.8 year return interval

Stage II Disturbance

- Channel altered, hydrology or sediment inputs modified
- Removal of permanent woody vegetation near the water line
- Two-stage channel shape eliminated or no longer supported by flow conditions

Stage III Incision

- Downcutting liberates sediment
- Lost or perched bankfull floodplains
- "U" shaped channel
- Woody vegetation high on bank with many "surfer" trees

Stage IV Channel Widening

- Widespread bank failures as banks exceed critical height or were undercut by toe scour
- Channel adjusts to new flow regime
- Significant sediment loads generated; most significant erosion hazard in this phase

Stage V Deposition

- Deposition begins from liberated sediment
- Vegetation establishes near water line

Stage VI Recovery and Reconstruction

- Bankfull floodplains may be reconstructed from liberated sediment
- Woody vegetation establishes near water line
- Stability re-established

Each of these phases is depicted on Figure 4-1.

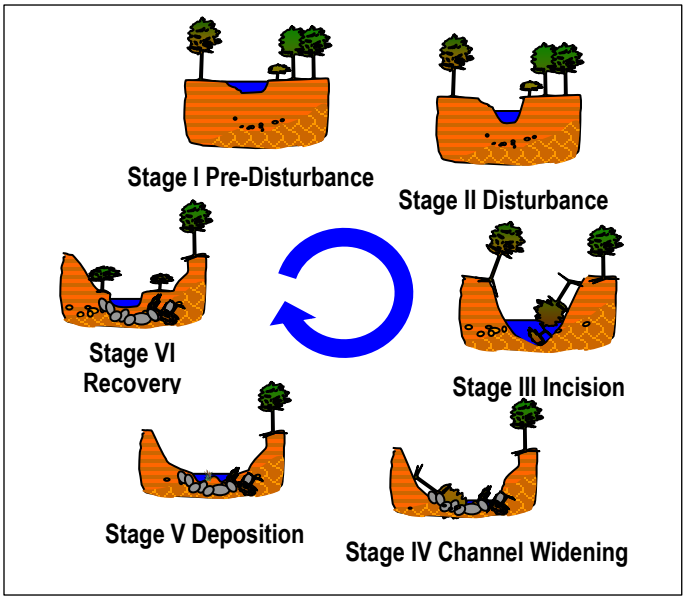


Figure 4-1: Channel Evolution Stages

4.2 Methodology

During March and April 2023, geomorphic field reconnaissance was conducted on about 22 miles of main stem and tributaries in the Creve Coeur Creek and Deer Creek Watershed Study Areas. A Rapid Reconnaissance Geomorphic Data Collection Method was used to determine the basic geomorphic conditions of the channels. This method was adapted from the Johnson, Gleason and Hey white paper "Rapid Assessment of Channel Stability in Vicinity of Road Crossing" published in the Journal of Hydraulic Engineering, June 1999 and evaluates the primary geomorphic parameters to determine the base health of the channel.

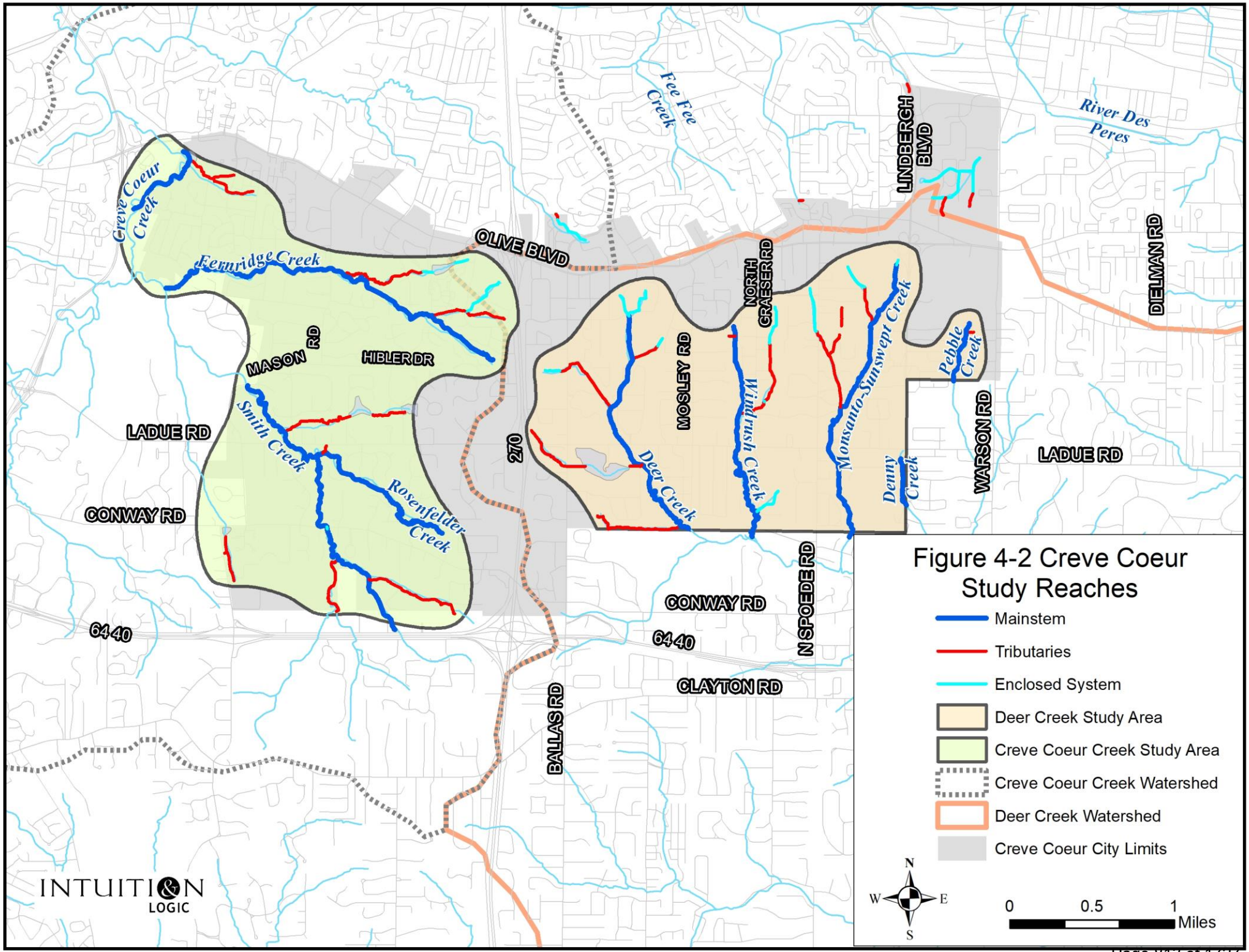
The field reconnaissance was completed by highly experienced Engineers/ Geomorphologists. The experience of the field team allowed the reconnaissance data to be further supplemented with the field engineer's opinion of dominant process based on the field observations at each channel condition data point. The field data was collected on Samsung Galaxy 10.4" Tab S6 Lite 64GB tablets with integrated GPS and ESRI ArcGIS Field Maps software containing the City's latest GIS data.

The Creve Coeur Creek Watershed fieldwork limits included Smith Creek, Rosenfelder Creek, Fernridge Creek, Creve Coeur Creek, and their respective tributaries. The Deer Creek Watershed fieldwork limit included Deer Creek, Windrush Creek, Monsanto-Sunswept Creek, Denny Creek, Pebble Creek, and their respective tributaries. A small tributary in the upper River Des Peres Watershed was also included in the study limits. The tributary fieldwork limits were developed by focusing on the higher stream order reaches (the larger channels). The MSD stormwater basemap layers were used to identify the upstream fieldwork limits from where the drainage network becomes fully enclosed. In some areas, the open channel continues on the upstream side of the enclosed drainage network. In these situations, the fieldwork continued upstream to where there was one mile or more of identified drainage way contributing to the tributary. Typically, the upstream stopping point was set to the nearest roadway, confluence, or where the channel became a shallow managed swale. Some exceptions to the contributing stream length were made where the tributary was fed by a development or where known issues were present. Figure 4-2 illustrates the Fieldwork Limits. Fieldwork evaluation generally progressed from downstream to upstream.

Field data was collected for three data categories:

1. Channel Condition Data
2. Reach Summary Data
3. Potential Project Data

The following pages describe the methods and approach for each of the data categories.


Creve Coeur Creek
Fernridge Creek
Fee Fee Creek
River Des Peres
OLIVE BLVD
LINDBERGH BLVD
DIELMAN RD
NORTH GRAESER RD
MOSLEY RD
Windrush Creek
Monsanto-Sunswept Creek
Pebble Creek
Denny Creek
WARSON RD
LADUE RD
MASON RD
HIBLER DR
Smith Creek
Rosenfelder Creek
Deer Creek
270
CONWAY RD
64 40
N SPOEDE RD
CLAYTON RD
BALLAS RD
Figure 4-2 Creve Coeur Study Reaches
Mainstem
Tributaries
Enclosed System
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur Creek Watershed
Deer Creek Watershed
Creve Coeur City Limits
N
W
E
S
0
0.5
1
Miles
INTUITION & LOGIC

Channel Condition Data

Channel Condition Data points were taken at regular intervals throughout the watershed. The following 13 rating categories were evaluated at each channel condition data point:

1) Bank soil texture and coherence
2) Average bank slope angle
3) Average bank height
4) Vegetative bank protection
5) Bank cutting
6) Mass wasting (wedge or slide slope failure)
7) Bar development
8) Debris jam potential
9) Obstructions, flow deflectors and sediment traps
10) Channel bed material consolidation and armoring
11) Percentage of channel cross section constriction
12) Sediment movement
13) Sinuosity (ratio of the channel length to valley length). This data was developed in the office, not in the field.

Each of the above 13 rating categories at each channel condition data point were assigned a score of 1 for good, 2 for fair or 3 for poor. The criteria used to determine a good, fair or poor rating for each of the rating is provided in Appendix D.

159 channel condition data points were taken during the rapid reconnaissance.

The Channel Condition Scores provide an indication of the lateral, vertical and overall stability of the channel at the channel condition point location as follows:

- GOOD – The channel is managing channel flows and sediment without significant erosion and the channel material, vegetation and shape in plan, profile and section are indicative of a state of dynamic equilibrium.

- FAIR – The channel is experiencing erosion and/or lateral/vertical migration and possesses channel material, vegetation and/or channel shape features that are indicative of active erosion that has not progressed to critical bank failures.

- POOR – The channel is actively eroding and/or moving laterally/vertically and many of the channel materials, vegetation and shape features indicate current and severe instability.

The field investigators also recorded the observer's opinion of dominant process at each of the channel condition points. Multiple dominant processes were recorded in the channel condition points if the observer noticed strong indications of multiple processes. The channel condition point locations are illustrated in Figure 4-7.

Reach Summary Data

The 22 miles of main stem and selected tributaries were sub-divided into 114 reaches (not including enclosed reaches) based on road crossings, confluence locations and other natural and/or manmade features. The reach limits were adjusted in the field to correspond with observed physical features or changes in process.

The reaches along the main stem were given a unique alphanumeric name with the format ZZRXXX. "ZZ" is the two-letter code for the named stream. "RXXX" is a three-digit reach number. Generally the reach numbers were assigned in increments of five to allow for future subdivision (e.g., DCR005, DCR010).

Table 4.1 Stream Naming Convention

Stream Name	Stream Code	Tributary Code
Creve Coeur Creek	CC	CC005
Fernridge Creek	FC	FC005
Smith Creek	SC	SC005
Rosenfelder Creek	RC	RC005
Deer Creek	DC	DC005
Windrush Creek	WC	WC005
Monsanto-Sunswept Creek	MS	MS005
Denny Creek	DY	DY005
Pebble Creek	PC	PC005
Fee Fee Creek	FF	FF005
River Des Peres	RD	RD005

The tributary reaches were also given a unique alphanumeric name with the format ZZYYYRXXX. "ZZ" is the two-letter code for the named stream. "YYY" is a three-digit tributary number. Tributary numbers were assigned in increments of five. Generally, the hundredths placeholder was used to identify branches along the tributary. "RXXX" is a three-digit reach number. Generally, the reach numbers were assigned in increments of five. An incremental assignment was used to allow for future subdivision or addition of tributaries. Figure 4-3 illustrates the general reach naming convention. Refer to Appendix D for a detailed breakdown of the reach limits and naming codes.

Reach summary data was prepared in the field at the end of each reach walked. The reach summary data includes the observer's opinion of dominant process for the reach based on key indicators of dominant process observed in the field. The field engineer recorded his observations by entering "TRUE" for each of the following 42 key indicators that were observed to be present in the reach:

Indicators of Dynamic Equilibrium –

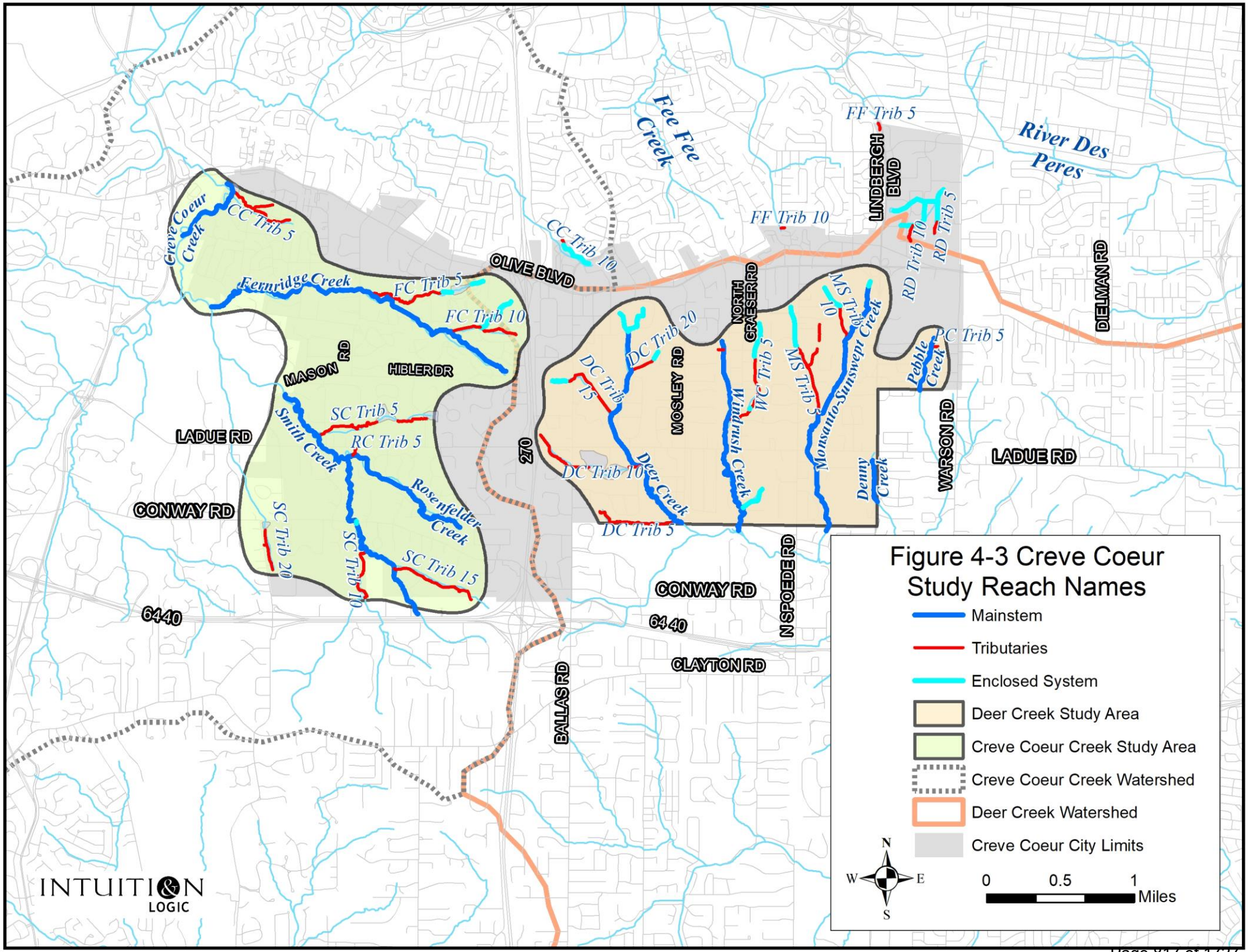
- No persistent scour or erosion features
- Bankfull shelf along one or both banks
- Gradually sloping banks
- Herbaceous vegetation growing at or near the water surface
- Well established woody vegetation on healed failure surfaces
- Vegetated, consolidated bars
- Consolidated bed material
- Imbricated rock bed material
- De facto grade controls reinforcing knickpoints
- Healthy riparian corridor and canopy cover

Indicators of Incision –

- "V" or "U"-shaped channel cross-section
- Persistent scouring on both banks toe to mid slope
- Wedge failures along both banks
- Steep, near vertical banks
- Perched bankfull floodplain or abandoned terraces
- Knickpoints and knickzones occurring in channel profile
- Steep bed slope
- Scoured bed material
- Consolidated bed material
- Frequent, large woody debris jams
- Lower limit of woody vegetation high with exposed roots
- Undercut or perched infrastructure

Indicators of Widening –

- Wide, "U"-shaped channel cross-section
- Increase in cross sectional area
- Increase in channel width and decrease in bank height from upstream to downstream
- Scouring or bank failures along both banks
- Persistent scouring on both banks mid to upper slope
- Residual failure material at bank toes
- Unconsolidated, depositional bed material
- Depositional center bars
- Unconsolidated, depositional sediment bars
- Reinforced knickpoints and knickzones
- Large woody debris jams
- Lower limit of woody vegetation high with exposed roots
- Numerous surfing or overhanging trees


Fee Fee Creek
River Des Peres
Creve Coeur Creek
CC Trib 5
CC Trib 10
Fernridge Creek
FC Trib 5
FC Trib 10
OLIVE BLVD
FF Trib 5
FF Trib 10
LINDBERGH BLVD
RD Trib 10
RD Trib 5
DIELMAN RD
NORTH GRAESER RD
MS Trib 10
PC Trib 5
Pebble Creek
MASON RD
HIBLER DR
DC Trib 20
DC Trib 15
MOSLEY RD
WC Trib 5
Windrush Creek
MS Trib 5
Monsanto-Sunswept Creek
SC Trib 5
RC Trib 5
Smith Creek
LADUE RD
270
DC Trib 10
Deer Creek
Denny Creek
WARSON RD
LADUE RD
CONWAY RD
Rosenfelder Creek
SC Trib 20
SC Trib 10
SC Trib 15
DC Trib 5
CONWAY RD
N SPOEDE RD
64 40
64 40
CLAYTON RD
BALLAS RD
Figure 4-3 Creve Coeur Study Reach Names
Mainstem
Tributaries
Enclosed System
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur Creek Watershed
Deer Creek Watershed
Creve Coeur City Limits
N
W
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1
Miles
INTUITION & LOGIC

Indicators of Planform Adjustment (meander advance and lateral migration)

- Cutbanks with active scour lines opposite of advancing bar formations
- Circular failures along alternating banks or at the outside of bends
- Alternating pattern of scour and deposition
- Bar formations are consolidated, with an unconsolidated leading edge
- Bar material unsorted with fines downstream
- Bar is irregularly shaped and more than 1/3 across the channel
- Poorly sorted bed material

The reach summary data is provided in Appendix D.

Potential Project Data

In addition to the Channel Condition Data and the Reach Summary Data, potential projects were investigated and/or identified in the field. Utilities near or crossing the channel and structures near the top of bank were located in GIS prior to field work and each location was evaluated in the field as potential projects. Reported channel issues from residents were also evaluated in the field as potential projects. If a potential project was identified, potential solutions were identified and project data was recorded in the field. Project data included the potential project location point, project notes, grade control locations, bank stabilization limits and more as appropriate for each potential project. The project identification process, associated data and the identified projects are discussed in further detail in Section 5.

At the conclusion of the field work, the following data is available:

1. Channel Condition Point Data – erosion features identified and scored producing a channel condition score at each channel condition data point in addition to the observer's opinion of dominant processes for each channel condition point.
2. Reach Summary Data – the observer's opinion of dominant process for each reach and a list of indicators observed throughout the reach which resulted in the dominant process opinion.
3. Potential Projects identified

4.3 Channel Condition Results

Each of the 13 previously mentioned rating categories were evaluated at each of the 159 channel condition data point locations and assigned a score of 1 for good, 2 for fair or 3 for poor. In the Deer Creek Watershed, 77 channel condition data points were taken. In the Creve Coeur Creek Watershed, 82 channel condition data points were taken. The results for each watershed are broken down in the following sections.

4.3.1. Deer Creek Watershed

The following table presents the average assigned values recorded for each of the 13 channel condition rating categories of the 77 field scores in the Deer Creek Watershed:

Table 4.2 Average Field Score Per Channel Condition Rating Category

Table 4.2 **Channel Condition Rating Category**	**Average** **Field Score**	**Average** **Rating**
Bank soil texture and coherence	1.0	Good
Average bank slope angle	2.3	Fair - Poor
Average bank height	1.6	Good – Fair
Vegetative bank protection	2.1	Fair
Bank cutting	2.0	Fair
Mass wasting (wedge or slide slope failure)	1.7	Good – Fair
Bar development	1.5	Good – Fair
Debris jam potential	1.7	Good – Fair
Obstructions, flow deflectors and sediment traps	1.2	Good
Channel bed material consolidation and armoring	1.2	Good
Percentage of channel cross section constriction	1.5	Good – Fair
Sediment movement	1.8	Fair
Channel Sinuosity	2.3	Fair - Poor

The scores for each of the above 13 categories were weighted according to Johnson et. al and the weighted scores summed to produce an overall channel condition score for each field channel condition data point. The weighting factors for each data category are presented in Appendix D. The weighted Channel Condition Score for each data point ranges between 10.2 and 19.0. The resulting weighted channel condition score and rating for each data point are as follows:

Table 4.3 Number of GOOD, FAIR and POOR Field Scores

Table 4.3 Weighted Channel Condition Score Range	Number of Channel Condition Points in the Range	Percent of Channel Condition Points in the Range
GOOD – score of 8 – 10.9	4	5%
FAIR – score of 11 to 16.9	63	82%
POOR – score of 17 or greater	10	13%

Overall the Deer Creek Watershed channels walked are rated fair with an average channel condition score of 14.1. The overall score of 14.1 for the assessed Deer Creek Watershed channels should not be taken as a true average condition for the entirety of the study area. This score does not include all headwater reaches which were managed swales or in early stages of incision. The overall score of fair instead represents a general condition of the major channels located within the watershed study area.



Figure 4-4: Straightened Channel

The major drivers of the fair channel scores were significant portions of enclosed and managed channels. The Deer Creek watershed contains significant residential and commercial development, with the watershed nearing full buildout, as shown in Figure 4-4. Many channels are enclosed, constricted or straightened to fit the surrounding developments, which led to the generally poor sinuosity scores. Vegetative bank protection is limited in urban areas where yards are frequently adjacent to the channels with no riparian buffer. The watershed generally had low debris jam potential (good) and low obstructions which can be attributed to the ongoing maintenance of the managed channels. In addition, debris jams are often reported by residents and removed by the Metropolitan St. Louis Sewer District (MSD) crews.



Figure 4-5: Bank Cutting Near Roadway

The widespread managed channel reaches and numerous roadway crossings acting as de facto grade controls geomorphically isolate the natural channel reaches within the watershed and limit the channel's ability to respond. This is observed in the fair to poor ratings for the bank slopes, height, cutting, and sediment movement, but good to fair ratings for mass wasting, bar development, and channel constriction. Within each reach, the channel's response is limited by the amount is can down cut (halted by de factor grade controls) or migrate (halted by bank armament). There is little to no loose sediment in the watershed for bar building because the reaches tend to be steep

and any loosened sediment is transported downstream. Bank cutting leading to steep bank slopes and overhanging vegetation with extensive root exposure were common throughout the main stem and lower tributaries. Figure 4-7 illustrates the Channel Condition Scores.

4.3.2. Creve Coeur Creek Watershed

The following table presents the average assigned values recorded for each of the 13 channel condition rating categories of the 82 field scores in the Creve Coeur Creek Watershed:

Table 4.4 Average Field Score Per Channel Condition Rating Category

Table 4.4 Channel Condition Rating Category	**Average Field Score**	**Average Rating**
Bank soil texture and coherence	1.0	Good
Average bank slope angle	2.4	Fair – Poor
Average bank height	1.8	Fair
Vegetative bank protection	2.0	Fair
Bank cutting	2.4	Fair – Poor
Mass wasting (wedge or slide slope failure)	2.1	Fair
Bar development	2.0	Fair
Debris jam potential	2.0	Fair
Obstructions, flow deflectors and sediment traps	1.6	Good – Fair
Channel bed material consolidation and armoring	1.6	Good – Fair
Percentage of channel cross section constriction	1.7	Good – Fair
Sediment movement	2.3	Fair - Poor
Channel Sinuosity	1.7	Good - Fair

The scores for each of the above 13 categories were weighted according to Johnson et. al and the weighted scores summed to produce an overall channel condition score for each field channel condition data point. The weighting factors for each data category are presented in Appendix D. The weighted Channel Condition Score for each data point ranges between 11.0 and 19.8. The resulting weighted channel condition score and rating for each data point are as follows:

Table 4.5 Number of GOOD, FAIR and POOR Field Scores

Table 4.5 Weighted Channel Condition Score Range	**Number of Channel Condition Points in the Range**	**Percent of Channel Condition Points in the Range**
GOOD – score of 8 – 10.9	0	0%
FAIR – score of 11 to 16.9	59	72%
POOR – score of 17 or greater	23	28%

Overall the Creve Coeur Creek Watershed channels walked are rated fair with an average

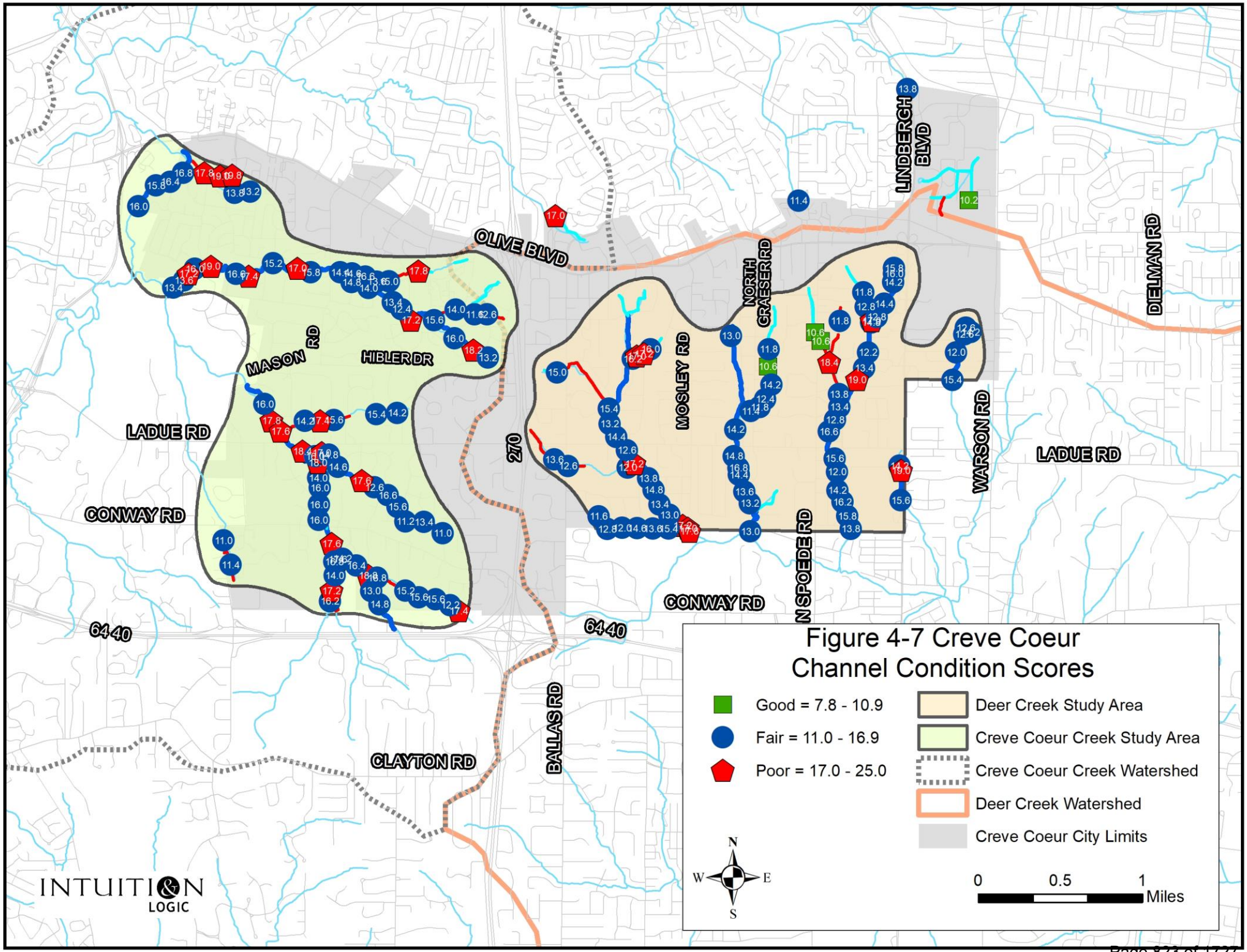
channel condition score of 15.5. The overall score of 15.5 for the assessed Creve Coeur Creek Watershed channels should not be taken as a true average condition for the entirety of the study area. This score does not include all headwater reaches which were managed swales or in early stages of incision. The overall score of fair instead represents a general condition of the major channels located within the watershed study area.

The major drivers of the fair channel scores were the limited vegetative bank protection, mass wasting and sediment movement along the main stem and tributaries. Similar to the Deer Creek watershed, the Creve Coeur Creek watershed contains significant residential and commercial development within the watershed. However, the Creve Coeur Creek watershed has significantly less managed channel reaches, providing more opportunity for the channel to respond. In this watershed, the bank cutting, mass wasting, bar development, debris jam, and sediment movement are fair to poor, however, the channel sinuosity is good to fair. This is indicative of the channel progressing along the channel evolution process in a less impeded manner.

Vegetative bank protection is limited in urban areas where yards are frequently adjacent to the channels with no riparian buffer. Cut banks up to 12 feet high were common with steep bank slopes and overhanging vegetation with extensive root exposure. Mass wasting was observed to be frequent and extensive on the main stem and tributary reaches as shown in Figure 4-6. Loose sediment, scour, and deposition was frequently observed throughout the reaches. Figure 4-7 illustrates the Channel Condition Scores.



Figure 4-6: Mass Wasting Threatening Transmission Tower


Figure 4-7 Creve Coeur
Channel Condition Scores
Good = 7.8 - 10.9
Fair = 11.0 - 16.9
Poor = 17.0 - 25.0
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur Creek Watershed
Deer Creek Watershed
Creve Coeur City Limits
N
W
E
S
0
0.5
1
Miles
OLIVE BLVD
LINDBERGH BLVD
DIELMAN RD
NORTH GRAESER RD
MOSLEY RD
WARSON RD
LADUE RD
MASON RD
HIBLER DR
CONWAY RD
N SPOEDE RD
270
64 40
BALLAS RD
CLAYTON RD
INTUITION LOGIC

4.4 Reach Summary Results

42 key indicators of dominant process were evaluated and recorded for each of the 110 Deer Creek and Creve Coeur Creek Watershed reaches walked (not including enclosed reaches). The Deer Creek Watershed consists of 29 mainstem reaches and 32 tributary reaches. The Creve Coeur Creek Watershed consists of 24 mainstem reaches and 25 tributary reaches. 2 tributaries in the Fee Fee Creek Watershed and 2 tributaries in the River Des Peres Watershed were also walked. The results for each watershed are broken down in the following sections. Appendix D contains a detailed breakdown of each reach and the dominant process indicators observed.

4.4.1 Deer Creek Watershed

In general, for all of the Deer Creek Watershed streams, there is a similar pattern of planform adjustment at the downstream limits, widening in the middle, and a combination of managed or enclosed in the upper reaches. Table 4.6 summarizes the number of reaches found within each of the dominant process categories within the Deer Creek watershed.

Table 4.6 Deer Creek Watershed Reach Summary

Stream Channel Dominant Process	Number of Reaches
Enclosed System	26
Managed	18
Dynamic Equilibrium	3
Early Stage Incision	7
Incision	10
Widening	14
Planform Adjustment	9

The following discussion breaks down the observed dominant process by each of the 5 named reaches within the City limits.

Deer Creek mainstem is undergoing planform adjustment in the lower reaches and widening in the middle reach. A segment of rectangular concrete channel in good condition separates these reaches. The lower reach has incised to bedrock and the channel is no longer able to down cut. Upward migration of incision is arrested at de facto grade control culvert crossings. The widening middle reach has multiple rock grade controls holding 1 foot tall drops in the channel bed. The east bank is armored with a gabion wall. These combined result in a widening reaction on the west bank. The upper reaches of Deer Creek are enclosed or managed.

- Tributary 5 on Deer Creek is incising with the incision having started at the lowered mainstem and is progressing up the tributary.
- Tributary 10 is controlled by Carlyle Lake at the lower end and is mostly enclosed or managed upstream of this large lake. Incision starting at the mainstem is progressing to the lake outfall structure. Upstream of the lake, there is one reach that is incising,

however, it is geomorphically isolated by enclosed systems at the upstream and downstream limits.

- Tributary 15 is primarily an enclosed system with small segments of managed channel and early stage incision. These are controlled by the enclosed system segments.
- Tributary 20 along the south edge of the golf course has a number of geomorphically isolated reaches controlled by culvert crossings and runs the gamut of dominant processes from planform adjustment up through early stage incision.

Windrush Creek mainstem is undergoing planform adjustment in the lower reaches and widening in the middle reach. A short segment of enclosed system is located in the middle of the widening reaches. The upper reaches of Windrush Creek are enclosed or managed. Knickpoints were found in the lower and middle reaches and are generally arrested at roadway culvert crossings or exposed bedrock.

- Tributary 5 is primarily a managed concrete trapezoidal or rectangular channel, with a short segment of incising natural channel in the lower portion of this tributary. The upper limits of this reach are enclosed.

Monsanto-Sunswept Creek mainstem is undergoing planform adjustment in the lower reaches and widening in the middle reach. Near the confluence with Tributary 5 the reach is geomorphically isolated by a culvert crossing and a section of reinforced concrete channel. This isolated reach is a previous bank stabilization project that is in dynamic equilibrium. Where the stabilization stops, the channel is in planform adjustment to the roadway culvert. Upstream of the reinforced concrete channel, the mainstem is widening with the historical incision halted by bedrock in the channel. The upper reaches are primarily incising or an enclosed system.

- Tributary 5 is widening through much of the tributary. The upper limit is an enclosed system. An offshoot tributary in the headwater is in early stage incision and dynamic equilibrium above that.
- Tributary 10 is in early stage incision. Near the confluence this tributary and the mainstem are in planform adjustment due to the bedrock outcroppings preventing further downcutting of the channel.

Denny Creek is widening with much of this reach paralleling S. Lindbergh Blvd. The widening is threatening the roadway in several locations. Historical incision on this reach has migrated through the reach and is arrested at the existing culvert crossings.

Pebble Creek is partially enclosed or managed, with a short segment of dynamic equilibrium upstream of the managed channel. The managed channel consists of a previous stabilization effort using a concrete toe and vegetated rock armor on the banks. The upstream limits are widening due to bedrock outcroppings in the channel bed. The unwalked headwater reach north of the Tealwood Drive service road around the Bayer complex consists of a managed detention pond.

Two tributaries to River Des Peres were investigated in the northeast corner of the City limits. This headwater tributary is primarily enclosed system with one short reach each of dynamic equilibrium and early stage incision.

Two tributaries to Fee Fee Creek were investigated in the northeast section of the City limits. Tributary 5 runs along Lindbergh Boulevard and is in early stage incision. Tributary 10 is a managed pond which outlets to an enclosed system.

Figure 4-8 illustrates the dominant process by reach.

4.4.2 Creve Coeur Creek Watershed

In general, for all of the Creve Coeur Creek Watershed streams, there is a similar pattern of widening at the downstream limits, continuing through the middle, and a mix of other processes in the upper reaches. The watershed is noticeably different from the Deer Creek Wateshed in that there are significantly less managed or enclosed system reaches. Table 4.7 summarizes the number of reaches found within each of the dominant process categories within the Creve Coeur Creek watershed.

Table 4.7 Creve Coeur Creek Watershed Reach Summary

Stream Channel Dominant Process	Number of Reaches
Enclosed System	17
Managed	7
Dynamic Equilibrium	2
Early Stage Incision	2
Incision	16
Widening	17
Planform Adjustment	5

The following discussion breaks down the observed dominant process by each of the 4 named reaches within the City limits.

Creve Coeur Creek mainstem within the City limits is widening. There are two constructed grade control crossings that are holding up approximately 2 feet of channel profile grade. They are in serviceable shape but are beginning to be flanked. Cutoff oxbows were found on the abandoned terraces of the floodplain.

- Tributary 5 is widening in the lower reach and the upper reach is mostly enclosed with a few interspersed incising reaches. The incision is arrested at the perched outfalls of the enclosed systems. A subtributary along this reach has deeply incised to a perched outfall at Fernview Drive.

Fernridge Creek mainstem is widening from the lower to the middle reaches. It transitions to planform adjustment upstream of N Mason Road. The road crossing is perched and holding

up the upstream reach. A segment of rectangular concrete channel isolates the upstream reaches. The lower segment of the upstream reach is widening, transitioning to incision near Tributary 10. The upper segment is isolated by a reach of enclosed system that opens up to a managed grass swale through a subdivision common ground dry detention basin. At the upstream limits of the basin, the channel enters a wooded corridor where the channel has incised to hardpan which has prevented further downcutting and has shifted the channel to planform adjustment.

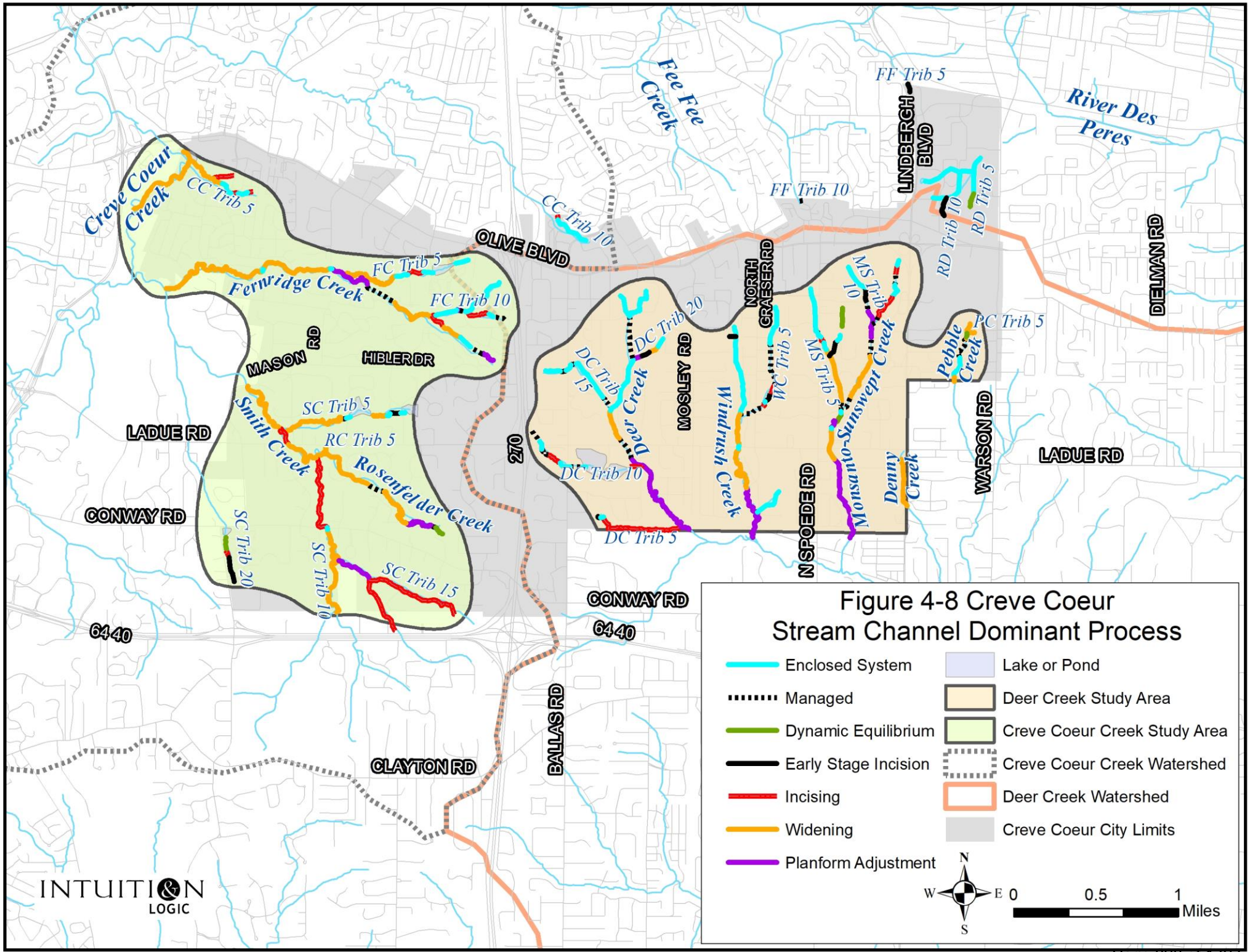
- Tributary 5 is widening from the confluence to the middle of the reach where it becomes an enclosed system. The upper reach is incising from the enclosed system to the wet pond outfall underneath Tempo Drive.
- Tributary 10 is primarily enclosed with a short segment near the middle that has progressed to planform adjustment between the enclosed system and the perched trapezoidal concrete channel running up to Country Manor Lane. Upstream of the road, the channel is incising up to the pipe outfall for a detention basin adjacent to Lake School Park. The reach through the detention basin is a managed segment.

Smith Creek mainstem is alternating between widening and subsequent rounds of incision moving through the watershed. The processes are interrupted at road crossings acting as de facto grade controls. Near the confluence with Tributary 15, the mainstem has progressed to planform adjustment in part due to the partial gabion and reno mat armament of the right descending bank and the high cobble bedload from the incising upstream reaches. The channel incised below the reno mat which turned the reno mat into a bankfull shelf albeit now the channel is over widened and cannot move the cobble bedload, thereby moving the channel to planform adjustment to rebuild the necessary transport shape. At the confluence with Tributary 15, the mainstem switches back to incision to the City limits.

- Tributary 5 is widening between the two subdivision lakes and their respective outfall piping and short reaches of managed channel. One section of early stage incision was found between Falaise Drive and Chamonix Court where the constructed retaining walls are beginning to fail allowing incision to resume.
- Tributary 10 is widening from the confluence to the City limits.
- Tributary 15 is incising from the confluence to the City limits.
- Tributary 20 is in a state of dynamic equilibrium in the lower reach immediately upstream of a small subdivision pond. The reach transitions to incision and early-stage incision as it moves upstream through the front lot of the St. Louis Priory School.

Rosenfelder Creek mainstem is widening with a short segment of rectangular concrete channel near the middle of the stream. The upper reach has incised to bedrock. The channel has responded by shifting to planform adjustment. There is a concrete trapezoidal channel behind the homes on Hewlett Court that is holding up several feet of grade drop. The reach upstream of the managed section is in dynamic equilibrium with some early-stage incision beginning to form. There is one location of bank erosion behind homes on Cabin Grove Ln.

Figure 4-8 illustrates the dominant process by reach.


Creve Coeur Creek
CC Trib 5
Fee Fee Creek
CC Trib 10
FF Trib 5
River Des Peres
FF Trib 10
LINDBERGH BLVD
RD Trib 10
RD Trib 5
DIELMAN RD
OLIVE BLVD
Fernridge Creek
FC Trib 5
FC Trib 10
NORTH GRAESER RD
MS Trib 10
PC Trib 5
Pebble Creek
MASON RD
HIBLER DR
DC Trib 20
DC Trib 15
Deer Creek
MOSLEY RD
Windrush Creek
WC Trib 5
MS Trib 5
Monsanto-Sunswept Creek
SC Trib 5
Smith Creek
LADUE RD
RC Trib 5
Rosenfelder Creek
270
DC Trib 10
Denny Creek
WARSON RD
LADUE RD
CONWAY RD
SC Trib 20
SC Trib 10
SC Trib 15
DC Trib 5
N SPOEDE RD
CONWAY RD
6440
6440
BALLAS RD
CLAYTON RD
Figure 4-8 Creve Coeur
Stream Channel Dominant Process
Enclosed System
Managed
Dynamic Equilibrium
Early Stage Incision
Incising
Widening
Planform Adjustment
Lake or Pond
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur Creek Watershed
Deer Creek Watershed
Creve Coeur City Limits
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INTUITION & LOGIC

4.5 Stream Recommendations

In general, the recommended approach to stabilizing both watersheds is to stop the process of widening, planform adjustment and incision. Each of these processes is attempting to reduce energy in the system by increasing channel section and lower the stream slope in response to changes in the watershed. At several locations on the main stem, active widening and planform adjustment are creating substantial bank failures. At many locations on the tributaries, active incision is threatening upstream tributaries or infrastructure that is in relatively good shape. Channel management is proving successful in stabilizing tributary reaches in several locations.

Grade controlling the channel will arrest the downward migration of the channel bed and will allow the reaches to adjust to a stable planform. Grade controls are recommended at existing knickpoints and at locations where projects are necessary to protect infrastructure from the channel erosion. Bank stabilization is recommended in conjunction with grade controls at locations where steep bank slopes and mass wasting are threatening infrastructure.

The Channel Condition score was used during Potential Project development and Prioritization, please refer to Section 5 and 6, respectively. The condition of the channel was considered during project identification with grade control or bank stabilization projects located to protect reaches of channel that are in good condition. Reaches in poor condition were also evaluated for potential projects, or consideration given to projects identified within those reaches, to add measures to address systemic issues within the reach. A project's priority may be increased to preserve natural resources where a reach in poor condition is progressing into a reach in good or fair condition.



Figure 4-9: Rectangular Concrete Channel With Grade Control Drops

As part of the historical development, several reaches in the watershed were enclosed or hard armored (managed channels), with materials such as rectangular concrete channels, gabion wall banks with reno mat inverts, grouted riprap, concrete filled geoweb reinforced slopes, and other hard armament techniques. While many of these were observed to be in serviceable condition, they should be monitored regularly and replacement plans prepared when they reach the end of their service life. The hard armament reaches often act to geomorphically isolate reaches of the channel and can interrupt the channel evolution process while the armament remains structurally sound. As the modifications start to fail, they release subsequent rounds of incision into the channel response. Some of the managed segments are starting to fail, others are threatened, and some are still in serviceable condition. Segments that were found in serviceable condition were identified as Monitor projects in the Potential Projects section, refer to Section 5.

Section 5
Potential Projects

5.1 Introduction

The results of the public involvement, hydraulic and hydrology data summary, stormwater problem site investigation, and channel condition assessment discussed in the previous sections of this report formed the foundation for identifying problem areas in the study area. The Potential Projects (PP) addressing each problem area were evaluated based on design, economic feasibility, and overall efficiency of addressing problems within the study area. Each PP was then prioritized according to the City's Priority Ranking System presented in Section 6.

The PP identification and development process is detailed in the following subsections. The PP writeups, cost estimate worksheets, and prioritization worksheets are found in Appendix E.

5.2 Evaluation Approach

Each stormwater issue was evaluated based on the PP criteria presented in Section 3. A checklist was filled out for each reported issue which was used to sort each problem area into either a private issue or an issue that may be solved with a publicly-funded project (PPs). Within the 132 problem areas, a total of 155 issues were identified. Of those 155 issues, 53 were categorized as private issues and 102 were categorized as potential projects.

The recommended PPs were further categorized into three project types:

1) Structures/Culverts
    a) Projects addressing erosion or flooding threats to structures or culverts.
2) Bank Stabilization
    a) Projects addressing streambank erosion issues that do not directly threaten a structure or culvert.
3) Overland Flooding
    a) Projects addressing overland flooding issues.

5.2.1. Typical Problem Solutions

Typical problem solutions for stormwater issues are as follows:

Grade Control Projects - construct grade controls along the main stem and tributaries at select locations to stop incision at these locations. The grade controls will eliminate incision and limit the propagation and depth of incision upstream of each grade control project. Grade control projects also include any localized bank stabilization necessary to construct a stable grade control. The bank stabilization should incorporate the use of native riparian vegetation. The grade control should be placed at grade on the channel bottom and formed in a manner to mimic the elevation and stable slopes of the existing channel banks. Where stabilizing a knickpoint, a ramp slope of 20H: 1V maximum should be used. The grade control should extend to the top of each bank or the 25 year flow depth, whichever is greater. Consideration should be given to soil erodibility, piping and shear stresses along the grade control and at the edges.

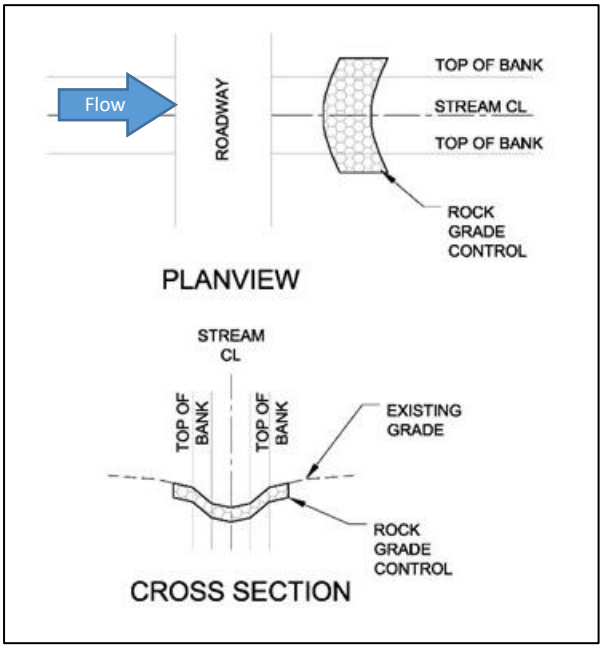


Figure 5-1: Rock Grade Control Structure Detail

Bank Stabilization Projects - construct engineered bank stabilization to protect identified infrastructure or structures from continuing bank erosion threatening the structure. The bank stabilization measures vary in size based on flow parameters, bank height, bank slope, site-conditions and other parameters. Bank stabilization should extend through the entire bend, beginning and ending at a riffle. To the greatest extent practical, bank stabilization shall be bio-engineered, incorporating the use of native riparian vegetation. Each bank stabilization project includes grade controls at the project limits to protect the stabilized bank from potential future incision and add to the systemic stability of the watershed study area.

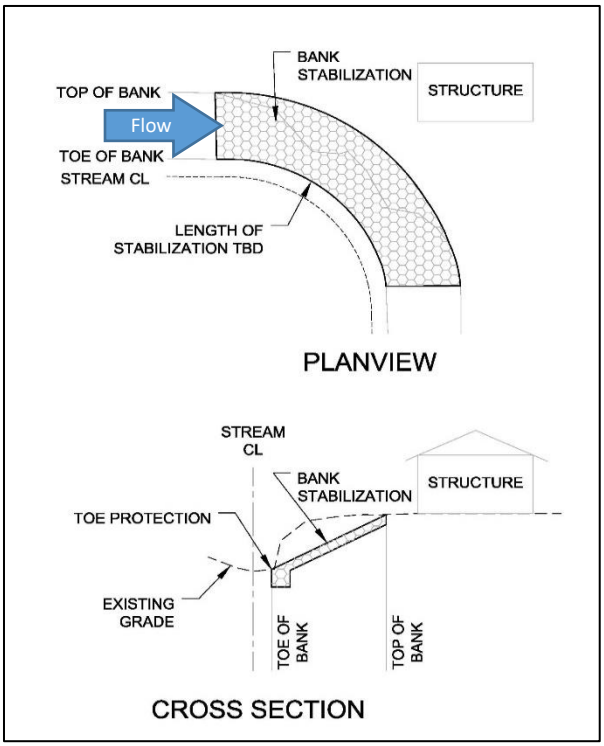


Figure 5-2: Bank Stabilization Structure Detail

Rock Armor and Scour Protection – construct a stilling basin or scour protection at the pipe or culvert outfall to protect the pipe from erosion and undermining due to outfall scour. The limits of protection should extend to the top of each bank or the 25 year flow depth, whichever is greater. Consideration should be given to soil erodibility, piping and shear stresses through the scour protection and at the edges. When using a stilling basin, consideration should be given to the depth of scour anticipated in the plunge pool for a variety of flow events. Due to tailwater influences, the greatest potential for scour may not occur at the largest flowrate.

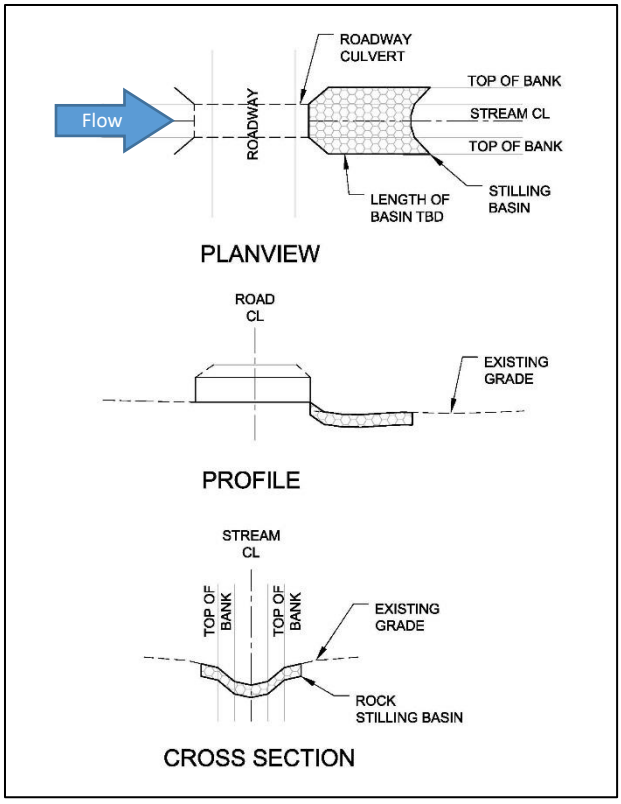


Figure 5-3: Rock Armor and Scour Protection Detail

Swales and Berms – grade swales and/or berms to shift overland drainage away from houses and through yards. Swales should be rock lined or reinforced with Instaturf ShearForce.

Mill and Overlay – mill and overlay the street to adjust the pavement slopes and allow water to drain across the pavement and prevent ponding.

Storm System – install additional area inlets, curb inlets, yard drains, and storm sewers to collect and guide drainage into the existing stormwater systems. Area inlets, curb inlets, and storm sewers shall conform to the Metropolitan St. Louis Sewer District (MSD) standards. Yard drains shall be dome grated to minimize clogging.

Water Quality Alternatives – Several water quality alternatives can be incorporated across the projects to benefit the watersheds. For bank stabilization projects, the stabilization can be extended to eliminate sediment and pollution from erosion. For overland flow projects, the addition of rain gardens or bioretention can be considered to help aid localized detention before discharging into existing stormwater systems. The addition of vegetated buffer strips can aid in slowing down stormwater runoff and capturing sediment and pollutants.

5.3 Cost Development Approach

The cost development approach focuses on establishing a defensible project budget that will be robust enough to cover the design and construction costs and allow the City to reliably budget and plan for implementation. There are two components to the cost development: the quantity takeoff, and the unit cost database. These combine to form the cost estimate for the project.

Quantity Takeoff – At each problem area a conceptual approach to solve the problem was developed using GIS basemap information and available LiDAR data. The LiDAR data aids in the conceptual layout by providing topographic information to help establish project limits, extents, access, and staging locations. From the layout information, conceptual level quantities are developed for key construction components such as: rock grade controls; rock toe protection; bank stabilization area; length of culverts or pipes; number of inlets or manholes; retaining walls; potential utility relocations; and access & staging restoration. A standard unit of measure is assigned to each key construction component for consistency throughout the project development. Refer to Appendix G – Cost & Prioritization Methodology for the detailed template worksheet used for each cost estimate takeoff.

Cost Development – For each of the key construction components, a unit cost is developed and applied to all projects. Unit costs were developed from local bid tab databases such as MSD, St. Louis County, MoDOT, as well as other recently bid projects as available to the City and the design team. The various sources were reviewed, and representative unit costs were selected from each.

Engineering Cost Development – Survey, geotechnical exploration, engineering design, and construction document costs were developed for each project site. Survey limits were developed from the conceptual project layout and access route as well as the estimated number of easements that will be needed. Geotechnical exploration was developed based on the length of the project, including the length of both banks at channel projects. Typically, one boring per 100 linear feet of project was used to estimate the exploration needs. The boring depth was estimated based on the LiDAR survey of the bank height or the estimated depth of a storm sewer system. Additional borings were identified for structural features such as bridge abutments or retaining walls.

Engineering budget estimates were developed based on the conceptual project layout, construction elements involved, and considered things such as flood study needs for projects in the floodplain; length of the project to determine the USACE 404 and MoDNR 401 permitting requirements; and MSD minimum plan requirements for plan review and approval.

Future Escalation Recommendations – The unit costs used to develop the cost estimates presented herein are a snapshot in time. It is recommended that an annual escalation be applied to the project budgets beginning the year following adoption of this plan and

progressing at a rate matching the annual inflation rate developed by the US Bureau of Labor Statistics, available at https://www.bls.gov/data/

5.4 Results

The amount of PPs in each project type as well as the overall cost is shown in Table 5.1. Individual project costs ranged from $1,788,700 to $61,900.

Table 5.1 – PP Results

PROJECT TYPE	QUANTITY	COST (IN MILLIONS)
1. Structures/Culverts	20	$12.6
2. Bank Stabilization	48	$16.7
3. Overland Flooding	34	$4.6
PROGRAM TOTALS	**102**	**$33.9**

PPs were assigned names based on the watershed and the type of issue with the format XX-Y-ZZ. "XX" is the two-letter code for the watershed (DC for Deer Creek and CC for Creve Coeur Creek). "Y" is the issue type identified (C for channel projects, S for stormwater/overland flow projects). "ZZ" is a two-digit project number generally increasing from the downstream end to the upstream end of the watershed or stream. Overview maps of the PPs can be seen in Figures 5-4 and 5-5.

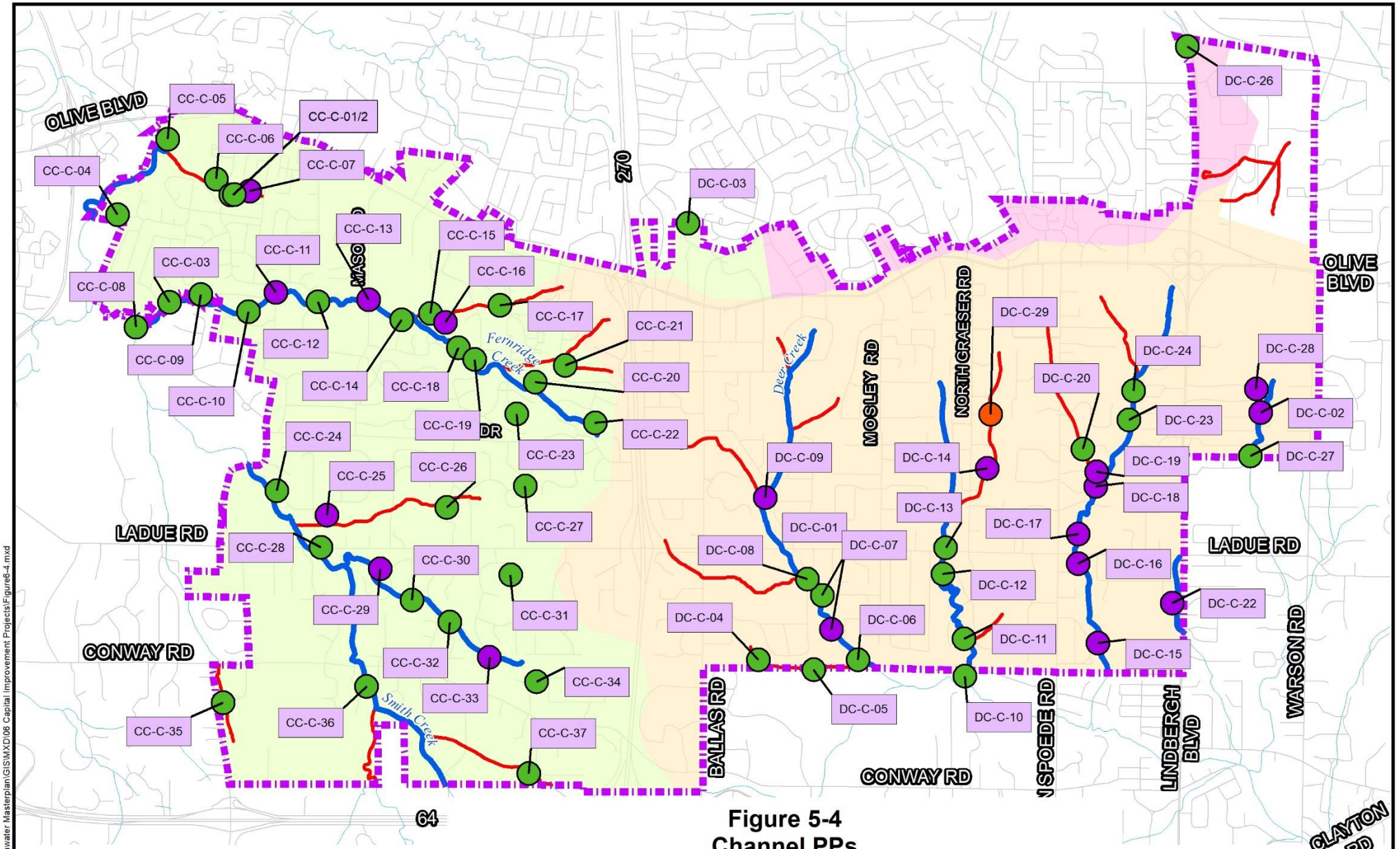


Figure 5-4
Channel PPs

PP

Project_Type
- Culverts/Structures
- Bank Stabilization
- Overland Flooding

- Mainstem
- Tributaries
- Streams

- Creve Coeur Creek Watershed
- Deer Creek Watershed
- Fee Fee Creek Watershed
- Creve Coeur City Limits

N
W E
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0 0.25 0.5 1
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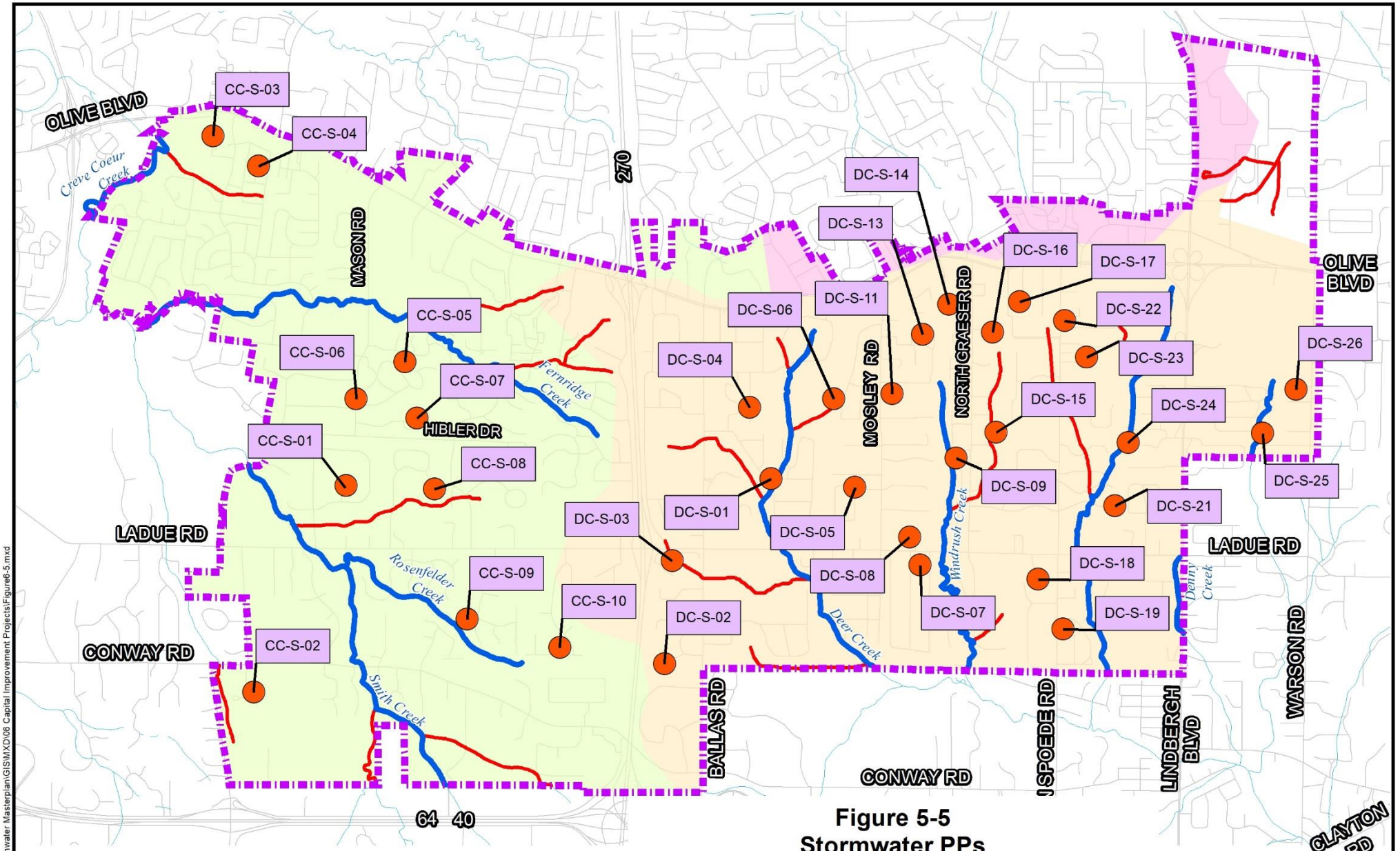


Figure 5-5
Stormwater PPs

Project_Type
- Overland Flooding
- Mainstem
- Tributaries
- Streams

- Creve Coeur Creek Watershed
- Deer Creek Watershed
- Fee Fee Creek Watershed
- Creve Coeur City Limits

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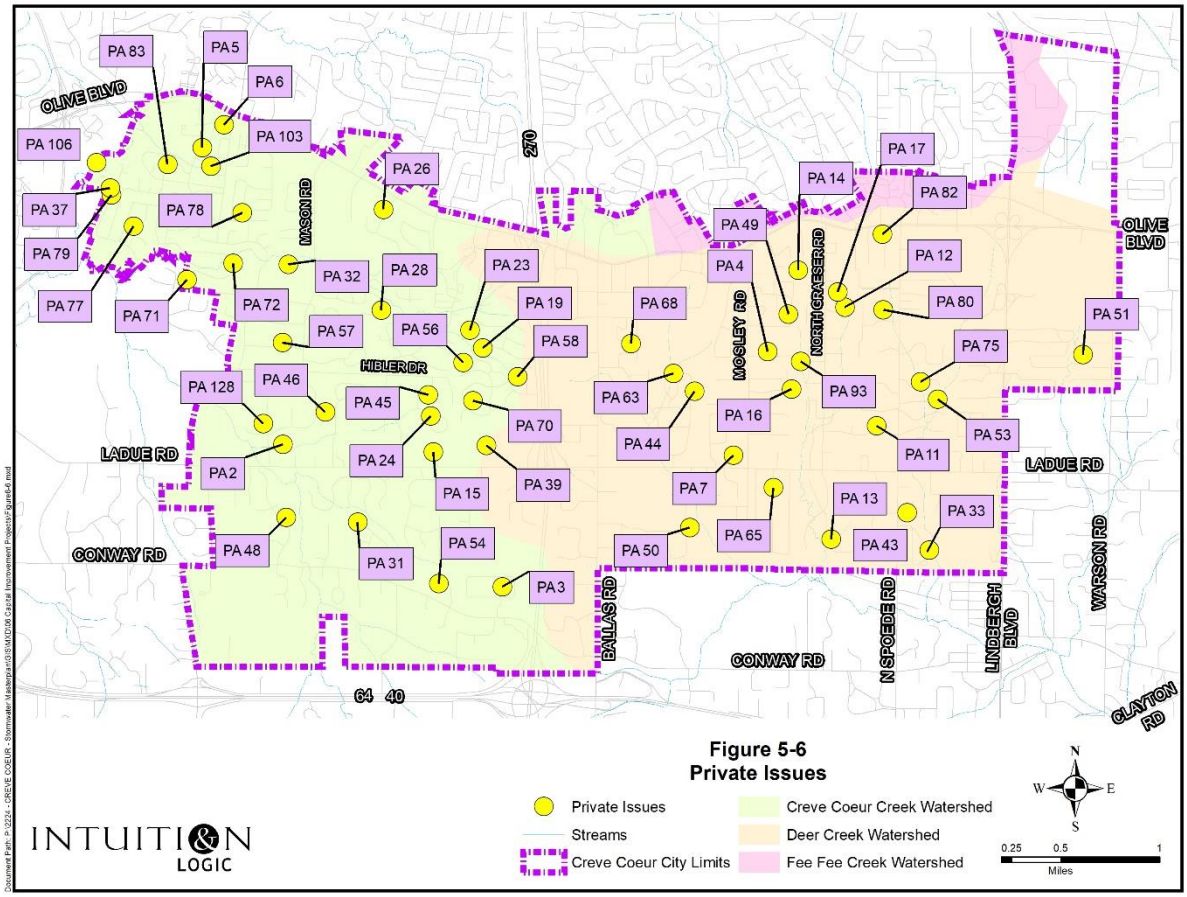
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5.5 Private Issues

While the process for identifying problem areas was primarily focused on identifying and evaluating potential PPs, it inevitably identified other projects which are not eligible for consideration as a PP given the detailed criteria in Section 3.

Residents who want to solve their private stormwater issues may receive funding assistance from the City's new Stormwater Management Cost-Share Program. This program was developed to help homeowner associations and individual homeowners solve stormwater issues that are unlikely to be addressed by a City funded project or receive funding from existing programs. An overview of the program, requirements, application, review, scoring, reimbursement, and responsibilities is available on the City's website at https://www.crevecoeurmo.gov/1203/Stormwater-Cost-Share-Program. This is a pilot implementation of the Cost-Share Program. Depending on the interest level and resident feedback, the City may adjust the funding levels. The Deer Creek Watershed Alliance and MSD also have grant opportunities for individual homeowners.

A map of private issues can be seen in Figure 5-6. A list of the private issues and their descriptions can be found in Appendix C.



Section 6
Prioritization Methodology

6.1 Introduction

As part of this Management Plan, a Prioritization Methodology was developed for the City of Creve Coeur to establish a consistent, defensible methodology for ranking Potential Projects (PPs) for implementation. The implementation order is based on the prioritization score providing the highest and best use of taxpayer dollars, regardless of the timing or order of identification of a PP. This establishes a system for the City to set priorities and implement the Capital Improvement Program each year. Subsequently identified PPs will be ranked with the Prioritization Methodology and inserted into the implementation list based on the prioritization score.

6.2 Prioritization Approach

The Prioritization Methodology was developed based on the Metropolitan St. Louis Sewer District's (MSD's) Stormwater Projects Prioritization System (SPPS). This methodology calculates a prioritization score based on the benefit cost ratio for each PP.

6.2.1 MSD Stormwater Project Prioritization System

MSD's Stormwater Project Prioritization System (SPPS) divides projects into problem solved and solution benefit categories. Within the problem solved category, there are stream and storm sewer/overland flow sub-categories. These are further divided by flooding and erosion. Severity classifications are used to assign points for each sub-category. Within the solution benefit category, there are regional, environmental/water quality, and miscellaneous sub-categories. The following presents an overview of the problem solved and solution benefit categories:

- Problem Solved Categories
    - Stream: This category identifies the impacts of stream flooding and erosion on structures, roadways, yards, and natural resources. The stream erosion threat may be identified through visual observation, not strictly fluvial geomorphic assessment. The flooding impacts are further divided according to the frequency of flooding, number of structures impacted, and roadway flooding obstructions. The erosion impacts are further divided by number of structures impacted, and type of roadway being threatened.
    - Storm Sewer/Overland Flow: This category identifies the impacts of storm sewers/overland flow flooding and erosion on structures, roadways, and yards as well as the age of the existing stormwater collection system. The flooding and erosion potential can be identified through hydrologic and hydraulic analysis, study of topographic maps, field investigation, or recorded historical problems. The

flooding impacts are further divided according to the frequency of flooding, number of structures impacted, and roadway flooding obstructions. The erosion impacts are further divided by risk to structures and yard erosion.

- Solution Benefit Categories
    - Regional: This category identifies benefits of reducing the flowrate leaving the site or combining smaller projects into a regional solution.
    - Environmental/Water Quality: This category identifies the benefits of addressing pollutants, eliminating combined sewers, and eliminating inflow into the sanitary system.
    - Miscellaneous: This category identifies the benefits from ease of implementation and the recreational/educational benefits of the project.

Appendix H provides the MSD template ranking worksheet and scoring guidance document.

6.2.2 Creve Coeur Prioritization Methodology

The Creve Coeur Prioritization Methodology follows the MSD methodology structure and scoring closely with the same category breakdowns and severity classification for point allocation. However, the MSD methodology was modified by changing or adding sub-categories to accommodate the City's unique needs. The following modifications were made to the MSD SPPS:

- Problem Solved Category Modifications
    - The Stream Erosion category was modified as follows:
        - Category 1.2.3 Threatening Roadway was changed to allow more points to be allotted for critical road sections as well as adding a point adjustment factor to account for undermined/failing bridges or culverts.
        - Category 1.2.4 Threatening Natural Resources was added to account for stream erosion threats to parks, wetlands, wooded areas, etc. based on the buffer width.
    - The Storm Sewer/Overland Flow category was modified as follows:
        - Category 2.4 Age of Existing System was renamed Condition of Existing System to allocate points based on the percentage of design life instead of the age. If the condition is unknown, the age of the system can still be used.
- Solution Benefit Category Modifications
    - The Environmental/Water Quality category was modified as follows:
        - Category 4.4 Preserves Natural Resource Areas was added to allocate points for projects that are preserving lakes, wetlands, natural corridors, etc.

- Category 4.5 Conservation Easements was added to allocate points for each conservation easement being obtained as part of the project.

- The Miscellaneous category was modified as follows:
  - Category 5.1 Ease of Implementation was modified to add a category for projects that require no easements.

This ranking system was specifically developed for Potential Projects proposed as part of the on-going stormwater master planning efforts. For each PP identified a ranking worksheet was prepared to add points under each category, with the goal of developing an overall score. A scoring guidance document was developed to provide additional information and understanding of the scoring worksheet. Projects with higher point scores are considered a higher priority. Appendix H provides a template ranking worksheet, a scoring guidance document, and a copy of each ranking worksheet developed for the identified PPs in this Management Plan.

6.3 Results

Table 6.1 lists the cost, project type, and cost/benefit ratio for the Potential Projects within the City of Creve Coeur. These are presented in order of highest cost/benefit ratio and project type. The project costs are based on 2023 material and construction costs.

Table 6.1 – PP Priority List

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
CC-C-16	Villa Hill Lane	12495 Villa Hill Lane, Creve Coeur, MO 63141	Bank stabilization to address erosion threatening structures along an outside bend of Fernridge Creek.	1	$104,000.00	2.28
DC-C-01a	Deer Creek in Malcolm Terrace Park	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at bridge with associated grade controls. City design plans were advanced to an 80% level prior to putting on hold due to funding.	1	$491,700.00	1.60
DC-C-18	Alden Lane	9 Alden Lane, Creve Coeur, MO 63141	Bank stabilization, grade control, and swale to address erosion threatening structures in Monsanto Sunswept Creek and one of its tributaries as well as overland flow issues.	1	$212,300.00	1.47
DC-C-02	Beaver Drive Crossing	48 Beaver Drive, Creve Coeur, MO 63141	Culvert replacement with associated grade control and bank stabilization combined with bank stabilization sites upstream and downstream. Plus address nearby issues.	1	$518,500.00	1.41
CC-C-29	Royal Manor Drive	12553 Royal Manor Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek as well as an area inlet and swales to convey overland flow.	1	$942,400.00	1.35

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
DC-C-28	Tealwood Drive	47 Tealwood Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basin, new culvert, wing wall replacement, overland swales, and a new inlet to address erosion and overland flow issues in Pebble Creek and along Tealwood Dr.	1	$473,900.00	1.34
CC-C-07	Ferngate Lane	954 Ferngate Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basin, wing walls, and toe walls to address erosion threatening structures along a tributary to Creve Coeur Creek.	1	$191,200.00	1.09
DC-C-17	10675 Ladue Road	10675 Ladue Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.	1	$621,700.00	1.07
DC-C-01	Deer Creek in Malcolm Terrace Park	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at bridge, low water crossing and trail with associated grade controls and a low water crossing replacement.	1	$1,116,900.00	1.01
CC-C-13	North Mason Road	900 North Mason Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion and knickpoints threatening structures in Fernridge Creek.	1	$619,500.00	1.00
DC-C-16	Ladue and South Spoede Road	10656 Ladue Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a culvert replacement to address erosion in Monsanto-Sunswept Creek.	1	$533,400.00	0.98
DC-C-22	Denny Creek	403 South Lindbergh Boulevard, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Denny Creek.	1	$1,760,500.00	0.87

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
DC-C-01 ALT	Deer Creek in Malcolm Terrace Park Alternative	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at bridge and low water crossing with associated grade controls, low water crossing replacement, and trail relocation.	1	$1,468,800.00	0.82
DC-C-15	Chaminade Drive	14 Chaminade Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a pedestrian bridge replacement to address erosion along Monsanto-Sunswept Creek as well as an inlet capacity review to address overland flow issues. The pedestrian bridge is a private structure. The City will evaluate a public/private partnership for this project.	1	$781,000.00	0.77
CC-C-25	Chasselle and Chamblee Lane	700 Chamblee Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek.	1	$1,030,300.00	0.75
CC-C-33	Bellington Lane	296 Bellington Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, a stilling basin, and replacing bridge abutments to address erosion in Rosenfelder Creek.	1	$556,100.00	0.65
CC-C-11	Fernridge Creek at Bellerive Estates Drive	12918 Bellerive Estates Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion along threatening structures Fernridge Creek.	1	$360,400.00	0.63

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
DC-C-19	Middlebrook Lane	5 Middlebrook Lane, Creve Coeur, MO 63141	Bank stabilization and bridge abutment replacement to address erosion in Monsanto-Sunswept Creek and one of its tributaries.	1	$174,400.00	0.37
DC-C-14	East Windrush Creek	1 East Windrush Creek, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a culvert replacement to address erosion threatening structures in a tributary to Windrush Creek.	1	$394,000.00	0.37
DC-C-09	281 Magna Carta Drive	281 Magna Carta Drive, Creve Coeur, MO 63141	Step grade control and stilling basin to protect outfall and replace failing grouted riprap structure in Deer Creek.	1	$233,800.00	0.32
DC-C-24	Sunswept Drive	15 Sunswept Drive, Creve Coeur, MO 63141	Bank stabilization and gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.	2	$477,800.00	1.67
CC-C-23	Oak Hollow Drive	12346 Oak Hollow Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion threatening structures along an upper tributary to Fernridge Creek.	2	$323,400.00	1.55
DC-C-03	996 East Rue De La Banque Street	996 East Rue De La Banque Street, Creve Coeur, MO 63141	Bank Stabilization and a stilling basin to address knickpoints threatening structures in an upper tributary.	2	$195,800.00	1.52
CC-C-12	680 Bellerive Estates Drive	680 Bellerive Estates Drive, Creve Coeur, MO 63141	Bank stabilization to address erosion threatening structures along Fernridge Creek. This structure is located in the floodplain. City Council and Stormwater Committee will review for funding projects for structures located within the floodplain.	2	$167,000.00	1.45

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
CC-C-26	Chamonix Court	227 Chamonix Court, Creve Coeur, MO 63141	Bank stabilization, grade controls, rock armoring, stilling basin, and a retaining wall to address erosion and knickpoints threatening structures along a tributary to Smith Creek. The City Council and Stormwater Committee will review to determine if City funds will be used for the primarily aesthetic feature.	2	$631,800.00	1.43
DC-C-08	New Salem Drive and Camfield Square Drive	201 New Salem Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion threatening structures in Deer Creek and one of its tributaries.	2	$383,900.00	1.33
DC-C-23	10620 Country View Drive	10620 Country View Drive, Creve Coeur, MO 63141	Bank stabilization, grade control, and pipe replacement to address erosion threatening structures along Monsanto-Sunswept Creek in Dr. Phillip Venable Memorial Park. Bridge work will be combined with the planned Venerable Park project.	2	$263,800.00	1.13
CC-C-28	2 Chasselle Lane	2 Chasselle Lane, Creve Coeur, MO 63141	Grade control and rock armoring to address bank cutting along Ladue Rd. Work to be done is located in MoDOT ROW. City Council and Stormwater Committee need to evaluate if City funds will be used in MoDOT ROW.	2	$106,200.00	1.05
CC-C-01	Ferntop Lane Bank Stabilization	12970 Ferntop Lane, Creve Coeur, MO 63141	Rock armoring to address erosion and grade control at outfall knickpoint.	2	$114,700.00	1.05

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
DC-C-04	11572 New London Drive	11572 New London Drive, Creve Coeur, MO 63141	Bank stabilization to address erosion in an unnamed tributary.	2	$181,900.00	1.04
CC-C-34	Williamsburg Road	14 Williamsburg Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and rock armoring to address knickpoints and erosion threatening structures along Rosenfelder Creek.	2	$285,100.00	0.98
DC-C-11	Brooktrail Court South	257 Brooktrail Court, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address erosion threatening structures in Windrush Creek.	2	$574,400.00	0.98
DC-C-06	Malcolm Terrace Park	Malcolm Terrace Park, 11370 St Paul Street, Creve Coeur, MO 63141	Bank stabilization to address bank erosion in Deer Creek.	2	$148,000.00	0.95
CC-C-06	1009 Fernview Drive	1009 Fernview Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basins, and rock armoring to address erosion threatening structures along a tributary to Creve Coeur Creek.	2	$490,900.00	0.95
CC-C-02	Ferntop Lane Outfall Repair	12970 Ferntop Lane, Creve Coeur, MO 63141	Headwall, rock armor, and grade control at existing outfall.	2	$96,100.00	0.94
CC-C-09	Ambois Drive	13010 Ambois Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address knickpoints and erosion threatening structures along Fernridge Creek.	2	$474,400.00	0.94
DC-C-12	Brooktrail Court North	123 Brooktrail Court, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion in Windrush Creek as well as swales to address overland flow issues.	2	$404,200.00	0.93

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
CC-C-37	Balcon Estates	24 Balcon Estates, Creve Coeur, MO 63141	Bank stabilization and grade control to address erosion threatening structures along an unnamed tributary to Smith Creek.	2	$143,400.00	0.91
DC-C-26	Lindbergh Boulevard	8 Millstone Campus Drive, St. Louis, MO 63146	Bank stabilization, grade control, rock armoring, and a stilling basin to address erosion in an unnamed tributary along Lindbergh Blvd.	2	$326,600.00	0.91
DC-C-10	Villa Coublay Drive	44 Villa Coublay Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to repair erosion in Windrush Creek. Some of the proposed work is in the City of Frontenac. The project will need an intergovernmental agreement. City Council and Stormwater Committee as well as City of Frontenac will need to agree on the project.	2	$228,900.00	0.85
CC-C-20	Falaise Drive	571 Falaise Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address knickpoints in Fernridge Creek.	2	$345,100.00	0.82
CC-C-14	840 Angleterre Drive	840 Angleterre Drive, Creve Coeur, MO 63141	Grade controls with associated bank stabilization to address knickpoints in a tributary to Fernridge Creek.	2	$156,000.00	0.79
CC-C-01 ALT	Ferntop Lane Bank Stabilization Alternative	12970 Ferntop Lane, Creve Coeur, MO 63141	Rock armoring to address erosion and grade control at outfall knickpoint as well as bank stabilization along rear yards.	2	$181,300.00	0.77
CC-C-18	12426 Stratford Ridge Court	12426 Stratford Ridge Court, Creve Coeur, MO 63141	Grade control and stilling basin to address failing grouted riprap in Fernridge Creek.	2	$132,100.00	0.74

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
DC-C-27	22 South Tealbrook Drive	22 South Tealbrook Drive, Creve Coeur, MO 63141	Bank stabilization, grade control, and rock armoring to address erosion threatening structures in Pebble Creek. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.	2	$249,700.00	0.72
CC-C-30	151 Royal Gate Drive	151 Royal Gate Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Rosenfelder Creek.	2	$365,500.00	0.71
CC-C-35	12 Broadview Farm Road	12 Broadview Farm Road, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion in a tributary to Smith Creek.	2	$343,200.00	0.69
CC-C-04	Autumn Trails Court	13241 Autumn Trails Court, Creve Coeur, MO 63141	Grade control to address a knickpoint in a tributary to Creve Coeur Creek.	2	$148,500.00	0.62
CC-C-15	Millenium Park	Millenium Park, 2 Barnes West Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion along a tributary to Fernridge Creek in Millenium Park. This project will be combined with future project Millenium Park Phase 2.	2	$805,400.00	0.59
CC-C-32	Conway Downs Drive	12567 Conway Downs Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion in Rosenfelder Creek.	2	$319,600.00	0.58
CC-C-10	Lampadaire Drive	12961 Lampadaire Drive, Creve Coeur, MO 63141	Grade controls to stabilize knickpoints in Fernridge Creek.	2	$190,200.00	0.57

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
CC-C-08	Bellerive Country Club	Bellerive Country Club, 12925 Ladue Road, St. Louis, MO 63141	A series of grade controls where Fernridge Creek confluences with Smith Creek.	2	$400,500.00	0.56
CC-C-05	Olive Boulevard	13150 Olive Boulevard, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion threatening structures along Creve Coeur Creek and one of its tributaries.	2	$894,000.00	0.55
DC-C-21	10694 Country View Drive	10694 Country View Drive, Creve Coeur, MO 63141	Grade control with associated bank stabilization to address erosion along Monsanto-Sunswept Creek.	2	$168,600.00	0.55
DC-C-20	Sherwyn Lane	7 Sherwyn Lane, Creve Coeur, MO 63141	Bank stabilization to address erosion threatening structures in a tributary to Monsanto-Sunswept Creek.	2	$153,800.00	0.52
DC-C-13	Executive Estates Drive	109 Executive Estates Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address erosion in Windrush Creek as well as a swale to address overland flow issues.	2	$580,900.00	0.48
CC-C-31	Boothbay Court	12318 Boothbay Court, Creve Coeur, MO 63141	Grade control with associated bank stabilization to address pipe outfall erosion threatening structures.	2	$108,000.00	0.46
DC-C-01b	Deer Creek in Malcolm Terrace Park	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at low water crossing with associated grade controls and a low water crossing replacement.	2	$588,700.00	0.46
DC-C-05	Westwood Country Club	Westwood Country Club, 11801 Conway Road, St. Louis, MO 63131	Grade controls and bank stabilization to address bank erosion and knickpoints in Deer Creek and one of its tributaries.	2	$1,788,700.00	0.44

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
CC-C-19	Questover Lane	665 Questover Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address erosion in Fernridge Creek.	2	$614,500.00	0.35
CC-C-03	13105 D'Artagnan Court	13105 D`Artagnan Court, Creve Coeur, MO 63141	Bank stabilization to address erosion with rock swale to convey subdivision drainage with associated grade controls.	2	$541,000.00	0.35
CC-C-27	Montsouris Drive	12365 Montsouris Drive, Creve Coeur, MO 63141	Bank stabilization to address erosion along an unnamed tributary near Montsouris Drive.	2	$167,000.00	0.23
CC-C-17	12344 Mulberry Tree Court	12344 Mulberry Tree Court, Creve Coeur, MO 63141	Grade control and stilling basin to address perched outfalls and a scour hole in a tributary to Fernridge Creek.	2	$180,500.00	0.22
CC-C-36	438 Twin Creek Road	438 Twin Creek Road, Creve Coeur, MO 63141	Bank stabilization to address erosion along Smith Creek.	2	$132,400.00	0.22
CC-C-21	Blackheath Court and Country Manor Lane	12230 Blackheath Court, Creve Coeur, MO 63141	Bank stabilization and rock armoring to address erosion in an upper tributary to Fernridge Creek.	2	$140,700.00	0.22
CC-C-24	17 Chamblee Lane	17 Chamblee Lane, Creve Coeur, MO 63141	Bank stabilization and fill to address sloughing and sinkholes along Smith Creek.	2	$108,900.00	0.20
DC-C-07	New Salem Drive	234 New Salem Drive, Creve Coeur, MO 63141	Bank stabilization to address bank erosion in Deer Creek.	2	$623,200.00	0.17
CC-C-22	Royal Valley Drive	12182 Royal Valley Drive, Creve Coeur, MO 63141	Grade controls and stilling basins to address knickpoints in Fernridge Creek.	2	$239,300.00	0.14
DC-S-03	Woodbridge Manor Road	8 Woodbridge Manor Road, Creve Coeur, MO 63141	Swales and inlet modifications to address street and structural flooding.	3	$62,200.00	6.83

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
CC-S-07	Mason Forest Drive	12574 Mason Forest Drive, Creve Coeur, MO 63141	Swale, slotted manhole, and inlet modifications to address yard, street, and structural flooding.	3	$73,400.00	4.69
DC-S-02	18 Sackston Woods Lane	18 Sackston Woods Lane, Creve Coeur, MO 63141	Storm sewer, inlets, and rock swale to address yard flooding.	3	$158,600.00	2.08
CC-S-04	Fernpark Drive	1032 Fernpark Drive, Creve Coeur, MO 63141	Swale, yard drain, storm sewer, and curb inlet to address yard and basement flooding.	3	$115,700.00	2.07
DC-S-17	Sona Lane	14 Sona Lane, Creve Coeur, MO 63141	Berm, swale, inlets, and storm sewer to address structural flooding and yard erosion.	3	$562,700.00	2.00
CC-S-09	252 Bellington Lane	252 Bellington Lane, Creve Coeur, MO 63141	Berm, swale, and inlet modifications to address yard and basement flooding.	3	$61,900.00	1.29
DC-S-26	Warington Square	9820 Warington Square, Creve Coeur, MO 63141	Berm, swales, inlets, and storm sewer to address yard and structural flooding.	3	$340,500.00	1.29
DC-S-19	308 South Spoede Road	308 South Spoede Road, Creve Coeur, MO 63141	Swale, catch basin, storm sewer, and curb to address structural flooding.	3	$103,600.00	1.21
DC-S-22	North Spoede Road & Mission Hills Court	800 North Spoede Road, Creve Coeur, MO 63141	Inlets and storm sewer to address street flooding.	3	$71,200.00	1.19
CC-S-05	740 North Mason Road	740 North Mason Road, St. Louis, MO 63141	Reconstructed berm and swale to contain overland flow in the cemetery.	3	$138,600.00	1.06
DC-S-09	Pine Manor Drive	8 Pine Manor Drive, Creve Coeur, MO 63141	Trench drain, inlets, inlet modifications, berm, and swales to address street and yard flooding.	3	$80,200.00	1.05
DC-S-13	Morwood Lane	53 Morwood Lane, Creve Coeur, MO 63141	Mill asphalt, inlets, berm, manhole, and grading to address seepage and yard flooding.	3	$148,800.00	0.94

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
DC-S-11	554 North Mosley Road	554 North Mosley Road, Creve Coeur, MO 63141	Swale to address yard gully and drainage issues.	3	$73,200.00	0.82
DC-S-05	Ladue Meadows	16 Ladue Meadows, Creve Coeur, MO 63141	Inlets and storm sewers to address yard flooding.	3	$132,600.00	0.72
CC-S-01	Cuiseaux Court	208 Cuiseaux Court, Creve Coeur, MO 63141	New inlet and pipe to existing storm sewer to convey runoff from the rear lots of Cuiseaux Court.	3	$135,600.00	0.70
DC-S-16	Wedgewood Lane	6 Wedgewood Lane, Creve Coeur, MO 63141	Inlets, storm sewer, and swale to address yard ponding.	3	$111,500.00	0.63
DC-S-01	Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive	11577 Templar Drive, Creve Coeur, MO 63141	New inlets and regrading pavement to address ponding issues along Magna Carta Drive.	3	$169,600.00	0.62
DC-C-29	The Knolls Lane	7 The Knolls Lane, Creve Coeur, MO 63141	Broken curb/drainageway replacement.	3	$74,500.00	0.62
DC-S-15	Fourwynd Drive	438 Fourwynd Drive, Creve Coeur, MO 63141	Berm, swales, and a culvert replacement to address yard flooding and overland flow erosion.	3	$213,900.00	0.61
CC-S-10	12229 Ladue Woods Drive	12229 Ladue Woods Drive, Creve Coeur, MO 63141	Berm to address yard flooding.	3	$69,200.00	0.55
CC-S-02	Broadview Farms Subdivision	19 Broadview Farm Road, Creve Coeur, MO 63141	Overlay street, adjust pavement slope, reset curb inlet, and reconstruct curb to address ponding along Broadview Farm Rd.	3	$107,400.00	0.52

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
DC-S-07	East Ladue Estates Drive	57 East Ladue Estates Drive, Creve Coeur, MO 63141	Swale, berm, and underdrain field to address yard ponding.	3	$78,200.00	0.51
DC-S-23	6 Spoede Ridge Lane	6 Spoede Ridge Lane, Creve Coeur, MO 63141	Rock channel to address yard flooding.	3	$73,800.00	0.49
DC-S-14	Mary Meadows Lane	808 Mary Meadows Lane, Creve Coeur, MO 63141	Berm, swales, inlets, and storm sewer to address flooding and overland flow erosion.	3	$166,200.00	0.48
DC-S-25	Haven View Drive	19 Haven View Drive, Creve Coeur, MO 63141	Gutters, inlets and storm sewer to address yard flooding.	3	$125,100.00	0.48
DC-S-06	Fairways Circle	541 Fairways Circle, Creve Coeur, MO 63141	Storm sewer, inlets, berm, and swales to address yard flooding.	3	$262,300.00	0.48
DC-S-18	3 Oak Park Court	3 Oak Park Court, Creve Coeur, MO 63141	Inlets and storm sewer to address yard erosion.	3	$107,000.00	0.47
DC-S-24	7 Quailways Drive	7 Quailways Drive, Creve Coeur, MO 63141	Pipe repairs and retaining wall replacement to address erosion and sinkholes.	3	$107,200.00	0.47
CC-S-06	Auburndale Drive	39 Auburndale Drive, Creve Coeur, MO 63141	Shoulder and swale along N Mason Rd to address street flooding.	3	$187,800.00	0.43
DC-S-21	Chilton Lane	8 Chilton Lane, Creve Coeur, MO 63141	Erosion control, berms, and swales to address erosion.	3	$98,100.00	0.41
DC-S-04	561 Sarah Lane	561 Sarah Lane, Creve Coeur, MO 63141	Profile and mill asphalt to address street ponding.	3	$65,800.00	0.38
DC-S-08	121 Mystic Meadows Lane	121 Mystic Meadows Lane, Creve Coeur, MO 63141	Storm sewer extension and inlet to address overland flow erosion.	3	$137,300.00	0.33
CC-S-08	228 Falling Leaves Court	228 Falling Leaves Court, Creve Coeur, MO 63141	Drains, curb inlet, and storm sewer to address yard ponding.	3	$168,200.00	0.27

Project Number	Project Name	Project Location	Project Description	Project Type	Total Project Cost	Cost/Benefit Ratio
CC-S-03	Ferntrails Lane	13096 Ferntrails Lane, Creve Coeur, MO 63141	Berm and swale to shift overland flow away from houses.	3	$78,300.00	0.26

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Section 7
Implementation

7.1 Introduction

The Watershed Management Plan (WMP) is intended to be used as a planning tool. It is understood that the recommendations included within the WMP carry significant costs and impacts to the community, and the plan will be implemented over decades. The needs and limitations of the City will inevitably change over that time. By creating a decision-making framework with a consistent project scoring and ranking system, the WMP will guide City Councils so that stormwater control efforts will be wisely chosen and well-coordinated for years to come.

The core of the WMP is the development of a prioritized list of possible projects. The projects listed in the WMP are by definition considered "concept" projects. Over the next few months, the City anticipates programming stormwater concept projects into the City's five-year Capital Improvement Program (CIP). City staff along with the Stormwater Committee will work together to develop the list of stormwater management concept projects for the CIP, and then the CIP will ultimately be reviewed and approved by the City Council. Many factors will be used in choosing concept projects for the five-year CIP with the overarching goal of having an optimal mix of projects that will solve significant stormwater issues within the given budget.

Typically each April, the City Council approves the CIP for the following fiscal year. The City's fiscal year starts on July 1st and ends June 30th the following year. After the CIP is approved by the City Council, typically the next step is the development of a detailed engineering study and then a plan set. After design work is complete, projects will be reviewed by City staff to ensure that they are economically feasible and likely to successfully solve a serious stormwater issue. Viable projects will then typically be publicly bid for construction.

7.2 Potential Project Implementation

The Potential Projects (PPs) outlined in Section 5 of this report were categorized using the Prioritization Ranking System presented in Section 6. The Prioritization Ranking System is one planning tool that gives City staff, the Stormwater Committee, and the City Council a way to consistently compare and rank possible projects based on the cost-to-benefit ratio. The intent of this scoring system is to help identify projects that are likely to deliver the most public good. The scores are a starting point – not the only or final determining factor in stormwater project programming. It's important to note:

- The ranked list of projects is dynamic and subject to adjustments as conditions change and new stormwater issues arise. As new possible projects are added, the order of projects on the list may adjust.

- Potential projects that are already on the list will only be re-scored if physical conditions significantly change the nature or severity of the stormwater issue.
- Projects with a cost-to-benefit ratio greater than 1.0 are the most likely to be addressed within the next five-year CIP planning window.
- High scores are not a guarantee that a project will be included in the CIP.
- Remaining CIP budget, staffing levels, and possible grant funding will be considered when scheduling projects.
- Grant funding options will likely be explored and pursued before committing City funds for some projects – particularly for streambank restoration and other watercourse projects.
- Construction-related timing constraints will be considered when scheduling projects.
    - Tree removal for creek stabilization projects can only be done November through March.
    - Live stakes and other types of vegetation have limited installation windows.
    - Concrete and asphalt can only be installed when temperatures exceed minimum thresholds.
- Projects involving a City asset (such as a roadway) may be scheduled before projects that solve issues solely on private property.
    - Replacing a failing roadway culvert may be prioritized over projects that involve only private assets. The reason? Culvert replacement can be considered both a roadway project and a stormwater project.
    - The City has an obligation to protect the public's safety by maintaining public roadways.
- Stormwater projects may be scheduled to coordinate with a planned roadway or park projects.
- Projects that do not require easements may be programed before projects that require one or more easements.
- Some projects may not be able to be constructed without the cooperation and support of other government entities such as the Missouri Department of Transportation, Saint Louis Country, or neighboring municipalities.

If the location of the work is within a floodplain or floodway, the Stormwater Committee and the City Council may choose not to fund the project.

7.3 Project Funding

Funding for these Potential Projects may include, but not be limited to, the City's one half-cent capital improvement sales tax, one half-cent parks and stormwater sales tax, transfers from the City's general fund, and grants from local, state, and federal aid programs such as 319 grants. Funding assistance for private issues can be obtained through the City's new Stormwater Management Cost-Share Program.

7.4 Coordination Efforts

A coordinated effort between the City, MSD, St. Louis County, MoDOT, and neighboring municipalities will be needed to guide the implementation of the Watershed Management Plan. When applicable, the City shall perform the initial outreach with appropriate agencies to discuss coordination efforts prior to moving forward with design on the PPs and verify agency concurrence.

7.5 Stormwater Ordinance Review for Mitigation BMPs

This report compared the regulatory requirements and performance of two neighboring municipalities. The goal of this analysis was to quantitatively show how the stormwater management benefits that Creve Coeur's current requirements provide compare to the regulatory stormwater management benefits achieved by neighboring municipalities.

While the City follows MSD criteria for stormwater design, it also has stormwater mitigation requirements for sites that disturb 2,000 square feet or more. The requirements provide mitigation for the incremental development that occurs as lots are redeveloped or additions are added. These small increases in runoff aggregate over the watershed and transform into larger impacts on channel erosion, enclosed system capacity, and downstream flooding. The mitigation requirements help prevent damage on adjoining parcels and downstream neighbors. The review will evaluate if improvements to the current ordinances would yield better protection for the City's residents.

7.5.1 Mitigation BMP Criteria Comparison

For this comparison reference is made to the *Olivette Stormwater System* Analysis dated January 30, 2024 and prepared by EDM Incorporated. While the report was prepared for the City of Olivette, the study methodology and results are directly applicable to the City of Creve Coeur. The study compared the stormwater mitigation approaches used by three cities for sites disturbing less than 1 acre and the resulting effects on peak stormwater discharges. The comparison evaluated the stormwater mitigation BMP criteria of Olivette, Frontenac, and Creve Coeur. The following nomenclature will be used for the discussion: "City Name" BMP, i.e. a BMP sized following Olivette's criteria will be referenced in the discussion as an "Olivette BMP".

Olivette Criteria - For new homes, the Olivette BMP (detention) is sized based on the roof area of the new house. Olivette does not consider the additional impervious area by other lot coverages for new construction. The City also requires detention of lot coverage for a residential addition, reconstruction, and/or improvement that increases lot coverage by one thousand two hundred (1,200) square feet or more. The 15-year, 20-minute storm is used to size the BMP, and the total roof area runoff (new construction) or increased impervious area (reconstruction) must be directed to the BMP.

Frontenac Criteria - A Frontenac BMP is sized based on the total increased impervious area over 1,000 square feet. If that area increases by more than 2,000 square feet, 20% of the

existing impervious area must be added to the increased impervious area. The Frontenac BMP is based on a 2.5-inch rain over the increased impervious area. This is equivalent to the rainfall of a 1-year, 24-hour storm with no losses assumed. A restrictive orifice is required to meter out flow.

Creve Coeur Criteria – In Creve Coeur, stormwater mitigation is required for all new homes, swimming pools, and detached garages. Mitigation is also required for any site improvement or building addition that disturbs more than 2,000 square feet. The 15-year, 20-minute storm is the design storm. The differential stormwater runoff shall be contained on-site if the subdivision's detention cannot handle the increase. The difference between the existing and proposed runoff rates is used to calculate the size of the detention.

A fourth BMP scenario was also considered that used the Olivette Criteria and added a restrictive outflow orifice as typically required in Frontenac. This scenario is referred to as Olivette BMP w/ Orifice.

7.5.2 Mitigation BMP Modeling Approach

EDM used the following modeling software: "Personal Computer Storm Water Management Model" (PCSWMM), a dynamic hydrologic and hydraulic program, to model two scenarios: a typical residential lot improvement and a larger scale, multi-lot redevelopment scenario in a 60-acre watershed in an Olivette residential neighborhood. For each scenario, stormwater BMP(s) were sized based on each municipality's criteria. A combined 1D-2D model was used to model the watershed. The enclosed system was modeled and linked to a 2D model of the surface. This was done to evaluate overland flow and flooding when the enclosed system is surcharged. To consider the effects of the detention, a 15-Year 24-Hour SCS Type II event was evaluated. Please note, this is different from the MSD 15-year, 20-minute peak flowrate calculation which does not generate a runoff hydrograph.

For consistency on the comparison, the detention BMP selected was an underground rock storage basin with an infiltration trench and overflow discharge. The analysis variable is the sizing of the BMP based on each municipality's criteria.

Single Lot Scenario – New home construction on an existing lot near the middle of the 60 acre watershed. The new home had an area of 4,229 square feet plus driveway and other lot coverages. The new home footprint approximately doubled the impervious area on the lot.

Multi-Lot Redevelopment – This scenario considered redevelopment of 50% of the homes in a 60-acre watershed to simulate redevelopment over time under the various criteria. The scenario assumed that 61 of the smallest homes in the watershed were redeveloped to a footprint similar to the single lot scenario (~4,200 square feet). Approximately half of the sites increased the impervious area more than 2,000 square feet (Frontenac criteria threshold). It was also assumed that 31 pools (about 25% of lots) would be added to the

watershed at an increase of 1,200 square feet of impervious area. The watershed was subdivided into 13 subbasins based on the enclosed system and the redevelopment improvements were proportionally distributed throughout the subbasins.

An existing conditions scenario and a development with No BMP were also developed as a basis for comparison.

7.5.3 Mitigation BMP Modeling Results

The peak flowrates from the watersheds were reviewed to evaluate the detention BMP impacts. The flowrates discussed are in units of cubic feet per second (cfs).

Single Lot Scenario – The runoff results for the drainage area with the single redevelopment lot are listed in Table 7.1. They showed that the biggest positive effect, reducing peak flow, was seen for the Olivette BMP w/ Orifice and the Frontenac BMP. The Olivette BMP was next and Creve Coeur BMP was least effective for the 15-Year 24-Hour SCS Type II event.

Table 7.1 Flows for Drainage Area A6 That Contains the Single Lot Redevelopment Site

Model 15 Yr Storm	Existing Condition	Add. Imp. Area No BMP	Olivette BMP	Olivette BMP w/ Orifice	Frontenac BMP	Creve Coeur BMP
A6 Runoff (cfs)	11.99	12.32	11.91	11.83	11.83	12.11

Multi-Lot Redevelopment – The runoff results for the watershed redevelopment are listed in Table 7.2. The 15-Year, 24-Hour SCS Type II event runoff results for this scenario were similar to those for the single redevelopment site. The scenarios with the biggest positive effect, reducing peak flow, varied between the Olivette BMP w/ Orifice and the Frontenac BMP for the 13 drainage areas. These scenarios also reduced peak flows from the existing condition scenario. The Olivette BMP peak flows were sometimes lower and sometimes higher than the existing condition scenario. The Creve Coeur BMP was least effective, overall. All scenarios did reduce the peak flows for the developed 15-Year, 24-Hour SCS Type II event. Table 3 also lists the enclosed storm sewer system outflows for each BMP application. It was noted that smaller reductions were observed in these flows because the piped system was surcharging and losing flow to overland bypass routes.

Table 7.2 Watershed Redevelopment Flowrate Results for the 15-year Storm (cfs)

Drainage Area	Existing Condition	Add. Imp. Area No BMP	Olivette BMP	Olivette BMP w/ Orifice	Frontenac BMP	Creve Coeur BMP
A1	26.75	29.95	25	24.34	24.8	26.78
A2	14.04	16.05	14.09	13.69	13.32	14.69
A3	16.84	18.57	16.86	16.22	16.35	17.54
A4	9.79	10.51	9.91	9.73	9.38	10.16

Drainage Area	Existing Condition	Add. Imp. Area No BMP	Olivette BMP	Olivette BMP w/ Orifice	Frontenac BMP	Creve Coeur BMP
A5	10	10.71	10.12	9.95	9.58	10.38
A6	11.99	13.59	12.22	11.89	11.46	12.65
A7	21.05	24.28	20.32	19.77	20	21.7
A8	16.93	19.28	16.65	16.13	16.03	17.62
A9	16.91	19.31	16.61	16.12	16.04	17.62
A10	17.51	19.68	16.92	16.44	16.41	17.94
A11	9.914	10.55	10	9.84	9.42	10.25
A12	15.94	17.64	15.92	15.29	15.41	16.61
A13	9.81	10.6	10.03	9.87	9.45	10.43
Total	**197.47**	**220.72**	**194.65**	**189.28**	**187.65**	**204.37**
Storm Sewer Max Outflow (cfs)	**143.3**	**147.1**	**144.9**	**143.9**	**142.3**	**145.3**

7.5.4 Mitigation BMP Conclusions

The City of Creve Coeur's criteria is effective at reducing the peak discharge for the 15-year, 20-minute flowrate, but could be more effective at controlling the cumulative runoff volumes. The detention sizing requirements could be increased similar to the Frontenac criteria that sizes the detention based on metering out 2.5 inches of rainfall (1 year storm) for the increased impervious area. In addition to mitigating the 15-year, 20-minute storm and improving conveyance system capacity, this would also help address cumulative increases to the stream forming flowrate and prevent increased erosion on the receiving channels.

7.5.5 Stormwater Ordinance Recommendations

It is recommended that the City strengthen the existing stormwater ordinances to require stronger detention requirements for any increase in impervious area on each lot. The Watershed Management Plan has identified more than $30 million in possible projects. Improving the effectiveness of stormwater management ordinances by requiring that more stormwater stays where it falls or remain longer where it falls will protect the City's current and future investments in stormwater infrastructure and streambank stabilization projects.

It is also recommended that the City evaluate the stormwater mitigation requirements periodically to assess potential improvements. The nature of storms has changed and will likely continue to change. Rainfalls are having higher intensity and shorter durations. This means more rainfall occurs in shorter timeframes. Adapting the regulations to the changing climate will ensure the residents receive the same levels of protection and stormwater management benefits in the future as they do today.

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Appendix A
Glossary of Terms and References

Content:

- A.1 Glossary of Terms
- A.2 References

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A.1 Glossary of Terms

The following terms and acronyms are used throughout the report.

- 2-year design storm - A rainfall event with a probability of occurrence of 50 percent in any given year
- 5-year design storm - A rainfall event with a probability of occurrence of 20 percent in any given year.
- 10-year design storm - A rainfall event with a probability of occurrence of 10 percent in any given year.
- 25-year design storm - A rainfall event with a probability of occurrence of 4 percent in any given year.
- 50-year design storm - A rainfall event with a probability of occurrence of 2 percent in any given year.
- 100-year design storm - A rainfall event with a probability of occurrence of 1 percent in any given year.
- 500-year design storm - A rainfall event with a probability of occurrence of 0.2 percent in any given year.
- Bank angle - The angle measured from the horizontal between the base of the slope and the top of bank. For complex cross sections, it is the series of angles measured from the horizontal at each change in slope.
- Bankfull elevation - In classical terms, the elevation in the channel where water surface reaches the top of the streambanks, also referred to as “top-of-bank” elevation. When the water surface rises above the bankfull elevation, it crests the banks and spills over onto the bankfull floodplain. In urban streams, the bankfull elevation generally coincides with the dominant discharge elevation. This elevation corresponds to the stream forming flow, which creates bankfull floodplains.
- Bankfull floodplain - The bankfull floodplain is a low, vegetated terrace, formed by, and an indicator of, the bankfull discharge. In incised streams, bankfull floodplains form as internal shelves within the main channel. While not an absolute diagnostic, functioning bankfull floodplains indicate stable reaches. Bankfull floodplains fulfill the important function of reducing stress on the streambanks. When the flow crests the internal floodplain, the velocity and thereby the shear stress is reduced as the flow spreads across the internal shelf.

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- Base flow - In a perennial stream, the low flow discharge attributable to groundwater flow.

- BFE - Base flood elevation.

- Bioengineering (also called biostabilization) - A scientific and ancient method of restoring the landscape of ecosystems using the physical properties of plants, such as their sheer resistance, tensile strength, and flexibility, to rebuild the terrestrial or aquatic foundation in a manner that is both physically and ecologically stable (see streambank stabilization, synonymous with bioengineering).

- BMP - Best management practice, a structural or nonstructural device designed to treat runoff in order to mitigate flooding, reduce pollution, and provide other amenities.

- cfs - Cubic feet per second, a unit of measurement for labeling flow of water.

- Channel bar - A streambed deposit of silt, clay, sand, or gravel, often exposed during low-water periods. An alluvial deposit composed of silt, clay, sand, gravel, or other material that obstructs flow and induces deposition or transport.

- Channel evolution - The progression of channel form (usually expressed as cross section) over time as a response to a disturbance. The model describes the progression of channel shapes as the stream accommodates the disturbance and eventually reacquires equilibrium. The stages of channel evolution in the most commonly used model are equilibrium, channel disturbance, incision, widening, deposition, and recovery.

- CMP - Corrugated metal pipe.

- Composite revetment - A bank strengthening method in which rock, geogrid, and plants form a composite material and increase resistance to scour and near-surface mass wasting. The revetment is built in layers comprised of durable rock interlaid with woody bare root plants. The thickness of the rock is controlled by geogrid layers wrapping the rock on three sides. The channel-facing side remains open. On steep slopes, a structural geogrid may also be used to increase slope stability.

- Contours - Lines of equal elevation that represent the land surface.

- Conveyance system - Natural channels and manmade structures that convey stormwater downstream.

- Cross section - A two-dimensional line that is drawn perpendicular to the contours to represent the open channel flow conveyance at that location.

- Detention basin - A stormwater facility that collects and temporarily stores runoff to reduce peak flow rates and alleviate downstream flooding and erosion problems.

Draft

- DFIRM - Digital Flood Insurance Rate Map

- Dominant discharge - The dominant stream-forming flow or recurring flow responsible for the majority of work and channel maintenance in a stream. It is the flow that over time has the greatest influence on stream form. The recurrence interval for the dominant discharge of most streams is roughly 1.5 years, as determined by flood frequency analysis. In urban areas with highly altered hydrology, this return interval may be much more frequent. The dominant discharge is sometimes referred to as the bankfull or stream-forming discharge.

- Extended dry detention basin: An extended dry detention basin provides flood control and water quality treatment and is a dry storage facility. The term "extended" means the entire WQCV is treated by slowly releasing the runoff over a specified period of time until the facility completely drains. The primary pollutant removal mechanism is sedimentation, which is achieved through an appropriate detention time.

- Extended wet detention basin: An extended wet detention basin provides flood control and water quality treatment and contains a permanent pool. The term "extended" means the entire WQCV is treated above the permanent pool by slowly releasing it over a specified period of time. The permanent pool provides a medium for the settling of solids between storms and, with longer retention times and aquatic vegetation, nutrients and dissolved pollutants can be removed. Section 8.3.4.2 of the Drainage Criteria Manual refers to these basins as "Retention (Wet) Ponds."

- FEMA - Federal Emergency Management Agency.

- FIRM - Flood Insurance Rate Map

- FIS - Flood Insurance Study.

- Flood bench - A technique used in stormwater control, when horizontal space is available, that removes earth from one or both streambanks such that the result is a visible bench when the stream is viewed in cross section, and done to reduce water velocity, shear stresses, and water surface elevation.

- Floodplain - The area of land that is inundated with water during a given storm event.

- Floodway – The channel of a river or watercourse and the adjacent areas that must be reserved in order to discharge the 100-yr flood without cumulatively increasing the water surface elevation more than one foot.

- Floodprone area – term used to refer to the 100-year floodplain identified as part of a new study and not yet shown on the FEMA floodplain maps.

Draft

- Fluvial geomorphology - The scientific discipline concerned with the study of how moving water shapes landforms.

- Freeboard - Defined as the distance between the maximum water surface elevation anticipated in design and the top of retaining banks or structures, and provided to prevent overtopping due to unforeseen conditions.

- ft/sec - Feet per second, a unit of measurement for labeling velocity of water.

- ft^2 – Square foot or square feet, a unit of measurement for labeling area.

- Geomorphology - The study of surface land forms and the processes that develop those forms. Geomorphic processes are the primary mechanisms that produce these land forms, including drainage patterns, streams, floodplains, and other watershed features (see also fluvial geomorphology).

- GIS - Geographical information system.

- GPS - Global positioning system.

- Gully - A channel or miniature valley cut by concentrated runoff through which water commonly flows only during and immediately after heavy rains and is sufficiently deep that it would not be obliterated by normal tillage operations.

- HEC - Hydrologic Engineering Center of the U. S. Army Corps of Engineers.

- HEC-HMS - A computer model developed by the U. S. Army Corps of Engineers to simulate the hydrologic conditions of a drainage area.

- HEC-RAS - A computer model developed by the U. S. Army Corps of Engineers to simulate the hydraulic conditions of a conveyance system through a drainage area.

- Hydraulic analysis - The study of stormwater flow through the conveyance system that includes underground pipelines, culverts, improved open channels, and natural creeks.

- Hydraulic Profile - A plot of the water surface elevation along the flow line of a stream or pipe.

- Hydrograph - A plot of surface runoff or excess precipitation versus time.

- Hydrology analysis - The study of the occurrence, distribution, movement, and properties of waters of the earth and their environmental relations.

- Hyetograph - A plot of rainfall depth or intensity versus time.

Draft

- Illicit connections - The illegal and/or unauthorized connections that result in untreated wastewater discharges into storm drainage systems and receiving waters.

- Illicit discharge - Any discharge to a municipal separate storm sewer system that is not composed entirely of stormwater, except for discharges allowed under an NPDES permit or waters used for certain emergency situations.

- Imbrication - Imbrication refers to the pattern of bed load deposition. Larger particles such as cobbles, concrete slabs, or shale plates deposit on the streambed in a "fish scale" pattern. The stream power necessary to move these larger particles generally results from mid-intensity storms (10- to 25-year events). Imbrication armors streambeds from the major storms and is one indicator of competent bedload transport.

- Impervious - The characteristic of a material that prevents the infiltration or passage of liquid through it. This may apply to roads, streets, parking lots, rooftops, and sidewalks.

- Incision - Vertical channel adjustment, or channel downcutting, generally in response to an alteration upstream or downstream of the incising reach. Incision occurs when sediment or transport material is more easily removed from the channel bed than it is from the streambanks. Bed material is liberated to "heal" a temporary disturbance in sediment transport equilibrium or channel shape.

- Knickpoint - An abrupt discontinuity in bed slope indicating the upward limit of channel incision. A knickpoint usually occurs at a resistant hard point in the channel bed, such as a geologic control, debris jams, de facto grade control, or manmade structure.

- Knickzone - Typically observed in loess or alluvial streams, a knickzone is an area of slope discontinuity similar to a knickpoint, but less pronounced and occurring over a greater length of channel. In bedrock streams, knickzones occur as a series of smaller knickpoints.

- Left (and right) descending bank - Refers to the either side of the channel in relation to the downstream flow of water. For example, left descending bank refers to the lefthand side of an in-channel observer facing downstream. This designation is the convention in river science and engineering.

- Length-to-width ratio - Increasing the length-to-width ratio of the water quality basin increases the water quality treatment potential by providing additional detention time for settling, infiltration, and possibly biological uptake. As a result, a 3:1 length-to-width ratio or greater is generally recommended. Basins should be wedge-shaped, narrowest at the inlet and widest at the outlet. Greater flow lengths can be accommodated by relocating the basin inlet or outlet where possible, or by installing berms or baffles within the basin to the full depth of the WQCV to avoid short circuiting and increase travel time to the outlet.

- lf – Linear foot or linear feet, a unit of measurement for labeling length.

Draft

- Littoral zone - An aquatic and safety bench around the perimeter of a pond or detention/retention basin is called the littoral zone.

- Longitudinal profile - A profile survey down the thalweg of a stream. A thalweg profile is not a channel centerline profile and the two are not interchangeable. Longitudinal profiles are used both for diagnosis of dominant process and for design guidance. Longitudinal profiles are particularly helpful in identifying knickpoints and knickzones and for evaluating pool riffle sequences.

- Manning's formula - A formula used to predict the velocity of water flow in an open channel or pipeline: V = 1.486/n* R2/3 *S1/2, where V is the mean velocity of flow in feet per second, R is the hydraulic radius, S is the slope of the channel, in feet per foot, and n is the roughness coefficient of the channel lining.

- Mass wasting - Landslide, a mass downward movement of material caused by gravity in contrast to surficial erosion, which is the movement of individual soil particles.

- Meander advance - The natural process by which the meander waveform migrates downstream. The movement is a consequence of the secondary flows occurring perpendicular to the primary downstream flow. These secondary flows alternately scour and deposit channel materials. The greatest stress and the greatest scour occur just downstream of the apex of a curve on the outside of the bend. Similarly, the peak deposition occurs just downstream of the apex on the inside of a bend. Over time, this pattern moves the waveform downstream.

- Meander amplitude - The linear distance between the apex of one meander and the apex of the next meander.

- Meander wavelength - The length of one complete waveform. Wavelength can be measured as the linear distance between two analogous points on a waveform.

- Micropool - The micropool is an optional feature for extended dry detention basins, a relatively shallow impoundment intended to concentrate sediment and reduce the potential for resuspension during runoff events. Vegetation in the micropool can help stabilize the trapped sediment. A micropool also helps prevent clogging of the outlet.

- Normal depth - Depth of flow in an open conduit during uniform flow for the given conditions (see Manning's equation).

- NPDES - The National Pollutant Discharge Elimination System, established by Section 402 of the Clean Water Act, is a federally mandated system used for regulating point source and stormwater discharges.

Draft

- Open channels - Also known as swales, grass channels, streams, and biofilters. These systems are used for the conveyance, retention, infiltration, and filtration of stormwater runoff.

- Outfall - The point where water flows from a conduit, stream, or drain.

- Perennial stream - A stream channel that has running water throughout the year.

- Permanent pool – The permanent pool is the designed water surface, water area and volume of water in a pond or retention basin where water is permanently stored. The permanent pool provides a holding volume between runoff events for continued settling of particulate contaminants and nutrient uptake by aquatic plants. As discussed in Section 6.11.2 of the City's Drainage Criteria Manual, water budget calculations are required for all permanent pool stormwater facilities to demonstrate that a permanent pool will be achieved given the average annual site hydrologic conditions. If the permanent pool cannot be maintained under normal conditions, infiltration losses in the permanent pool can be minimized using various methods, including compaction, incorporating clay into the base materials, and installing an impermeable liner.

- Permanent pool volume - There are a variety of methods for determining the design volume of the permanent pool. Sizing criteria have been developed based on solids settling and nutrient removal mechanisms. Due to limited empirical evidence to support these designs, a simplified method of one to two times the WQCV is suggested (Table 7-1). The permanent pool depth should be between 5 to 10 feet, which is consistent with City's Drainage Criteria Manual guidance.

- Plan form analysis - Evaluation of the horizontal geometry of the shape and size of the stream channels. Plan form analysis provides insight on whether and how parts of the basin differ from one another and if the geometric relationships of meanders are within the expected norms.

- Pollution prevention plan - A requirement for some land uses or activities (e.g., industrial sites) that outlines techniques to prevent pollutants from being washed off in stormwater runoff (e.g., spill response, material handling, employee training, etc.)

- Pool-riffle sequences - In a streambed, the combination of topographical lows (pools) produced by scour and the topographical high areas (riffles) created by the accumulation of relatively coarse-grained sediment. A sequence is defined as the beginning point of one riffle to the beginning of the next.

- RCB - Reinforced concrete box.

- RCP - Reinforced concrete pipe.

Draft

- Rill - Erosion of lesser depth than a gully and would be smoothed by ordinary farm tillage (see gully).

- Riparian - Woody vegetation that is characteristic of an area bordering a stream or river.

- Riprap - A loose assemblage of broken stones built along streams or beaches for erosion protection.

- Runoff - The portion of precipitation that is discharged from a drainage area.

- Sediment forebay - A sediment forebay is a pretreatment feature that can increase the pollutant removal efficiency of the facility by trapping sediment and trash at all basin inlets. Generally it is recommended that the forebay represent at least 10 percent of the WQCV to be effective. The forebay can also facilitate maintenance by concentrating sediment in an accessible location. The forebay consists of a separate cell, formed by an acceptable barrier such as a vegetated earthen weir.

- Sediment transport - The movement of dislodged particles through a stream system. It is one of the driving forces (along with flow) of channel adjustment.

- Sediment transport competence - The condition in which the stream maintains sufficient stream power to transport the sediment supplied to it continuously through the system.

- Sedimentation - Soil particles suspended in stormwater that can settle in streambeds and disrupt the natural flow of the stream.

- Scour line elevation - The distance above a known datum (top of ground) to a persistent near-horizontal erosion feature at the peak depth of any given flow.

- Side slopes - The slope of the sides of a channel, dam or embankment, where customary naming is the horizontal distance first, as 1.5 to 1, or frequently, 1½:1, meaning a horizontal distance of 1.5 feet to 1 foot vertical.

- Sinuosity - The ratio of channel length to valley length. For example, a river 2,000 feet long, winding through a river valley that is 1,000 feet long has a sinuosity of 2.

- Slope - Defined by change in vertical elevation divided by horizontal distance and typically expressed as a percentage.

- Stabilization - Providing adequate measures, vegetative and/or structural that will prevent erosion from occurring.

- Streambank stabilization - The use of the structural properties of live plants to rebuild washed out streambanks and flood terraces, including live slope fascines, hedge brush layers, and live willow brush mattresses.

Draft

- Structural BMPs - Constructed facilities designed to remove pollutants and slow down the runoff from smaller rainstorms to preserve water quality and provide long-term stream stability. These facilities can be installed as development progresses (sitespecific) or to address multiple developments (regional).

- Subarea - A portion of a watershed that drains and concentrates at point, typically at a catch basin, within a system of drainage pipes, or along a stream.

- Surcharge - A condition of a stormwater system, where the water surface exceeds the freeboard and overflows.

- Swale - An open drainage channel or depression explicitly designed to detain and promote the filtration of stormwater runoff.

- Tail water - Water, in a river or channel, immediately downstream from a structure.

- Thalweg - The deepest part of a channel cross section. The dominant thread of stream flow creates the thalweg.

- Time of concentration - Time required for water to flow from the most remote point of a watershed, in a hydraulic sense, to a point of concentration described within a subarea.

- Toe (of slope) - Where the slope stops or levels out. Bottom of the slope.

- TR-55 - Technical Release 55, a report compiled by the Natural Resources Conservation Service that presents procedures for stormwater calculations.

- Watershed - A region of land that drains to a river, creek, or body of water.

- Wing wall - Side wall extensions of a structure, typically at the head or tail end of a system of stormwater pipes or a culvert, which is used to prevent sloughing of banks or channels and to direct runoff.

- WQCV - Water quality control volume.

- WSE - Water surface elevation.

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Appendix B
Public Participation Materials

Content:

- Questionnaire
- City Newsletters
- Open House #1 Materials
- Open House #2 Materials
- Open House #3 Materials
- Open House #4 Materials

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Questionnaire

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CITY OF CREVE COEUR
2023 STORM WATER QUESTIONNAIRE

This questionnaire may be filled out online at :

1. Has storm water entered your home in the past? If so, how has water entered your home? (Note: if you're experiencing a basement backup, this is likely a sanitary backup. Please contact MSD.) **(Circle as many as apply.)**
   - A. No storm water has entered my home.
   - B. Leaks in walls or floor.
   - C. Windows or window wells.
   - D. Doors.

2. Has flooding been a problem around your property, but not in the house? **(Circle as many as apply.)**
   - A. No flooding around my home or property.
   - B. Flooding is in the yard with little or no damage.
   - C. Ponding or standing water remains in lawn area more than 24 hours.
   - D. Damage occurs to lawn, trees, or fence.
   - E. Other:

3. Where does the flood water come from? **(Circle as many as apply.)**
   - A. No flooding around my home or property.
   - B. Overflow from creek/swale.
   - C. Overflow from storm drain.
   - D. Flow from neighbor's yard.
   - E. Ponding in yard.
   - F. Other:

4. How many times have you experienced flooding problems at this location in the last three years? **(Circle one.)**
   - A. Flooding is not a problem.
   - B. One time.
   - C. Two times.
   - D. Three times.
   - E. More than three times.

5. Has Creek Bank or Drainage Swale erosion been a problem on your property? **(Circle Location)**

   Creek Bank Drainage Swale

   (Circle one)
   - A. No erosion problem on my property.
   - B. Erosion with little or no damage.
   - C. Erosion that damaged lawn, trees, or fences.
   - D. Erosion will soon damage building(s).

6. Do you know of an area with consistent street flooding in the City?

   No. Yes. (If yes, please note the nearest intersection.)

   _____And_____

   (street name) (street name)

   Can you briefly describe the problem?

   _____

Please use the space below for additional comments: _____

_____

_____

Please provide your name and contact information so that the City may contact you for clarification or for additional information about a problem reported.

*Name: _____ *E-mail: _____

*Phone Number: _____

What is your address, so that the City may better understand the location of any problems reported?

*Address: _____

Thank you for taking the time to complete the City's Storm Water Questionnaire. This information will aid the City as it develops an update to its Storm Water Master Plan. Please note by returning this form you are granting permission for Representatives of the City and its contractors to access this property for inspection and evaluation purposes. Thank You

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City Newsletters

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City of Creve Coeur Newsletter
the heart of community & commerce
February 2023

Council Considers Ballot Measure to Implement Additional Sales Tax on Adult-Use Marijuana

The City Council is considering an ordinance to place Proposition M on the April 4, 2023, ballot for voter consideration. At the time of this writing, a second reading and final vote of the ordinance was scheduled for the January 23 City Council meeting.

The Missouri Constitution allows municipalities to impose an additional sales tax of up to 3% on retail sales of adult-use marijuana with voter approval. If approved by a majority of voters, the sales tax revenue would be dedicated to supporting public safety in Creve Coeur. The additional 3% sales tax would not apply to medicinal marijuana retail sales.

In response to the amendment to Missouri's Constitution approved by voters on November 8, 2022, the Planning and Zoning Commission is reviewing a text amendment to allow recreational marijuana uses in appropriate zoning districts. These marijuana uses include cultivation, manufacturing, and testing facilities, as well as dispensaries. The City Council is expected to consider the text amendment on February 13, or at a later meeting upon receiving a recommendation by the Planning and Zoning Commission.

Proposed language for the ballot:

Proposition M

Shall the City of Creve Coeur be authorized to impose an additional sales tax for the limited purpose of public safety in an amount not to exceed three percent on all tangible personal property retail sales of adult use marijuana sold in the City?

☐ Yes ☐ No

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Building Division Provides Progress Update After Implementing Task Force Recommendations

In late 2021, the Building Division implemented several improvements to make the building permitting process more efficient and user friendly. The improvements were implemented at the recommendation of the Building Permit Task Force, established in 2020 to identify opportunities for improvement within the Building Division.



After reviewing areas of concern gathered from survey data and public input, the Task Force recommended several improvements to streamline the permitting process, including amendments to the building code, policy changes and new permitting software. Since taking steps to implement these recommendations, the Building Division has received positive feedback from both residents and contractors about the updated process and policies.

Building Code Amendments – In fall of 2021, the City adopted several amendments to the building code to make Creve Coeur

(Continues on page 3)

This Issue

Page 2
Mayor's Column
Elected Officials
Resident ID Cards
Page 3
Building Division Update
Stormwater Questionnaire
Page 4
Street Light Program
Election Judges
Coffee with the Mayor
Page 5
Employee of the Year
Business Awards
Council Actions
Page 6
Recreation
Page 7
Arbor Day
Page 8
City Calendar
Heart to Heart Run

Building Division Update *(Continued from page 1)*



consistent with the building code requirements in St. Louis County and consistent with the 2015 International Residential Code as published.

User-Friendly Policy Changes – The Building Division has implemented several new policies to make the permitting process more accommodating and streamlined for residents and contractors, such as no longer charging a penalty fee for every failed inspection, assigning the same inspector throughout a project when possible, and only requiring a final inspection for fences.

New Permitting Software – The City has acquired new software to improve the efficiency and service of the Building Division, another recommendation of the Building Permit Task Force. The new software will allow applicants to submit permit applications, schedule inspections, and view the status of permits and inspections online. The City is currently building the system with our vendor and anticipates it will be available for public use later this year.

Improve Public Perception – The City continues to conduct permit close-out surveys to measure satisfaction among applicants. Survey results show a noticeable increase in satisfaction levels during the past year, which is likely a direct reflection of the code amendments and policy changes made in late 2021.

BUILDING CODE AMENDMENTS – *ADOPTED SEPTEMBER 2021*

1. Interior Doors – There is no minimum size requirement for interior doors. *Previously, the Building Code required a minimum door size of 2'8" except for bathrooms and closets.*
2. Emergency Escape Windows in Basement – Emergency escapes/rescue windows are only required when a new sleeping room is created in the basement. *Previously, they were required upon creation of any space in the basement, such as an office or family room.*
3. Retaining Walls – Residential retaining walls under 48 inches do not require a building permit. *Previously, retaining walls over 30 inches required a permit.*
4. Smoke Detectors – Upgrades during home renovation may be hardwired or battery powered with Wi-Fi interconnectivity. *Previously, hardwired smoke detectors were required when home renovations triggered an upgrade.*
5. Window & Door Replacement – A building permit is not required when the framing is not altered. *Previously, all window and door replacements required a building permit.*

BUILDING DIVISION SURVEY QUESTIONS *A permit close-out survey is sent to the applicant once the project is completed.*	**RESIDENTIAL SURVEY** *% of "Strongly Agree" and "Agree" Responses*			**COMMERCIAL SURVEY** *% of "Strongly Agree" and "Agree" Responses*		
	2021		**2022**	**2021**		**2022**
The office staff was courteous.	88%	+3	91%	82%	+10	92%
The plan review comments were clear and concise.	78%	+12	90%	73%	+19	92%
The Building Inspector was professional.	86%	+5	91%	81%	+7	88%
The Building Inspector was helpful.	74%	+12	86%	72%	+12	84%
The building inspection process was satisfactory.	73%	+11	84%	72%	-1	71%

The above data was presented to the City Council in November 2022 as part of a one-year update from the Building Division. Survey responses represent data collected from January 1–September 30 from applicants following the close-out of building permits.

Help the City Identify Stormwater Issues by Completing the Online Stormwater Questionnaire *(Coming Soon!)*

The City has recently begun the process of developing a citywide Watershed Management Plan in order to plan for future stormwater infrastructure improvements. This process will include several opportunities for public input including a questionnaire and a series of open houses.



Through the online questionnaire, residents can mark stormwater problems they've seen or experienced on a map to help the city identify and prioritize future projects. The more information gathered, the more effective the Watershed Management Plan will be at delivering solutions that could reduce flood risks and help protect homes, yards, streams and streets.

The questionnaire will be available on the City's website starting mid-February at: www.crevecoeurmo.gov/stormwater

Alternatively, individuals who wish to complete the questionnaire over the phone may call 314-872-2533 for staff assistance when the survey opens mid-February.

This project is funded by the City's Parks and Stormwater Sales Tax.

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ARBOR DAY CELEBRATION & ART CONTEST

Sunday, April 30, 2023


Navya Gupta, Grades 3-5, Arbor Day 2022


Sarah Waldron, Middle School, Arbor Day 2022

Celebrate Arbor Day on Sunday, April 30, in Millennium Park with a plant giveaway, activities for kids, educational displays, tree planting demonstration and more! Entries to the all-ages art contest will be on display inside of Tappmeyer Homestead.

ART CONTEST ENTRY RULES

All entries:

- Not to exceed 9" x 12" (no canvas, please)
- Must be any two-dimensional medium: pencil, water color, crayon, marker, oil, photo, digital design, etc.
- Theme: Nature Around Us (any aspect of nature is acceptable)
- Must list artist's name, category, address and phone number on the back of the art piece

SUBMISSION DEADLINE MARCH 24, 2023

Submit to Janet Rueschhoff, City of Creve Coeur
300 N. New Ballas Road, Creve Coeur, MO 63141

Participation ribbons for all entries. Winners will have artwork displayed at the Creve Coeur Government Center for one month; all other artwork can be picked up following the event between 3:00 and 3:30 p.m.

With the exception of winning pieces, any artwork not picked up at the end of the show will be available for pick up at the Government Center until May 31. **Artwork will not be returned by mail.**

★ WWW.CREVECOEURMO.GOV/ARBORDAY ★

award categories

PRE-K to KINDERGARTEN | GRADE 1 to GRADE 2 | GRADE 3 to GRADE 5 | MIDDLE SCHOOL | HIGH SCHOOL | ADULT | SENIOR (65+)

educational displays ★ *tree planting demonstration* ★ *activities for kids* ★ *free sapling giveaway*

Information:
Janet Rueschhoff, (314) 872-2511
jrueschhoff@crevecoeurmo.gov

Sunday, April 30, 2023
1:00 to 3:00 PM

TAPPMEYER HOMESTEAD, MILLENNIUM PARK
2 BARNES WEST DRIVE
CREVE COEUR, MO 63141

Presented by the Horticulture, Ecology & Beautification Committee, Arts Committee, Parks & Historic Preservation Committee, and Energy & Environment Committee

Draft

City of Creve Coeur Newsletter
the heart of community & commerce
March 2023

Citizens to Vote on Proposition M on Tuesday, April 4

Creve Coeur Proposition M

On April 4, 2023, Creve Coeur citizens will vote on Proposition M, an additional 3% sales tax on adult use (recreational) marijuana. If approved by a majority of voters, the sales tax revenue will be dedicated to supporting public safety in Creve Coeur. Medical marijuana is exempt from the proposed tax.

Proposed language for **Proposition M**

Shall the City of Creve Coeur be authorized to impose an additional sales tax for the limited purpose of public safety in an amount not to exceed three percent on all tangible personal property retail sales of adult use marijuana sold in the City?

☐ Yes ☐ No

For more information, visit **www.crevecoeurmo.gov/PropM**.

Fast Facts About Creve Coeur's **Proposition M**

- Imposes an additional 3% sales tax on adult use (recreational) marijuana.
- Revenue will be dedicated to public safety in Creve Coeur.
- Applies to dispensaries in Creve Coeur only. Two dispensaries are currently located in Creve Coeur.
- Does not apply to medical marijuana.
- The 3% sales tax on adult use marijuana would be in addition to the 6% state tax on recreational marijuana and all other applicable sales tax in place.

This Issue

Page 2
Mayor's Column
Elected Officials
Favorite Restaurant Award
Page 3
Council Actions
K9 Frizbi's Instagram
Team Tappmeyer Volunteers
Page 4-5
Meet the Candidates
Election Sign Regulations
Municipal Election Notice
Page 6
Recreation
Arbor Day Celebration
Page 7
Heart to Heart Run
Planning Updates
Leaf and Limb Schedule
Page 8
City Calendar
Capital Improvement Program

Residents Invited to Watershed Management Open House

Wednesday, March 22, 2023 • 6:30–8:00 p.m. • Creve Coeur Government Center

The City is working with engineering firm Intuition & Logic to develop a citywide Watershed Management Plan to plan for future stormwater infrastructure improvements. As part of the planning process, residents are invited to attend an upcoming Watershed Management Open House to share stormwater concerns with staff and learn more about the development of the Watershed Management Plan.

The open house is on Wednesday, March 22, at 6:30–8:00 p.m. at the Creve Coeur Government Center, 300 N. New Ballas Rd. This will be the first of a series of open houses to collect feedback and update residents on the progress of the plan as it develops. The more information that residents share about stormwater issues, the better the plan will be at pointing to solutions that will help protect homes, roads and creeks.

During the next couple of months, residents can also expect to see City staff and Intuition & Logic engineers visiting known stormwater issue sites and walking creeks and streams in order to gather additional information for the Watershed Management Plan. This project is funded by the City's Parks and Stormwater Sales Tax. For the latest information, visit **www.crevecoeurmo.gov/Stormwater**.



Complete the online questionnaire & report existing stormwater problem sites on an interactive map at: www.crevecoeurmo.gov/stormwater

Draft

City of Creve Coeur Newsletter
the heart of community & commerce
April 2023

Residents Encouraged to Report Stormwater Issues for the Citywide Watershed Management Plan

As the development of the city's Watershed Management Plan is underway, residents are encouraged to complete the stormwater questionnaire to report existing problem sites within the city using the interactive reporting tool. Through the tool, residents can mark on a map where the problem site is located, as well as see problem sites reported by others.

Stormwater issues reported may include home flooding, property flooding, street flooding or streambank erosion. The more information gathered through the tool, the more effective the Watershed Management Plan will be at helping the city identify and prioritize future stormwater projects. Residents may report issues now through June 1, 2023.

The City is working with engineering firm Intuition & Logic to develop a citywide Watershed Management Plan. The first project open house was held in March to collect feedback and update residents on the progress of the plan. A second open house will be scheduled for the spring.



Complete the online questionnaire & report existing stormwater problem sites on an interactive map at: www.crevecoeurmo.gov/stormwater

City staff and Intuition & Logic engineers will continue to visit known stormwater issue sites in order to gather additional information for the plan. This project is funded by the City's Parks and Stormwater Sales Tax. For the latest information, visit **www.crevecoeurmo.gov/Stormwater**.

This Issue

Page 2
Mayor's Column
Elected Officials
Favorite Restaurant Voting

Recreation Guide

Pages 3
Venable Park Call for Artists
Council Actions
Planning Updates

Page 4
City Calendar
Proposition M

IN THIS ISSUE :

GET READY FOR SUMMER WITH OUR

SUMMER RECREATION GUIDE!



Capital Improvement Program Public Hearing

Monday, April 10, 2023 • 7:00 p.m. • Creve Coeur Government Center • 300 N. New Ballas Rd.

The City Council will host a public hearing at 7:00 p.m. on Monday, April 10, 2023. The subject of the public hearing will be the proposed Capital Improvement Program (CIP) for fiscal years 2024-2028.

The CIP includes design, construction, and management of improvements to the City's facilities, parks, streets, sidewalks, stormwater infrastructure, and equipment. Examples of capital improvements include street repaving, repairs and replacement of playgrounds, new snow plows and creek bank stabilization. The primary funding sources of the CIP are the capital improvement sales tax, the parks and stormwater sales tax, grants, and transfers from the general fund.

The CIP process includes:

- Input from residents, elected and appointed officials and city staff
- Preparation of the draft CIP by city staff
- Review of the CIP by the Planning & Zoning Commission, Finance Committee and the City Council
- A public hearing
- Final adoption by the City Council

Please visit **www.crevecoeurmo.gov/CIP** for more information, including the latest CIP documents.

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City of Creve Coeur Newsletter
the heart of community & commerce
May 2023

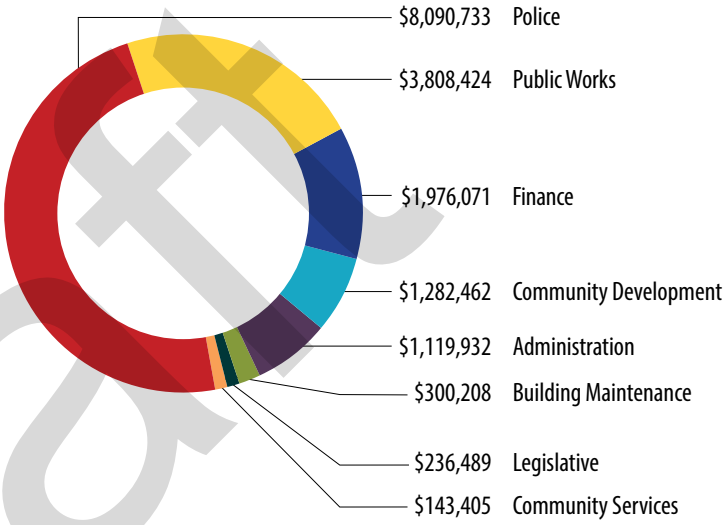
Council Reviewing Proposed Fiscal Year 2024 Budget

The City Council is currently reviewing the proposed budget for Fiscal Year 2024 (FY24), which begins July 1, 2023. In developing the annual budget, city staff rely upon a variety of planning documents, including the city's Strategic Plan, Comprehensive Plan, the five-year Capital Improvement Plan, and the Parks and Recreation Master Plan. The budget is guided by the principles of maintaining high service levels, responding to the needs of residents and businesses, preserving long-term financial stability and providing for well-planned capital investment to preserve infrastructure and facilities.

General Fund

The city's General Fund relies heavily on Intergovernmental Revenues, including sales tax (47% of revenues) and utility licenses (36% of revenues). General Fund revenues are expected to increase 1.3% compared to projected revenues for FY23. This increase is primarily due to an increase in sales tax and increase in utility tax rates. General Fund expenditures are projected to increase 7.4% compared to projected expenditures for FY23 to $16,957,724. This increase is primarily due to personnel and benefit costs, in addition to a large number of full-time position vacancies in FY23. Personnel services comprise approximately 70% of the General Fund Budget.

FY24 General Fund Expenditures by Department



(Continues on page 4)

This Issue

Page 2
Mayor's Column
Elected Officials
Pavement Maintenance Program
Page 3
Council Corner
Little Art Gallery
Watershed Management Plan
Document Shred Event
Page 4
Proposed FY24 Budget
Venable Playground Closure
Page 5
Planning Updates
GFOA Award
Page 6
Recreation
Page 7
Officer of the Year
Council Actions
Page 8
City Calendar
Holiday Trash Schedule
Heart to Heart Run/Walk

City Enters Agreement with Great Rivers Greenway

The City Council recently approved a cooperation agreement with Great Rivers Greenway and other partners to develop a preliminary design of the 39 North Greenway. Adopted by the City in 2020, the 39 North Greenway Plan provides a vision for connectivity as well as access to the Centennial Greenway for Creve Coeur businesses and residents.

Under the agreement, the City will contribute $33,750 toward the project design, and the other partners will cover the remaining funds for a total design cost of $300,000. The proposed greenway segments in Creve Coeur would run through the 39 North Innovation District. Once completed, the preliminary design will be used to seek funding for construction, which is projected for 2025-2027.



Draft



WARD 3
Council Corner

Sari Neudorf & David Z. Hoffman



The month of May and Millennium Park are in full bloom.

Kudos to members of the Horticulture, Ecology and Beautification (HEB) Committee and Committee Chair Mara Berry for another successful Creve Coeur Arbor Day on April 30, 2023. The annual event at Millennium Park was well attended, as always, especially this year with the addition of the musical performance by Babaloo Music & Fun. We also want to recognize all of the amazing artists of all ages who participated in the Arbor Day art contest. The winning pieces are currently on display at the Government Center. Come check them out!

And speaking of beautification in our community, keep an eye out for the new Sculptures on the Move at LaVerne Collins Park and in front of Cold Stone Creamery on Olive Boulevard. The Sculpture on the Move program is a statewide art-on-loan program with nearly two dozen participating Missouri cities. Through the program, the Arts Committee selects new sculptures to add to the city's rotating public art collection for a two-year term.

Next time you visit Millennium Park, take a minute to peruse the Little Art Gallery located next to the Little Free Library. The artists' works will surprise you.

City staff is currently working with engineering firm Intuition & Logic and the Stormwater Committee to gather information from residents to develop a citywide Watershed Management Plan. The next open house is on Wednesday, May 17, from 6:00-7:30 p.m. at the Creve Coeur Government Center.

Stay safe and let us know what we can do for you.

Sari & David

Draft

WELCOME TO THE LITTLE ART GALLERY OF CREVE COEUR!

Little Art Galleries are a free art exchange. Our motto is **"take art, leave art, love art!"** You are encouraged to take home and keep any piece of art you like, or leave a creation of your own for someone else to take home. This Little Art Gallery is located near the entrance of Millennium Park (2 Barnes West Drive) and is brought to you by the Creve Coeur Arts Committee of the City of Creve Coeur.



WATERSHED MANAGEMENT PLAN OPEN HOUSE #2

Wednesday, May 17 • 6:00-7:30 p.m.
Creve Coeur Government Center

Stop by to learn more about the Watershed Management Plan, the scoring system and data collected so far.

www.crevecoeurmo.gov/stormwater

DOCUMENT SHRED EVENT

Saturday, July 22, 2023 • 9:00A–12:00P
Congregation Temple Israel • 1 Rabbi Alvan D Rubin Dr.



City of Creve Coeur Newsletter
the heart of community & commerce
June 2023

Creve Coeur Ice Arena Prepares for Refrigeration System Replacement

In order to maintain the ice arena's aging facility and replace the outdated refrigerant, the facility will require a significant investment in the near future. The ice arena currently uses a refrigerant (R-22) that is no longer produced, environmentally unfriendly and expensive to replace. The City recently commissioned a study to evaluate options for replacing the system, which has been in place since the 2003 renovation and expansion of the ice arena. The study recommended replacement of the existing system with a new ammonia-based refrigeration system. Ammonia is a widely used refrigeration system for ice arenas.



City staff will make a bid recommendation for this project to the City Council at the regular meeting on June 26. Construction is tentatively scheduled for summer and fall 2024. At that time, the ice rink will be closed for up to four weeks as the temporary ice plant system is installed. The temporary system will allow the ice rink to remain operational during the switchover project.

The City was recently awarded $525,000 in grant funding from the Municipal Park Grant Commission to switch over the ice arena's aging refrigeration system to a new system. The City has also dedicated $1.9 million in American Rescue Plan Act (ARPA) funds to the project. The total project cost is estimated as $2.4 million.

Tips for Managing Mosquitos in Your Neighborhood

Mosquitoes plague us with their whines and itchy bites, as well as with the serious and life-threatening diseases they transmit to humans and other animals.

St. Louis County Vector Control provides mosquito mitigation for the City of Creve Coeur on an as needed basis. Mosquito control is primarily targeted through larviciding areas of ponding water where mosquitoes like to lay their eggs. Sites found to contain larvae are treated with an appropriate EPA-registered larvicide. Mosquito spraying (also known as adulticiding) is used as a last resort.



The most effective way to control mosquitoes in your backyard is to eliminate breeding sites: standing water in clogged gutters, old tires, flowerpots, ditches, and so on. Do not allow water to accumulate in places such as flower pot saucers and pet dishes for more than two days. Change the water in bird baths at least once per week. Use a repellent, such as one containing DEET. Mosquitoes are not strong fliers, so breezy places and breezy weather conditions will have fewer mosquitoes.

Residents who are experiencing problems with mosquitoes may submit a service request at **www.crevecoeurmo.gov/servicerequest** or contact the Public Works Department at 314-872-2533 to report the problem area. City staff will investigate and follow up with St. Louis County Vector Control on appropriate mosquito mitigation measures.

This Issue

Page 2
Mayor's Column
Elected Officials
Sculpture on the Move
Page 3
Council Corner
Tappmeyer Homestead Events
Document Shred Event
Page 4
Pool Barrier Regulations
Council Actions
FY24 Budget Public Hearing
Page 5
Out-of-Town Residence Check
New Planning Signs
Planning Updates
Page 6
Recreation
Page 7
Police Department Graduation
Arbor Day Celebration
Page 8
City Calendar
Yard Waste Disposal Tips

Draft

Creve Coeur Lieutenant Graduates from Northwestern University's Staff and Command Program

The Creve Coeur Police Department is pleased to announce the recent graduation of Lieutenant Jonathan McIntosh from the School of Police Staff and Command (SPSC) at Northwestern University. Lieutenant Jonathan McIntosh has successfully completed the 10-week Staff and Command program held in Maryland Heights.

This program, which was implemented by the Center for Public Safety in 1983, has graduated over 30,000 students both nationally and internationally. Lieutenant Jonathan McIntosh was a student in SPSC Class #541 which accommodated a total of 40 students for the 10-week period.

The School of Police Staff and Command provides upper-level college instruction on topics including leadership, human resources, employee relations, organizational behavior, applied statistics, planning and policy development, budgeting and resource allocation.

The Center for Public Safety was established at Northwestern University in 1936 with the specific goal of expanding university-based education and training for the Law Enforcement Community. Since its inception, the Center has broadened its original objective and now provides a variety of courses and programs in the area of police training, management training, and executive development.



Lt. Jon McIntosh and Chief Jeffrey Hartman

Arbor Day Celebration

On Sunday, April 30, the community celebrated Arbor Day this year with a variety of fun, family-friendly activities in Millennium Park.



Visitors admired the display of art contest entries inside of Tappmeyer Homestead.



Babaloo Music & Fun got the party started with an interactive performance the kids loved!



Kids learned about rain gardens at the informational booth for the city's Watershed Management Plan.



Mayor Robert Hoffman and Horticulture, Ecology and Beautification Committee Vice Chair Claire Chosid demonstrated how to properly plant a tree.





Throughout the event, attendees of all ages visited the various educational booths hosted by the Wild Ones, Forest ReLeaf, St. Louis Audubon Society, and several City committees.

Draft

City of Creve Coeur Newsletter
the heart of community & commerce
July 2023

Creve Coeur Explores Sister City Partnership Proposal

The City of Creve Coeur is exploring a Sister City partnership with Cesson-Sévigné, a suburb of Rennes, France. The goal of the Sister City partnership is to build person-to-person connections, create global relationships and promote citizen diplomacy.

Mayor Robert Hoffman and Jean-Pierre Savignac, Mayor of Cesson-Sévigné, have met virtually to discuss the variety of ways both cities can engage their communities in a Sister City relationship, starting with a pen pal program between high school students. The City of Creve Coeur and the City of Cesson-Sévigné may explore additional ways to partner with each other in the future, such as with art and culture exchanges, student exchanges, or sports tournaments.

Creve Coeur and Cesson-Sévigné share many similarities, making it a prime candidate for a Sister City partnership. The cities have similar populations in a metropolitan area, offer many parks, green spaces and public art, are located near major universities, and are home to robust business and research institutions including agriculture and technology industries.

If you would like to get involved with the Sister City Program, please contact Kellie Henke, City Clerk, at **khenke@crevecoeurmo.gov** or 314-872-2517.

What is a sister city? A sister city is a long-term partnership between two communities in two countries. A relationship is officially recognized after the highest elected or appointed official from both communities sign off on an agreement to become sister cities.

Each sister city organization is independent and pursues the activities and thematic areas that are important to them and their community including municipal, business, trade, educational, and cultural exchanges and projects with their sister city. Sister city partnerships can include representatives from nonprofits, municipal governments, the private sector, and other civic organizations—as well as involvement from community volunteers.

City Council Considers Changes in Pension Benefits

The City Council has been reviewing several potential changes to the City's employee retirement plan for the last several months. These changes include:

- Modifying the City's Employee Retirement Plan (Legacy) Plan to include cost of living adjustments (COLA) for current retirees and terminated vested Plan participants. Retirees will receive an increase of 0.75% for each year of retirement since 2002, and an increase of 0.5% annually moving forward; the City has not provided a COLA to retirees since 2002.
- Freezing and transferring administration of the Legacy Plan to the Missouri Local Government Employees Retirement System (LAGERS). This will reduce the city's fiduciary liability associated with managing a city retirement plan, which was closed to new members in 2006.
- Moving the remaining 23 active employees from the Legacy Plan to LAGERS.
- Upgrading the current LAGERS LT-8(65) Plan to the LAGERS L6 Plan. This upgrade will provide a more competitive benefit level to facilitate employee retention and recruitment.

All of these changes and cost statements are included in the Notice of Proposed Pension Changes per Section 105.675 RSMO, available on the City's website. Legislation regarding these changes is tentatively scheduled to be considered by the City Council at its July 24 meeting.

For more information, contact Lori Obermoeller, Director of Finance, at **lobermoeller@crevecoeurmo.gov** or 314-872-2519.



This Issue

Page 2
Mayor's Column
Elected Officials
Coffee with the Mayor
Page 3
Council Corner
Venable Park Memorial
Page 4
Business Award Winners
Page 5
Planning Updates
Council Actions
Watershed Management Plan
Page 6
Recreation
Page 7
Heart to Heart Run Photos
Crime Prevention Events
Page 8
City Calendar
Dead Tree Removal
Holiday Trash Schedule

Draft

Planning Updates *as of June 9, 2023*

Planning and Zoning Commission Approves Amendment to Comprehensive Plan

On June 5, 2023, after several months of study, the Planning and Zoning Commission approved an amendment to the City's comprehensive plan. The amendments were necessary due to the sale and potential redevelopment of the former Bayer West campus, comprising of approximately 96 acres located on the west side of Lindbergh Boulevard, south of Olive Boulevard within the 575-acre 39 North AgTech District. The City's existing comprehensive plan, Creve Coeur 2030, was adopted by the Creve Coeur Planning and Zoning Commission in March 2017. The 39 North Master Plan was adopted in June 2017 as a component of the City's comprehensive plan. The approved amendments put forth new goals and objectives and provide recommendations for the future redevelopment of the former Bayer West campus. The development of a comprehensive plan and any amendments to the adopted plan are a function of the Planning and Zoning Commission. City Council approval is not required. To view the comprehensive plan amendments, please visit the Planning Division website and select the Comprehensive Plan section or visit **www.crevecoeurmo.gov/CompPlan**.

*Planning and Zoning Commission meetings are held on the first and third Monday of the month at 6:00 p.m. in the Council Chambers at the Creve Coeur Government Center, 300 N. New Ballas Rd. For more information, please visit **www.crevecoeurmo.gov/CurrentPlanning**.*

Council Actions *from May 22 and June 12, 2023*

- Ord. No. 5839 amending Section 635.020 of the Municipal Code to establish incentives to bury overhead utility lines
- Ord. No. 5840 approving an intergovernmental master agreement and related computer-aided dispatching services exhibit between the City of Creve Coeur and the REJIS Commission
- Resolution No. 1643 authorizing a contract with DEKA Service for replacement of the Dielmann East HVAC system for a total of $119,879
- Resolution No. 1644 authorizing an agreement for economic development services with the 39 North AgTech Innovation District
- Resolution No. 1645 authorizing an agreement with Kimco USA Inc. under a cooperative purchasing agreement for the purchase of a stainless-steel conveyor for $82,242.95
- Ord. No. 5841 amending the personnel policy and procedures manual of the City of Creve Coeur and amending related ordinances
- Resolution No. 1646 in support of reimbursement of First Bank for a portion of costs incurred for burial of electric transmission lines along Olive Boulevard at the First Bank location
- Resolution No. 1647 authorizing a contract with Two Alpha Contracting, LLC, for the Alden Lane Stormwater Improvements Project for $57,144
- Resolution No. 1648 endorsing Saint Louis County's Grant Program for the city's waste reduction efforts

Watershed Management Plan Underway

Over 280 stormwater issues have been reported or identified.

The City continues to work with engineering firm Intuition & Logic to develop a citywide Watershed Management Plan. Funded by the parks and stormwater sales tax, this plan will act as a guide for future stormwater infrastructure improvements.

What's been done so far? The data collection phase has been completed and included site visits to known stormwater issue sites, as well as public input. Residents were encouraged to complete the online questionnaire and mark their stormwater problems on the map-based reporting tool to help city staff identify areas of concern. Additionally, two open houses have been held so far, allowing residents to talk to staff face-to-face. At the most recent open house, attendees learned more about the plan's progress, including the channel condition scoring matrix and prioritization ranking that will be used to quantify the risks of identified stormwater issues. If you missed an open house, you can find the presentation materials on the City's website.

What's next? Using the data collected, stormwater issues will be ranked with the prioritization ranking system. Two additional open houses will be scheduled for fall and winter to provide residents opportunities to learn more about the plan's progress. Once the Watershed Management Plan is completed, some of the projects with the highest prioritization ranking system scores may be included in the Capital Improvement Program.

Watershed Management Plan Timeline

Spring 2023

- ☑ Open House #1
- ☑ Channel condition assessments
- ☑ Residents report known stormwater issues to the online map-based tool
- ☑ Open House #2

Summer 2023

- ☑ Data collection phase is complete
- ○ Identified stormwater issues are scored and ranked with the Prioritization Ranking System

Fall 2023

- ○ Open House #3
- ○ Begin implementation of budgeting software to help the City maximize benefits from stormwater funds

Winter 2023

- ○ Open House #4
- ○ Watershed Management Planning complete

Learn more at: **www.crevecoeurmo.gov/Stormwater**

Draft

City of Creve Coeur Newsletter
the heart of community & commerce
September 2023

Millennium Park Renovation Project Begins

Millennium Park, the city's busiest park located at 2 Barnes West Drive, is undergoing a significant renovation beginning after Labor Day weekend. Funded by the Parks and Stormwater Sales Tax, this $2.5 million project will feature a new playground that is 1.6 times larger than the existing playground area and a new splash pad that is 2.5 times larger than the existing splash pad area.

The new expanded playground will have a nature theme and include play structures for ages 2-5 and ages 5-12, as well as swings, a climbing structure, and inclusive and independent play features.

The nature theme will continue into the new expanded splash pad. The play area will include bubblers, arches and buckets—all enclosed by a fence. Additional renovations will include the construction of a bandstand for summer concerts and other events, site drainage improvements and the creation of a new entry plaza.

This project is phase 1 of a multi-phase project included in the Millennium Park Master Plan. The City Council adopted the Millennium Park Master Plan in 2021, following months of review and input from Creve Coeur residents, City staff and park stakeholders. The plan builds upon the general recommendations of the Creve Coeur Parks Master Plan adopted in 2019.

(Continued on page 5)



This Issue

Page 2
Mayor's Column
Elected Officials
Street Tree Planting Program
Page 3
Council Corner
Council Actions
Upcoming Town Halls
Page 4
Planning Updates
Holiday Trash Schedule
Page 5
Planning Updates Cont.
Watershed Management Plan
Millennium Park Cont.
Page 6
Recreation
Page 7
Crime Prevention Events
Deer Bow Hunting Season
Page 8
City Calendar
Grow Solar St. Louis

We Want to Hear From You! Submit Your Comments on the Venable Park Commemorative Artwork Proposals

The Venable Park Memorial Jury has selected three finalists to develop concept proposals for commemorative artwork to be installed in Dr. H. Phillip Venable Memorial Park. The three concept proposals will be available for public review and comment from **September 15 through October 15, 2023**.

During this time, informational display boards will be available at the Creve Coeur Government Center lobby between Monday–Friday, 8:00 a.m.–5:00 p.m., and at the Dielmann Recreation Complex any day of the week, 8:00 a.m.–5:00 p.m. The same information will also be available online for public review and comment.

In March, a call for artists was published seeking an artist or artist team to create a site-specific commemorative artwork for Venable Park that engages visitors in the Venable family's story and the legacy of racial residential segregation. The Venable Park Memorial Jury reviewed the submitted artist qualifications and narrowed down the selection to three finalists to develop concept proposals for public review.

Comments collected during the public review period will be shared with the Venable Park Memorial Jury, who will then make a final recommendation to the City Council. The final decision on which proposal to select will be made by the end of the calendar year, with installation anticipated for 2024.

For updates on this project, visit **www.crevecoeurmo.gov/Venable**.

DRAFT

Planning Updates *(Continued)* *as of August 15, 2023*

The following applications were submitted for review by the Planning and Zoning Commission with a public hearing scheduled for Monday, September 18, 2023. The first reading by City Council could occur on September 26 with possible approval on October 9th or at a later meeting upon receiving a recommendation by the Planning and Zoning Commission.

Text Amendment to the Zoning Regulations Regarding Short Term Rentals

Jason Jaggi, Director of Community Development, on behalf of the City of Creve Coeur, has submitted an application for text amendments to Section 405.450.C of the Zoning Ordinance which regulates short term rentals. The Court of Appeals for the 5th Circuit if the United States recently held that a residency requirement for owners of residential properties desiring to engage in short term rentals unconstitutionally interferes with interstate commerce. The City of Creve Coeur's short term rental ordinance presently contains such a restriction and now must be amended for conformity with federal law.

Text Amendment to the Zoning Regulations Regarding the Procedures for the Review of Conditional Use Permits

Jason Jaggi, Director of Community Development, on behalf of the City of Creve Coeur, has submitted an application for text amendments to Section 405.1070 of the Zoning Ordinance which provides the procedures for consideration of applications for Conditional Use Permits by the City Council. The amendments are proposed to refine the procedures regarding these types of applications, including additional procedures when Conditional Use Permits are disapproved by the City Council.

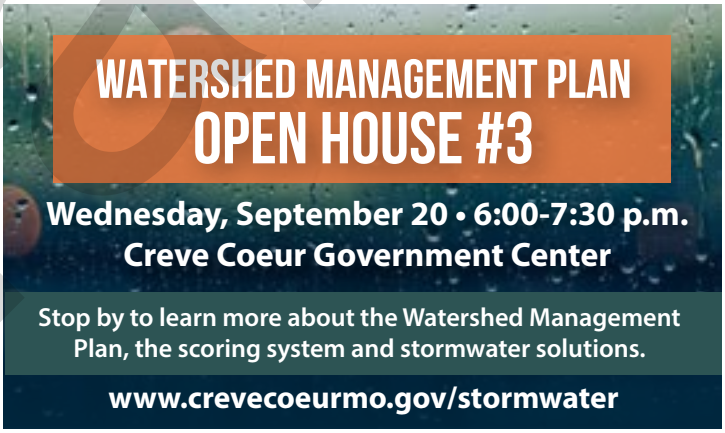
Planning and Zoning Commission meetings are held on the first and third Monday of the month at 6:00 p.m. in the Council Chambers at the Creve Coeur Government Center, 300 N. New Ballas Rd. For more information, please visit **www.crevecoeurmo.gov/currentplanning**.

You're Invited: Join Us for the Next Watershed Management Plan Open House

The City continues to work with engineering firm Intuition & Logic to develop a citywide Watershed Management Plan. Funded by the Parks and Stormwater Sales Tax, this plan will act as a guide for future stormwater infrastructure improvements.

Residents are invited to attend the next open house on Wednesday, September 20, 2023, from 6:00-7:30 p.m. in the Multipurpose Room of the Creve Coeur Government Center at 300 N. New Ballas Rd. At this meeting, residents will learn about possible solutions for stormwater issues identified in Phase I and have an opportunity to talk with the engineering team.

Once the Watershed Management Plan is completed, projects with high prioritization ranking system scores will be included in the Capital Improvement Program.



(Continued from page 1)

Millennium Park Renovation

Construction is scheduled to begin after Labor Day and completed in summer 2024. During construction, the playground, splash pad, pavilion, Tappmeyer Homestead, and west portion of the walking path in Millennium Park **will be closed**. The soccer fields, park restrooms, and walking path east of the construction area will remain open.

Updates on this project will be posted on the City's website at **www.crevecoeurmo.gov/PropC**.



This rendering of the new Millennium Park splash pad shows the features inside the play area. Additional planned features, such as fencing and seating, are not pictured here but will be included in the final design.

Draft

City of Creve Coeur Newsletter
the heart of community & commerce
November 2023

City Implements Stormwater Management Cost-Share Program

Homeowners looking for financial assistance to help resolve a stormwater issue may be eligible for funding through the City's new cost-share program.

The City Council recently approved the establishment of a new Stormwater Management Cost-Share Program for Creve Coeur residents. The goal of the program is to help neighborhoods and individual homeowners solve stormwater issues that are unlikely to be addressed by a City-funded project or receive funding from existing programs.

The program will have two categories: neighborhoods and individual homeowners. The neighborhoods category will help subdivisions maintain the capacity and performance of stormwater detention basins. The individual homeowner category will help individual homeowners maintain existing stormwater maintenance installation or install small projects like rain gardens or bioswales.

The program will be funded by the Parks and Stormwater Sales Tax. The first year of the program will be the pilot phase with project funding limited to $60,000. Through the program, neighborhoods and individual homeowners who have their applications approved will be reimbursed 50% of total cost, up to the maximum limits for each program category.

Funding Summary for Pilot Phase		
	Neighborhoods	Individual Homeowners
Total Funding	$40,000	$20,000
# Projects	2	5
Max. Funding Per Project	$20,000	$4,000

Applications for the pilot phase of the Stormwater Management Cost-Share Program are due Thursday, January 11, 2024. Submitted applications will be reviewed, scored and presented to the Stormwater Committee for consideration. The Stormwater Committee's recommended projects will be presented to the City Council for final approval. Learn more about the program and how to apply at **www.crevecoeurmo.gov/Stormwater**.

This Issue

Page 2
Mayor's Column
Elected Officials
Proclamation Presentation
Page 3
Council Corner
Winter Coat Drive
Upcoming Town Halls
Page 4
Parks & Stormwater Update
Citizen of the Year
Page 5
Sewer Lateral Repair Program
Council Actions
Page 6
Recreation
Planning Updates
Filing for 2024 Election
Page 7
Creve Coeur Night Out
Impact of Solar
Page 8
City Calendar
Holiday Trash Schedule
Leaf Collection Schedule

City Council Approves Reimbursement Increase for Sewer Lateral Repair Program

As of October 1, 2023, the sewer lateral reimbursement through the Sewer Lateral Repair Program has increased from 50% to 70%, with a maximum City contribution of $7,500.

The Sewer Lateral Fund was established in 1999 with voter approval, with the purpose of promoting public health and welfare by facilitating prompt repairs to private sanitary sewer lines. Through the program, residents can apply for partial reimbursement of their expenses for sewer lateral repairs. The program is funded by an annual $28 fee per single-family residence in Creve Coeur.

For the past several years, the number of reimbursement requests has leveled off, allowing revenues to exceed expenditures. As a result, the City has seen a significant increase in the sewer lateral fund balance. After reviewing the sewer lateral fund with City staff at a recent City Council meeting, the City Council voted to approve an increase in the reimbursement percentage to 70% so that more funds may be allocated toward reimbursing residents for costly sewer lateral repairs.

(Continued on pg. 5)

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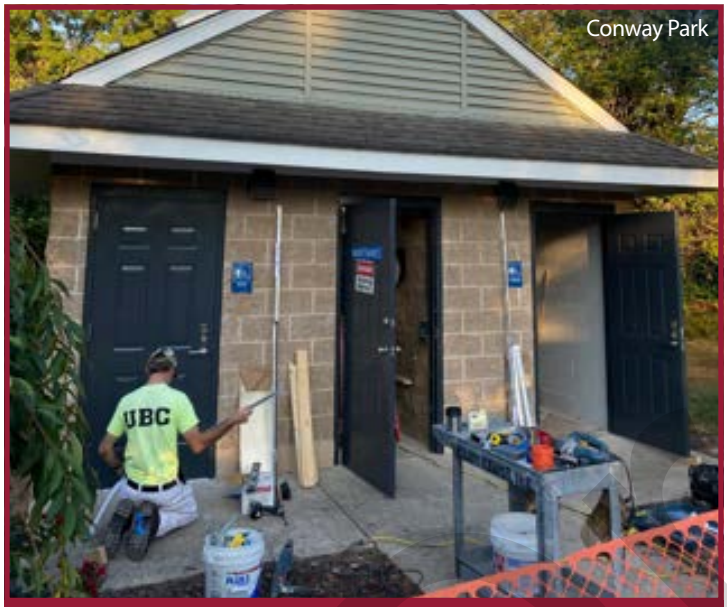
Update on Parks and Stormwater Improvement Projects Underway

The following projects are funded by the Parks and Stormwater Sales Tax. Learn more at **www.crevecoeurmo.gov/PropC**.


Millennium Park

Millennium Park Renovation Project

Since the $2.5 million renovation of Millennium Park began mid-September, the playground and splash pad have been removed and site grading is underway. Next steps will include the installation of storm and sanitary sewer lines, followed by laying the foundation for the expanded playground and splash pad. The restrooms and pavilion will get a fresh coat of paint before the winter weather arrives. The entire project will be completed during summer 2024.



Conway Park

Restroom Renovation at Conway Park and Malcolm Terrace Park

The restrooms at Conway Park and Malcolm Terrace Park are undergoing renovation to convert them from seasonal to year-round restrooms. Previously closed during winter, these restrooms will reopen in early November and will now remain open year round. Portable restrooms are available for park visitors in the meantime as the project wraps up.


Open House #3

Watershed Management Plan

The citywide Watershed Management Plan is entering the final stage of development following several months of public input, data collection and evaluation. Once completed, the plan will act as a guide for future stormwater infrastructure improvements.

The fourth and final open house will be Wednesday, December 13, where staff and consultant engineers will be present to discuss a summary of issues reported and the scores for each public stormwater issue. Stormwater issues with higher Prioritization Ranking Scores are more likely to have a publicly-funded solution. All materials presented during the open houses are also available on the City's website at **www.crevecoeurmo.gov/Stormwater**.



WATERSHED MANAGEMENT PLAN OPEN HOUSE #4
Wednesday, December 13, 2023 • 6:00–7:30 p.m.
Creve Coeur Government Center, 300 N. New Ballas Rd.

CITIZEN OF THE YEAR

Do you know someone who has contributed to the community in a way that goes above and beyond? The City is seeking nominations for the Citizen of the Year 2023 award, recognizing an individual who has made outstanding contributions to Creve Coeur.

Nominations Due November 8, 2023

Submit your nomination at: **www.crevecoeurmo.gov/CitizenOfTheYear**

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City of Creve Coeur Newsletter
the heart of community & commerce
December 2023

Rezoning Application Approved for Former Bayer West Campus Property

The City Council voted to approve an application to change the zoning of the former Bayer West campus to PMD-Planned Mixed Use Development District at the meeting on October 23, 2023. The Site Concept Plan and Phase One Site Development Plan for the development, referred to as Olia Village, were approved for the 96-acre property as Ordinance 5682.

In approving the project, the City Council made several changes to the proposed development standards, including restricting certain uses, limiting the height of parking garages, and requiring extra greenspace for portions of the development that are closest to existing residential areas. Prior to review by the City Council, the Planning and Zoning Commission held three public hearings for the application. The Planning and Zoning Commission recommended approval, subject to several conditions, at its meeting on Monday, October 2.

The developer has submitted a request for economic incentives to assist with certain extraordinary costs associated with the project. These incentives include property tax abatement, sales tax exemption on certain construction materials, and creation of Community Improvement and Transportation Development Districts. On November 13, Ordinance 5682 was amended to clarify that no site improvement permits would be issued until Council action is taken on the incentive request. City Council review of the requested incentives is projected to occur over the next several weeks.



This Issue

Page 2
Mayor's Column
Elected Officials
Subdivision Trustee Meeting
Page 3
Council Corner
Watershed Management Plan
Stormwater Cost-Share Program
Page 4
Capital Improvement Program
Planning Updates
Page 5
Business Awards Nominations
2024 Election Filing
Council Actions
Page 6
Recreation
Real vs. Artificial Christmas Trees
Page 7
Crime Prevention
Holiday Trash Schedule
Page 8
City Calendar
City Boundary Map
Leaf Collection Schedule

Creve Coeur Sergeant Receives 2023 Outstanding Crisis Intervention Team Officer Award

Sergeant Nicole Martin was recognized with the 2023 Outstanding Crisis Intervention Team (CIT) Officer Award by the St. Louis Area CIT Coordinating Council on November 9, 2023. This award recognizes an officer's exemplary dedication and service to those experiencing a mental health crisis.

This past spring, Creve Coeur officers responded to the intersection of Olive Boulevard and I-270 for a report of a suicidal person. Upon arrival, Sergeant Martin directed officers to shut down the interstate and began to calmly talk to the individual experiencing a mental health crisis. Sergeant Martin was eventually able to de-escalate the situation and encouraged the person to move away from the ledge, who was then transported to a hospital for psychological evaluation and treatment. Through her crisis intervention and de-escalation skills, Sergeant Martin was able to avert a potential tragedy.

The CIT program is a national model aimed to promote more effective interactions among law enforcement, mental health care providers, individuals with mental illnesses, their families and communities. As a result, those individuals in crisis will not be unnecessarily arrested because of behavior related to their illness but will instead be afforded access to emergency, inpatient and community-based mental health treatment services. Certified Crisis Intervention Team (CIT) officers are able to skillfully interact with persons in crisis using de-escalation techniques that increase the overall chances of a safe and effective outcome.

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WARD 1
Council Corner

Heather Silverman & Mark Manlin



Now that the year is winding down, it's a great opportunity to look back at 2023. One of the largest and most significant projects/proposals in the city's history, Olia Village, came to the city this year. This project, situated on what was previously the Bayer West campus, is on 96 acres at the corner of Olive Boulevard and Lindbergh Boulevard. As their marketing information states, "The bustling main street of Olia Village will feature a unique collage of boutique shops and popular retailers to appeal to a wide variety of shoppers in a pedestrian-friendly environment. A grocery store, multiple hotels, restaurants, as well as many more retailers will help make Olia Village a destination shopping experience."

To date, the City Council has approved the rezoning for this project and phase 1, which includes grading and the installation of the infrastructure. The developer has submitted a request to the city for various economic incentives to help cover the cost of certain extraordinary expenses associated with completing the project. These incentives include property tax abatement and sales tax exemption on construction materials, and creation of community improvement and transportation development districts. The city has engaged a consultant, PGAV, to assist in the review of this request. The City Council will be considering this issue in the coming weeks and months, but Olia Village is certain to make a big impression on our city and region in the coming years.

The City of Creve Coeur is also in the process of creating a park master plan to evaluate the needs and develop a plan for improvements in Dr. H. Phillip Venable Memorial Park, including commemorative artwork honoring Dr. Venable. The draft master plan and three concept proposals for the commemorative artwork were available for public review September 15 through October 15, 2023. Comments collected during the public review period were shared with the Venable Park Memorial Jury, who will then make a final recommendation to the City Council. The final decision on which proposal to select will be made by the end of the calendar year, with installation anticipated for 2025.

Stay warm and safe over the winter months!!

Heather & Mark

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WATERSHED MANAGEMENT PLAN
OPEN HOUSE #4

Wednesday, December 13, 2023
6:00-7:30 p.m.
Creve Coeur Government Center
300 N. New Ballas Rd.

Join us for the final open house where staff and consultant engineers will be present to discuss a summary of issues reported and the scores for each public stormwater issue.

www.crevecoeurmo.gov/stormwater



Residents and Neighborhoods Encouraged to Apply for the **Stormwater Management Cost-Share Program**

The new Stormwater Management Cost-Share Program was established to help neighborhoods and individual homeowners in Creve Coeur solve stormwater issues that are unlikely to be addressed by a City-funded project or receive funding from existing programs.

The program has two categories: neighborhoods and individual homeowners. The neighborhoods category will help subdivisions maintain the capacity and performance of stormwater detention basins. The individual homeowner category will help individual homeowners maintain existing stormwater maintenance installation or install small projects like rain gardens or bioswales. Through the program funded by the Parks and Stormwater Sales Tax, neighborhoods and individual homeowners who have their applications approved will be reimbursed 50% of total cost, up to the maximum limits for each program category.

Applications for the pilot phase of the Stormwater Management Cost-Share Program are due Thursday, January 11, 2024. Submitted applications will be reviewed, scored and presented to the Stormwater Committee for consideration. The Stormwater Committee's recommended projects will be presented to the City Council for final approval. Learn more about the program and how to apply at **www.crevecoeurmo.gov/Stormwater**.

City of Creve Coeur Newsletter
the heart of community & commerce
January 2024

City Honors Citizens of the Year 2023

The Creve Coeur City Council recognized Mike Karasick and Ted Armstrong as Citizens of the Year 2023 for their dedication and service to the community at the annual Appreciation Event on Tuesday, December 5, at the Creve Coeur Government Center. Mayor Robert Hoffman presented the award to Karasick and Armstrong during the event honoring all city volunteers and members of the city's boards, committees and commissions.

"Mike and Ted both have extensive experience in the financial sector and have brought invaluable expertise to the Employee Pension Fund Board," said Mayor Hoffman. "Under their leadership, the board has successfully tackled numerous complex issues and challenges during the past year."

During their tenure on the Employee Pension Fund Board, Karasick and Armstrong have been instrumental in taking actions to protect the city's fiduciary interests. These actions include lowering the interest earnings assumption for the Legacy Pension Plan from 7% to 6.75% in 2019—and then from 6.75% to 6% in 2022.

The Employee Pension Fund Board has also reviewed and analyzed a proposal to transition the City's Legacy Pension Plan to Missouri LAGERS, the statewide municipal retirement plan. This transition to LAGERS is nearing completion, resulting in reduced long-term fiduciary liability to the city, peace of mind to retirees and a more competitive benefit to attract and retain great employees.



Mayor Robert Hoffman (center) presents the 2023 Citizen of the Year Awards to Mike Karasick (left) and Ted Armstrong (right).

In addition, a one-time lump sum option was initiated by the Employee Pension Board for participants who had separated from service with a vested accrued benefit, thereby reducing the fund's liability.

Karasick was appointed to the Employee Pension Fund Board of Trustees in 2016 and has served as Chair since 2020. Armstrong currently serves as the Vice Chair of the Employee Pension Fund Board of Trustees; he has also served on the Finance Committee from 2007 to 2011 and was reappointed in 2019.

City Staff Explores Options for Lake School House

City staff is working on developing the Lake School Park Master Plan based on the recommendations of the Creve Coeur Parks Master Plan adopted in 2019. Located at 581 Coeur De Ville Road, Lake School Park is home to three tennis courts, a soccer field, and the historic Lake School House.

Lake School House is in need of structural, costly repairs and has been closed to the public for many years. These necessary repairs to restore the building with historically accurate alterations is estimated to cost $350,000. One option under consideration is to donate the building to a local historical group. The Chesterfield Historic and Landmark Preservation Committee and the City of Chesterfield have expressed interest in taking possession of the Lake School House and are currently looking into the possibility of relocating the building.

If no historical groups are interested, then City staff has recommended the Lake School House be demolished due to the high cost of repairs and ongoing maintenance. Demolition of the building would allow more space for parking to accommodate the possible expansion of the tennis and pickleball courts, in addition to a playground and walking trail.

This Issue

Page 2
Council Actions
Elected Officials
2024 Business Awards
Special Insert
Popular Annual Financial Report
Page 3
Pedestrian Safety
Recreation
Page 4
City Calendar
Mid-Winter Limb Chipping
Subdivision Trustee Meeting
Stormwater Cost-Share Program
Capital Improvement Program

Draft

City of
CREVE COEUR
300 N. New Ballas Road
Creve Coeur, MO 63141-7501

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January Calendar

1	City Offices Closed - New Year's Day	
2	Planning & Zoning Commission - Canceled	
4	Coffee with the Mayor	7:30A
8	City Council Work Session	6:00P
	City Council Meeting	7:00P
10	Stormwater Committee	4:45P
	Parks & Historic Preservation Committee	5:00P
	11400 Olde Cabin Rd.	
	Annual Subdivision Trustee Meeting	6:30P
15	City Offices Closed - Martin Luther King Jr. Day	
16	Economic Development Committee	8:00A
	Planning & Zoning Commission	6:00P
17	Horticulture, Ecology & Beautification Committee	4:30P
	Energy & Environment Committee	5:30P
18	Board of Adjustment	4:00P
22	City Council Work Session	6:00P
	City Council Meeting	7:00P
30	Finance Committee	4:00P
31	Arts Committee	6:00P

February Calendar

1	Coffee with the Mayor	7:30A
5	Planning & Zoning Commission	6:00P
12	City Council Work Session	6:00P
	City Council Meeting	7:00P
14	Parks & Historic Preservation Committee	5:00P
	11400 Olde Cabin Rd.	

Public meetings may be held either online or in person at the Creve Coeur Government Center, unless otherwise specified. Please check the meeting's agenda posted on the City's website for the most up-to-date information at: www.crevecoeurmo.gov

Mid-Winter Limb Chipping

Public Works crews will make one pass through the city to chip limbs placed at the curb beginning on **Monday, January 29.** This start date is weather dependent, and the program may be suspended at any time due to inclement weather. To guarantee pick up, please have your limbs at the curb by 7:00 a.m. the morning of January 29. To qualify, limbs must be:

- Placed by the curb (not in the street),
- At least 3 feet long, between 0.5 and 3 inches in diameter,
- Less than 300 cubic feet per pick up (e.g., 10' wide x 5' tall x 6' deep).
- Limbs only (no leaves, evergreens, vines, bamboo, root balls or thorns)

Sign up for updates at **www.crevecoeurmo.gov/SignUp**.

MARK YOUR CALENDAR:

JAN 10

Annual Subdivision Trustee Meeting

Subdivision trustees are invited to attend the annual subdivision trustee meeting hosted by the City of Creve Coeur on Wednesday, January 10, 2024, at 6:30 p.m. at Creve Coeur Government Center, 300 N. New Ballas Rd. This meeting is open to the public.

JAN 11

Applications Due for Stormwater Management Cost-Share Program

Individual homeowners and neighborhoods looking for financial assistance to help resolve a stormwater issue may be eligible for funding through the City's new cost-share program. Applications are due Thursday, January 11, 2024. Learn more at **www.crevecoeurmo.gov/Stormwater**.

JAN 26

Submit Your Project Idea for the Capital Improvement Program

The City maintains a five-year outlook of its capital improvements through the Capital Improvement Program (CIP) and is seeking input from the community on future projects. Submitted project ideas are due by Friday, January 26, 2024. Learn more at www.crevecoeurmo.gov/CIP.

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Open House #1

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Watershed Management Plan

1

Watershed Master Planning

- City Planning Effort
- Previous Efforts
  - 1999 Stormwater Evaluation Report
  - 2010 Stormwater Questionnaire
  - 2012 Stormwater Master Plan Update
- Overall Goals
  - Updated Master Plan
  - Integrate Public Input
  - Develop Prioritization Ranking Methodology



2

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Watershed Management Plan
Goals & Objectives

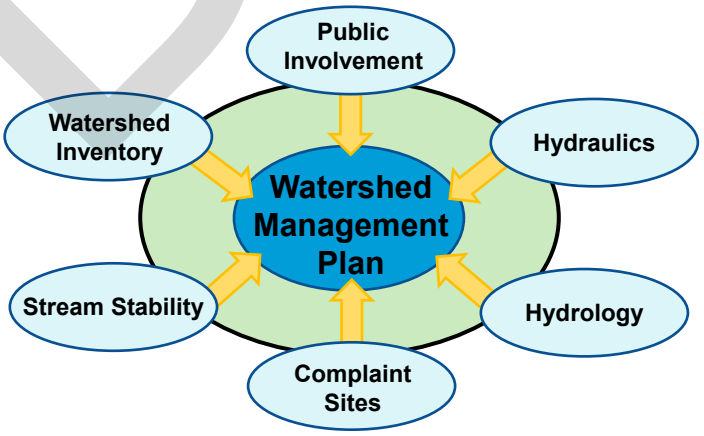
Goal - Develop planning tools and capital improvement projects to address water quality, stream stability, and stormwater infrastructure and drainage issues.

Study Objectives

- Maintain a proactive public involvement process
- Identify needed Capital Improvement Projects (CIPs) for stormwater issues
- Quantify existing hydrologic and hydraulic data
- Map stream corridors
- Evaluate complaint sites
- Develop prioritization ranking method

3

Watershed Management Plan
Major Study Components

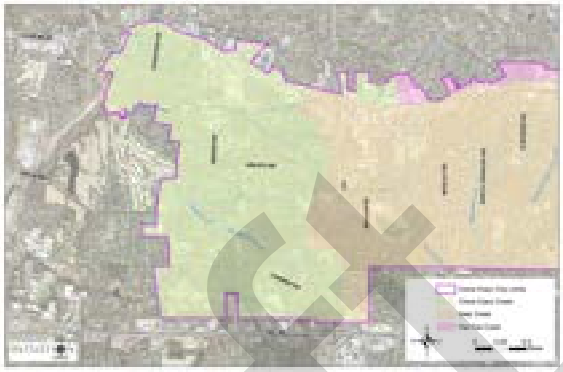


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Creve Coeur Creek Watershed Study Area

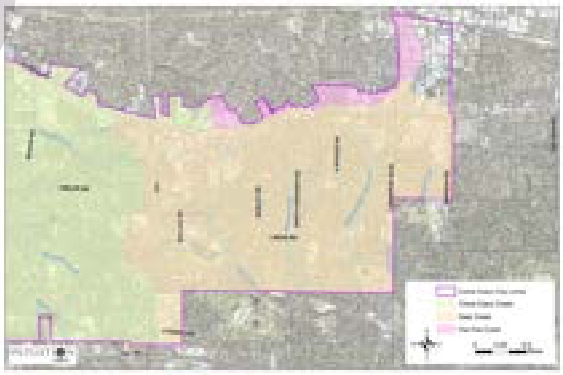
- 27 Square Miles Watershed
- 4.4 Square Miles Study Area



5

Deer Creek Watershed Study Area

- 37.7 Square Miles Watershed
- 5.1 Square Miles Study Area

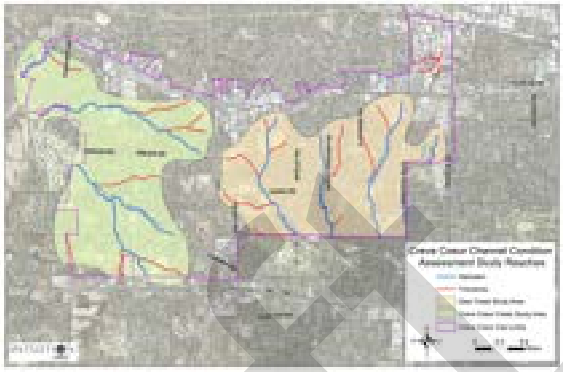


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Channel Condition Assessment

- 9.5 Square Miles Study Area
- Over 20 miles of stream field observation
  - Creve Coeur Creek
  - Fernridge Creek
  - Smith Creek
  - Rosenfelder Creek
  - Deer Creek
  - Windrush Creek
  - Monsanto-Sunswept Creek
  - Pebble Creek
  - Denny Creek



7

Complaint Site Investigation

- Based on past complaints received by the City and online survey complaints
- Field visits
  - Verify problem
  - Determine scope
  - Develop potential solutions



- Not every complaint investigated may turn into a project.

8

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Prioritization Ranking Methodology

- Problem Categories
  - Stream Flooding and Erosion
  - Storm Sewer/Overland Flow Flooding, Erosion, and Condition
- Solution Categories
  - Regional
  - Environmental/Water Quality
  - Ease of Implementation
  - Recreational/Educational Use
- Benefit/Cost Ratio



9

Watershed Management Plan

Project Websites

https://www.crevecoeurmo.gov/stormwater



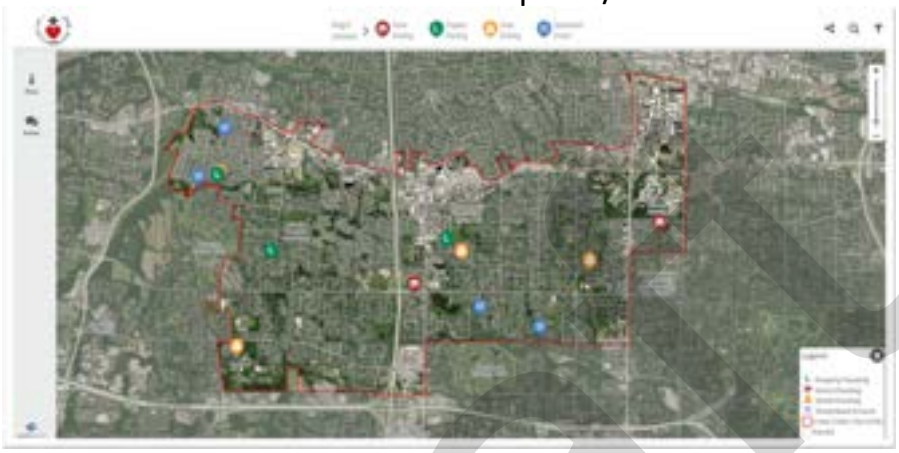
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Watershed Management Plan

Project Websites

https://ampm.mysocialpinpoint.com/creve-coeur-storm-water-master-plan#/



11

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Creve Coeur Stormwater Master Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DATE:

PROJECT LOCATION:

PROJECT DESCRIPTION:

PROBLEM CATEGORY		Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM								
1.1. FLOODING	1.1.1. Structure Flooding							
	Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
	Basement (1 lot per structure) *Address:*	200		100		15		
	Attached Garage (1 lot per structure) *Address:*	100		50		8		
	Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
	Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
	Yard Flooding (1 per lot) *Address:*	10		5		0		
	1.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
	Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
	Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
	Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
	Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
1.2. EROSION	1.2.1. Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
	Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
	Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
	Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
	1.2.2. No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
	1.2.3. Threatening Roadway (2 lots per intersection impacted and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
	Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
	Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
	Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
	1.2.4. Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
		20		10		5		

Creve Coeur Stormwater Master Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DATE:

PROJECT LOCATION:

PROJECT DESCRIPTION:

PROBLEM CATEGORY, CONT.		Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW								
2.1. FLOODING	2.1.1. Structure Flooding							
	Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
	Basement (1 lot per structure)* *Address:*	250		200		50		
	Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
	* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
	Attached Garage (1 lot per structure) *Address:*	100		75		25		
	Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
	Yard Flooding (1 per lot) *Address:*	10		6		0		
	2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
	Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
	Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
	Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
	Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
	Ponding (per ponding area) *Address:*	No. Ponds:		Points/pond:	5			
2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		Points/lot:	20			
2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		Points/lot:	10			
2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
	Points for Condition							
		TOTAL PROBLEM POINTS						

Creve Coeur Stormwater Master Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DATE:

PROJECT LOCATION:

PROJECT DESCRIPTION:

SOLUTION CATEGORY						
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:		Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:		Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units		Points per Unit		
	Bioswales		PER 100 LF	10		
	Forebays		AC	200		
	Wet Ponds		AC	100		
	Wetlands		AC	50		
	Biostabilization of banks (per bank)		PER 100 LF	10		
	Riffle Pool Complex		PER 100 LF	10		
	4.2. Eliminates combined sewer (per project)		EA	100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA	10		
	4.4 Preserves natural resource areas	No. Units		Points per Unit		
	Lakes, Wetlands, etc.		AC	30		
	Natural Corridor (min. 25ft width)		PER 100 LF	10		
	4.5 Conservation Easement		EA	20		
5.0 MISC.	5.1. Ease of Implementation (No. of Easements)	0-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements					
	5.2. Recreational/Educational	Yes = 100 No = 0 pts				
				TOTAL SOLUTION POINTS		
				TOTAL BENEFIT POINTS		

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS=

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS=

Place "X" in one box below:

☐ **Creve Coeur Project**
☐ **Project by Others**

DRAFT

Channel Condition Scoring Matrix
(Adapted from Johnson et al 1999)

	Stability Indicator	Good (1)	Fair (2)	Poor (3)
1	Bank soil texture and coherence per Uniform Soil Classification using the visual-manual procedures (ASTM D 2488-00)	Cohesive materials, clay (CL), silty clay (CL-ML), massive limestone, continuous concrete, clay loam (ML-CL), silty clay loam (ML-CL), thinly bed limestone	Sandy clay (SC), sandy loam (SM), fractured thinly bedded limestone	Non-cohesive materials, shale in bank, (SM), (SP), (SW), (GC), (GM), (GP), (GW)
2	Average bank slope angle as measured where obvious breaks in slope create a top of bank and toe of slope	Slopes ≤ 2H:1V on one or occasionally both banks	Slopes from 2H:1V to1.7H:1V common on one or both banks	Slopes steeper than to1.7H:1V on one or both banks
3	Average bank height as measured from the lowest point in the channel cross section to the top of bank	Less than 6 feet	Greater than 6 and less than 12 feet	Greater than 12 feet
4	Vegetative bank protection	Wide to medium band (≥ the width of the riparian buffer) of woody vegetation with 70-90% plant density and cover. Majority are hardwood, deciduous trees with well-developed understory layer, minimal root exposure	Narrow band (>20 feet up to the buffer width) of woody vegetation, poor species diversity, 50-70% plant density, most vegetation on top of bank and not extending onto bank slope, some trees leaning over bank, root exposure common	Thin or no band (20 feet or less) of woody vegetation, poor health, monoculture, many trees leaning over bank, extensive root exposure, turf grass to edge of bank
5	Bank cutting	Little to some evident along channel bends and at prominent constrictions, some raw banks up to 4 foot	Significant and frequent. Cut banks 4 feet high. Root mat overhangs common.	Almost continuous cut banks, some over 4 feet high. Undercut trees with sod-rootmat overhangs common. Bank failures frequent
6	Mass wasting (wedge or slide slope failure)	Little to some evidence of slight or infrequent mass wasting, past events healed over with vegetation. Channel width relatively uniform with only slight scalloping	Evidence of frequent and significant mass wasting events. Indications that higher flows aggravated undercutting and bank wasting. Channel width irregular with bank scalloping evident	Frequent and extensive mass wasting evident. Tension cracks, massive undercutting and bank slumping are considerable. Highly irregular channel width.
7	Bar development	Bar width is less than ¼ of the channel width at low flow, well-consolidated, vegetated and composed of coarse bed material to slight recent growth of bar as indicated by absence of vegetation on part of bar	Bar widths ¼ to ½ of channel width at low flow with freshly deposited sand to small cobbles with sparse vegetation	Bar widths greater than ½ the channel width at low flow. Bars are composed of extensive deposits of finer bed material with little vegetation
8	Debris jam potential	Slight – small amounts of debris in channel. Small jams could form	Moderate – noticeable debris of all sizes present	Significant – moderate to heavy accumulations of debris apparent
9	Obstructions, flow deflectors and sediment traps	Negligible to few or small obstructions present causing secondary currents and minor bank and bottom erosion but no major influence on meander bend	Moderately frequent and occasionally unstable obstructions, noticeable erosion of channel. Considerable sediment accumulation behind obstructions	Frequent and unstable causing continual shift of sediment and flow
10	Channel bed material consolidation and armoring	Massive competent to thinly bed limestone, continuous concrete, hard clay, moderately consolidated with some overlapping. Assorted sizes of particles, tightly packed and overlapped, possibly imbricated. Small % of particles < 4mm	Shale in bed, soft silty clay, little consolidation of particles, no apparent overlap, moderate % of particles < 4mm	Silt, weathered, thinly bedded, fractured shale, high slaking potential, very poorly consolidated, high % of material < 4mm
11	Percentage of channel cross section constriction	< 25% of average cross section area	26-50% of average cross section area	> 50% of average cross section area
12	Sediment movement	Little to no loose sediment	Scour and/or deposition, some loose sediment	Near continuous scour and/or deposition and/or loose sediment
13	Sinuosity (ratio of the channel length to valley length) channel length = longitudinal profile survey length	1.2 ≤ Sinuosity ≤ 1.4	1.1<Sinuosity <1.2	Sinuosity <1.1 or >1.4

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STREAM DOMINANT PROCESS



Stable

- Channel is healthy
- Bed and bank materials balanced with erosive forces
- Permanent woody vegetation near the water line
- ***No erosion hazards***



Incision

- Down cutting liberates sediment
- Trees falling and sliding into channel
- Bank failures begin
- ***Significant erosion hazards in this phase***



Widening

- Widespread bank failures
- Significant sediment loads generated
- ***Significant erosion hazard in this phase***



Planform Adjustment

- Active bank scour opposite channel bar formations
- Bank failures at the outside of bends
- Alternating pattern of scour and deposition
- ***Significant erosion hazard in this phase***

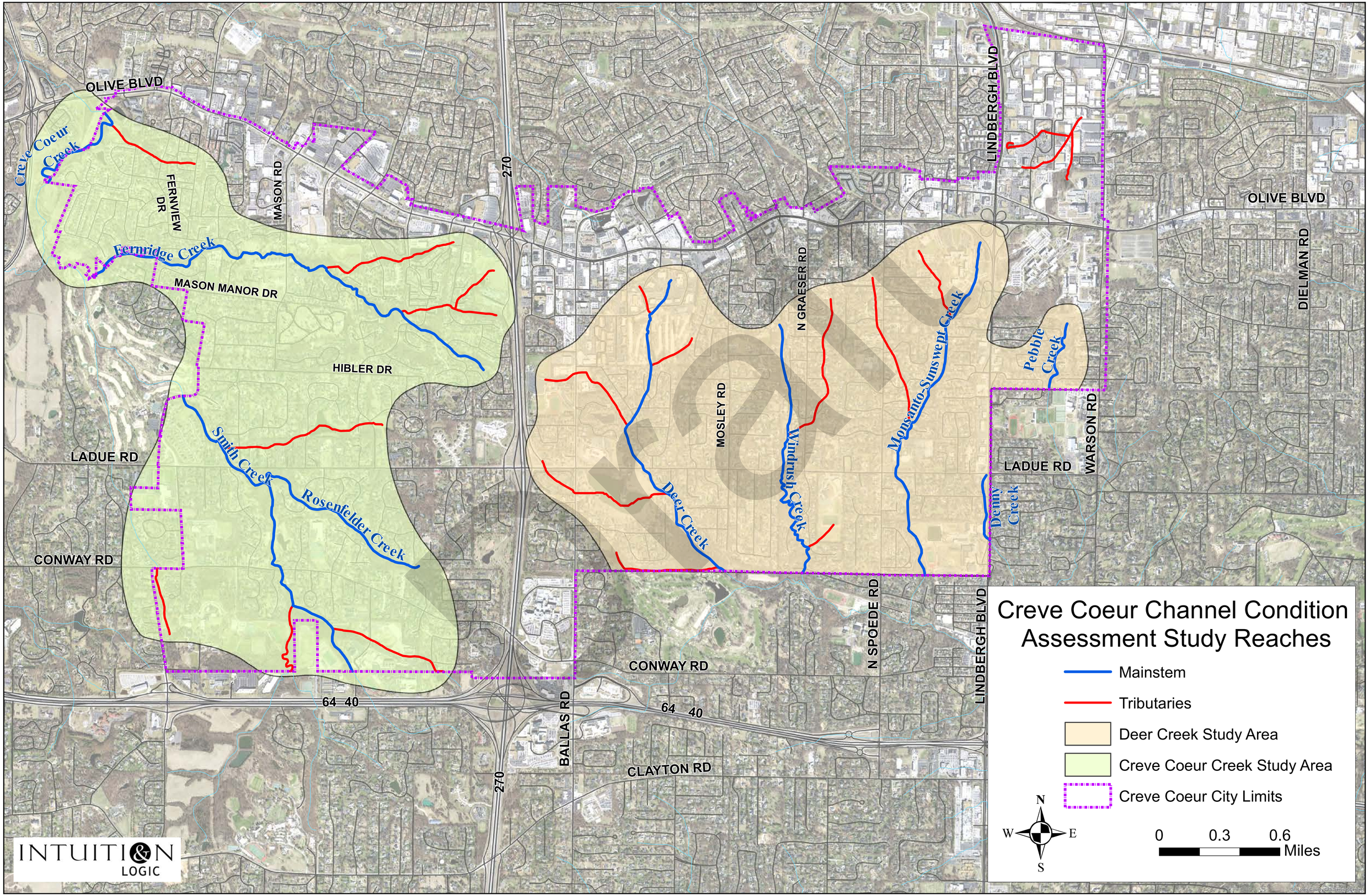
Managed Swale



Early Stage Incision



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OLIVE BLVD
Creve Coeur Creek
FERNVIEW DR
MASON RD
270
LINDBERGH BLVD
OLIVE BLVD
DIELMAN RD
Fernridge Creek
MASON MANOR DR
HIBLER DR
N GRAESER RD
MOSLEY RD
Monsanto-Sunswept Creek
Pebble Creek
WARSON RD
LADUE RD
Smith Creek
Rosenfelder Creek
Deer Creek
Windrush Creek
Denny Creek
CONWAY RD
N SPOEDE RD
LINDBERGH BLVD
64 40
BALLAS RD
CONWAY RD
64 40
CLAYTON RD
270
INTUITION & LOGIC
Creve Coeur Channel Condition Assessment Study Reaches
Mainstem
Tributaries
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur City Limits
N
W
E
S
0
0.3
0.6
Miles
St. Louis County GIS Service Center

OLIVE BLVD
Creve Coeur Creek
FERNVIEW DR
MASON RD
270
Fernridge Creek
MASON MANOR DR
HIBLER DR
MOSLEY RD
N GRAESER RD
LINDBERGH BLVD
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Rosenfelder Creek
Deer Creek
Windrush Creek
Denny Creek
WARSON RD
CONWAY RD
N SPOEDE RD
LINDBERGH BLVD
64 40
BALLAS RD
CONWAY RD
64 40
CLAYTON RD
270

Legend

- Home Flooding
- Property Flooding
- Street Flooding
- Streambank Erosion
- Streams
- Parcel Limits
- Creve Coeur City Limits

N
W E
S

0 0.25 0.5 Miles

INTUITION & LOGIC

LOW

STORMWATER ISSUE SPECTRUM

HIGH

NUISANCE DRAINAGE ISSUES

MINOR YARD FLOODING

MAJOR YARD FLOODING

STREET FLOODING

STRUCTURAL FLOODING & FAILURES



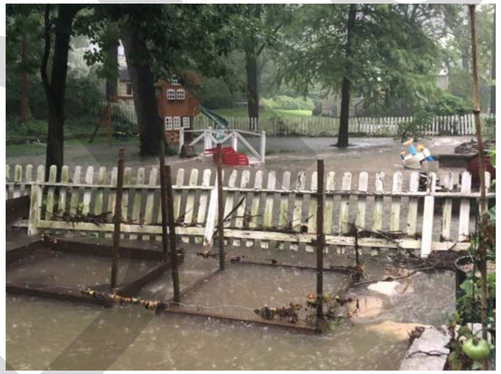


























Open House #2

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DEPARTMENT OF PUBLIC WORKS
STAFF MEMORANDUM

DATE: May 22, 2023

TO: Jim Heines, Director of Public Works

FROM: Dione Garson, P.E., Civil Engineer

SUBJECT: Open House #2
Watershed Management Plan

The second Watershed Management Open House was held on Wednesday, May 17, 2023 from 6:00 PM to 7:30 PM. Approximately fifteen residents attended the event.

Presentation
Tim Dean from Institution & Logic (I&L) started the night with a Power Point presentation that gave residents an overview of Watershed Management Plan that included information about:

- The planning process and study components
- The plan's goals and objectives
- The channel condition assessment findings
- Stormwater issues data collection
- Analysis of problem areas
- Prioritization ranking methodology
- How projects will be identified for possible inclusion in the Capital Improvement Program (CIP)
- Systematic data trends
    - As expected, creeks with late stage incision had a more reported issues such as fallen trees
    - Widening and planform reaches have a higher likelihood of reports of yard retreat

Questions from residents
After the presentations, residents asked the following questions:

Question:
If a stormwater issue was identified in one of the City's past watershed planning efforts, how will that impact the ranking for the 2023 Watershed Management Plan?

Answer:
The ranking system strives to identify projects that will be the best use of City funds.

When a stormwater issue was first identified is not considered in scoring or ranking in the current Watershed Management Plan's Prioritization Ranking System. Scoring considers severity (risk), frequency, costs, and benefits.

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The scoring system is intended to be applied consistently over time. Individual scores reflect the evaluation of the stormwater issue at a given point in time. Over time, conditions may change. If the severity, frequency, costs, or benefits associated with a stormwater issue change over time then the score will be reevaluated. Similarly, ranking depends on the scores of all identified projects at any given time. As scores change so may the ranking of potential CIP projects.

The City is establishing criteria for distinguishing and defining the difference between public and private projects. This criteria will be used to determine which public stormwater issues will be included for consideration as possible projects for the CIP.

Question:
What is an example of a severe problem that would score highly and likely become a City-funded project?

Answer:
Examples of stormwater problems that will have a high risk component and therefore have a higher likelihood of having a City-funded solution:

- Habitable first floor flooding
- Basement flooding
- Emergency access roadway flooding

Examples of stormwater problems that will have a low risk component and are less likely to have a City-funded solution:

- Yard flooding
- Less than six inches of water on a residential street
- Flooding on miscellaneous structures such as tennis courts, patios, pools, and decks.

In addition to cost and benefit, the scoring also considers frequency. Stormwater issues with higher frequency have greater scores than the same type of issues that occur less frequency.

Question:
If a stormwater problem is determined to be a private project and/or the prioritization ranking is low and the project is unlikely to receive City funding, what help will be available to homeowners?

Answer:
The Stormwater Committee is working on developing a grant cost-share program. Currently, the committee is in the process of determining what types of projects may be eligible for funding and the scoring criteria that will be used evaluate and rank applications.

If the proposed cost-share program is approved by City Council, the program would reimburse residents a percentage of the cost of the design and construction of private stormwater management improvements.

Not all applications will be funded. If the total sum of requests for reimbursement is greater than the available funds, only the highest scoring projects will receive funding. The Stormwater Committee will score applications and approve funding.

The City's reimbursement cost-sharing program will likely have a structure similar to the Deer Creek Watershed Alliance Rainscaping Program, the City of Ladue's Cost Share Program, and Town & Country's Cost Share Program.

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Information stations
Residents could explore at their own pace stations staffed by engineers from Intuition & Logic and EDM. Stations educated and informed residents about:

- Stormwater issues identified in the data collection process (mapped)
- Project areas identified by I&L (mapped). Potential problem areas are groupings of individual problem areas that are:
    - Similar in nature
    - Likely to have a related solution
    - Benefit from coincident construction access
- Prioritization ranking scoring
- Spectrum of stormwater issues from most severe to nuisance
- Channel condition assessment scoring matrix
- Channel condition assessment scores (mapped)
- Stream dominant processes educational board showing the difference between stable, incision, widening, and planform adjustment

Next steps
Residents will be able to report stormwater issues to the Social PinPoint site until the end of 2023. Only issues reported before June 1, 2023 will be included in the Watershed Management Plan report. Issues reported after June 1, 2023 will be investigated by City staff, given a prioritization ranking score, and then considered for possible inclusion in the next CIP.

The second phase of the Watershed Management Plan will focus on the prioritization of improvements with the goal to develop the CIP masterplan. Work will include:

- Ranking identified stormwater issues
- Developing CIP project quantities and costs
- Generating CIP project sheets
- Creating the Capital Program & Project Management (PPM) System (AM:PM is the subcontractor with the expertise in this area)
- Conduct a review of City ordinances

Open House #3
The third open house will be scheduled in late August or September. At this event, residents will have an opportunity to:

- Review project locations and offer feedback
- Learn about the prioritization ranking scores

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Watershed Management Plan

1

Watershed Master Planning

- City Planning Effort
- Previous Efforts
  - 1999 Stormwater Evaluation Report
  - 2010 Stormwater Questionnaire
  - 2012 Stormwater Master Plan Update
- Overall Goals
  - Updated Master Plan
  - Integrate Public Input
  - Develop Prioritization Ranking Methodology



2

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Watershed Management Plan
Goals & Objectives

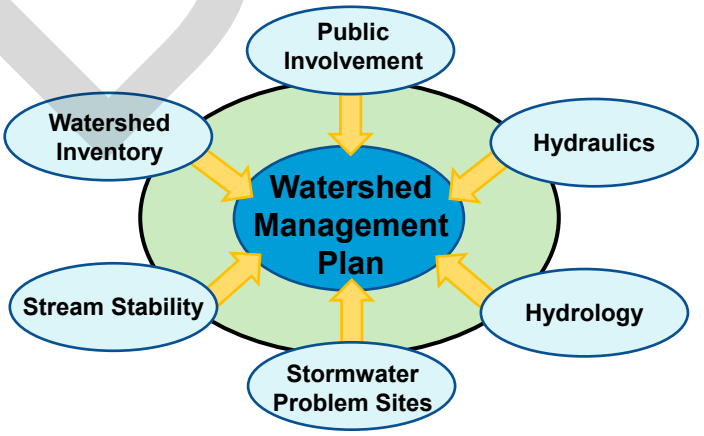
Goal - Develop planning tools and capital improvement projects to address water quality, stream stability, and stormwater infrastructure and drainage issues.

Study Objectives

- Maintain a proactive public involvement process
- Identify needed Capital Improvement Projects (CIPs) for stormwater issues
- Quantify existing hydrologic and hydraulic data
- Map stream corridors
- Evaluate stormwater problem sites
- Develop prioritization ranking method
- Develop software to assist the City in planning and budgeting for projects to maximize benefit of City residents throughout the five-year planning timeframes of the Capital Improvement Program (CIP)

3

Watershed Management Plan
Major Study Components

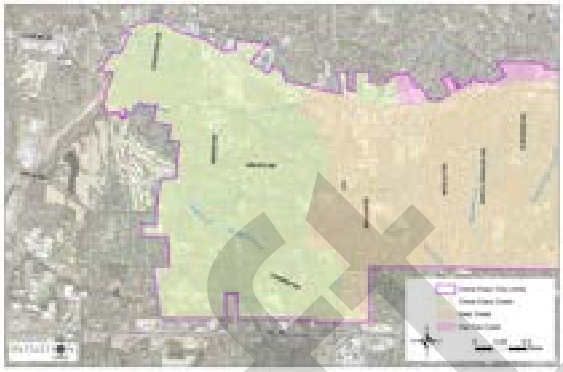


4

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Creve Coeur Creek Watershed Study Area

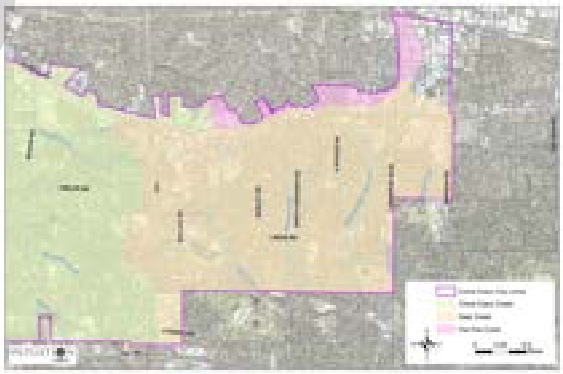
- 27 Square Miles Watershed
- 4.4 Square Miles Channel Condition Assessment Study Area



5

Deer Creek Watershed Study Area

- 37.7 Square Miles Watershed
- 5.1 Square Miles Channel Condition Assessment Study Area

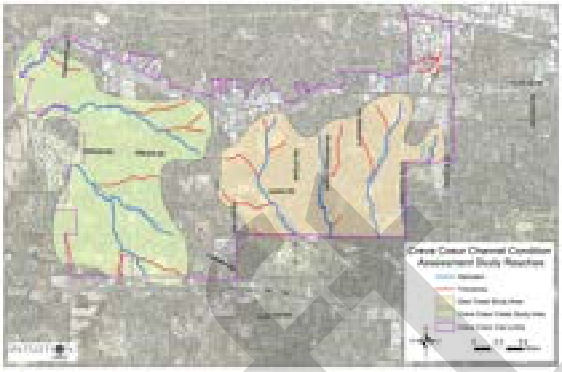


6

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Channel Condition Assessment

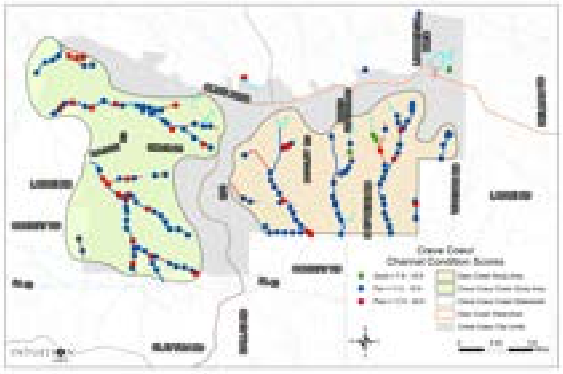
- 9.5 Square Miles Study Area
- Over 20 miles of stream field observation
  - Creve Coeur Creek
  - Fernridge Creek
  - Smith Creek
  - Rosenfelder Creek
  - Deer Creek
  - Windrush Creek
  - Monsanto-Sunswept Creek
  - Pebble Creek
  - Denny Creek



7

Channel Condition Assessment Results

- 159 Total Channel Condition Data Points Taken
- 77 Points in the Deer Creek Watershed
  - Average Channel Condition Score of 14.1 (Fair)
- 82 Points in the Creve Coeur Creek Watershed
  - Average Channel Condition Score of 15.5 (Fair)

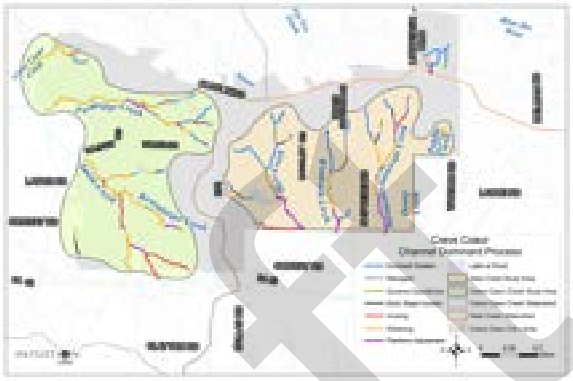


8

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Channel Dominant Process Results

- Deer Creek Watershed
  - 29 Mainstem Reaches
  - 32 Tributary Reaches
  - Mainly Widening with some Planform Adjustment at the downstream limits
- Creve Coeur Creek Watershed
  - 24 Mainstem Reaches
  - 25 Tributary Reaches
  - Mainly Widening



9

Stormwater Problem Site Investigation

- Based on past problems received by the City and online survey responses
- Thank you for all for participating in the online survey!! A total of 172 responses were received
  - 23 Home Flooding
  - 73 Property Flooding
  - 52 Streambank Erosion
  - 24 Street Flooding
- Stormwater problem sites and field identified issues were grouped into 129 potential problem areas



10

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Prioritization Ranking Methodology

- Problem Solved Categories
  - Stream Flooding and Erosion
  - Storm Sewer/Overland Flow Flooding, Erosion, and Condition
- Solution Benefit Categories
  - Regional
  - Environmental/Water Quality
  - Ease of Implementation
  - Recreational/Educational Use
- Benefit/Cost Ratio



11

Prioritization Ranking System & Guidance Document

Based on MSD's ranking system

I&L made slight modifications for Creve Coeur including:

- Changing the lengths on item 1.2.3 to allow more points for critical road sections
- Expanding item 1.2.3 to more directly account for erosion threats to roadways and bridges
- Added 1.2.4 for threats to Natural Resources
- Modified 2.4 from Age to condition of existing system (pipes, culverts, etc.)
- Added 4.4 for preservation of Natural Resources
- Added 4.5 for Conservation Easements

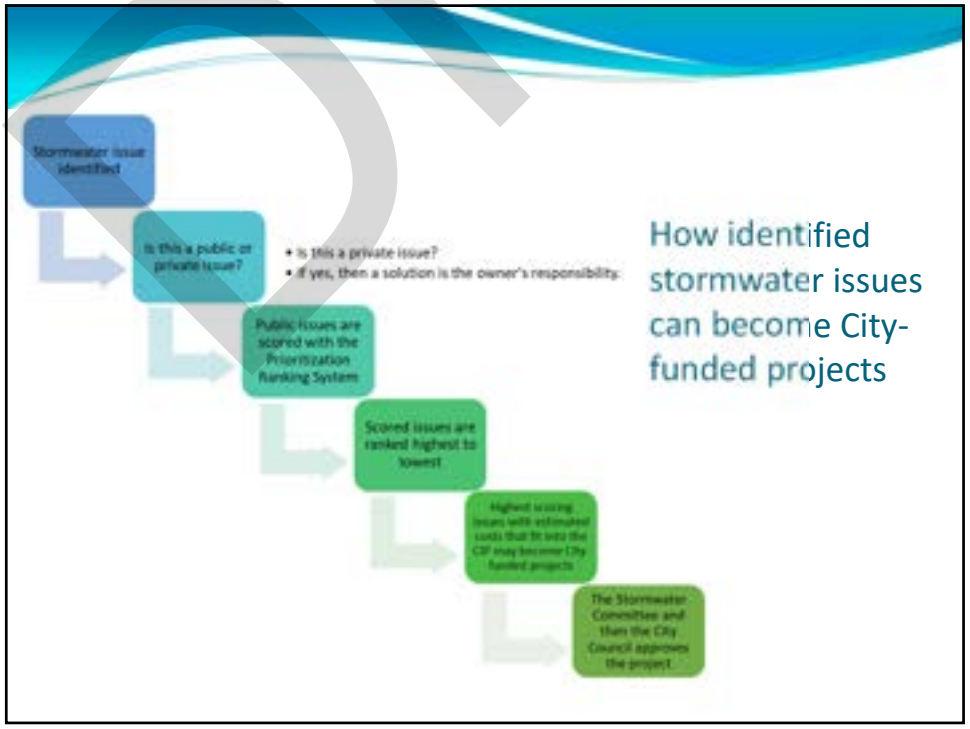
12

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Potential Projects

- City Project Criteria will determine what problem areas are eligible.
- Not every City identified issue will result in a City-funded project
- After the Watershed Management Plan is completed in January, new stormwater issues may develop. The City will then rank these newly identified issues using the same methodology, and these new issues may score higher than previously identified issues.
- Projects need to be approved by the Stormwater Committee and the City Council before receiving City funding. Being at the top of the ranking list alone does not guarantee the issue will be addressed by a City-funded solution.

13



14

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Criteria for public funding consideration

If an identified issue checks one or more of the boxes, then the project might will be scored with the Prioritization Ranking System.

Is a stormwater issue public or private?

If one or more boxes are checked, then a publicly-funded solution might be considered

Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue?	☐ Check for yes
Does the stormwater issue threaten public or private structures?	☐ Check for yes
Does the stormwater issue threaten public or private roadways?	☐ Check for yes
Does the stormwater issue threaten public infrastructure or publicly-funded improvements?	☐ Check for yes
Is the issue caused by an undersized stormwater conveyance infrastructure?	☐ Check for yes
Does the proposed project address regional or systematic channel instability?	☐ Check for yes
Would a solution protect water quality or natural resources?	☐ Check for yes
Was the issue caused by altered upstream conditions?	☐ Check for yes
Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations?	☐ Check for yes
Was the issue caused by inadequate maintenance of a public system?	☐ Check for yes
Will the project improve public safety?	☐ Check for yes
Has the stormwater issue been identified as a monitor project?	☐ Check for yes
Is the focus of the project utility work?	☐ Check for yes
Does the work focus on privately-owned infrastructure?	☐ Check for yes

15

Next Steps

- Complete Development of Project Criteria.
- Evaluate potential problem areas using the City's criteria for stormwater project eligibility.
- For each project, conceptual designs will be developed and the projects will be ranked using the prioritization ranking methodology.
- CIP planning software will be developed to assist the City in future planning and budgeting for projects.
- Open House #3 will present the identified Capital Improvement Projects! We hope you join us!

16

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Watershed Management Plan

Project Websites

https://www.crevecoeurmo.gov/stormwater

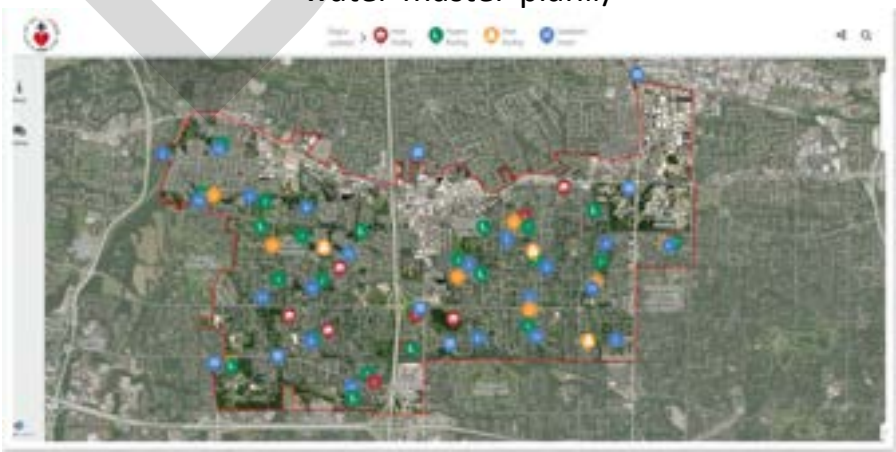


17

Watershed Management Plan

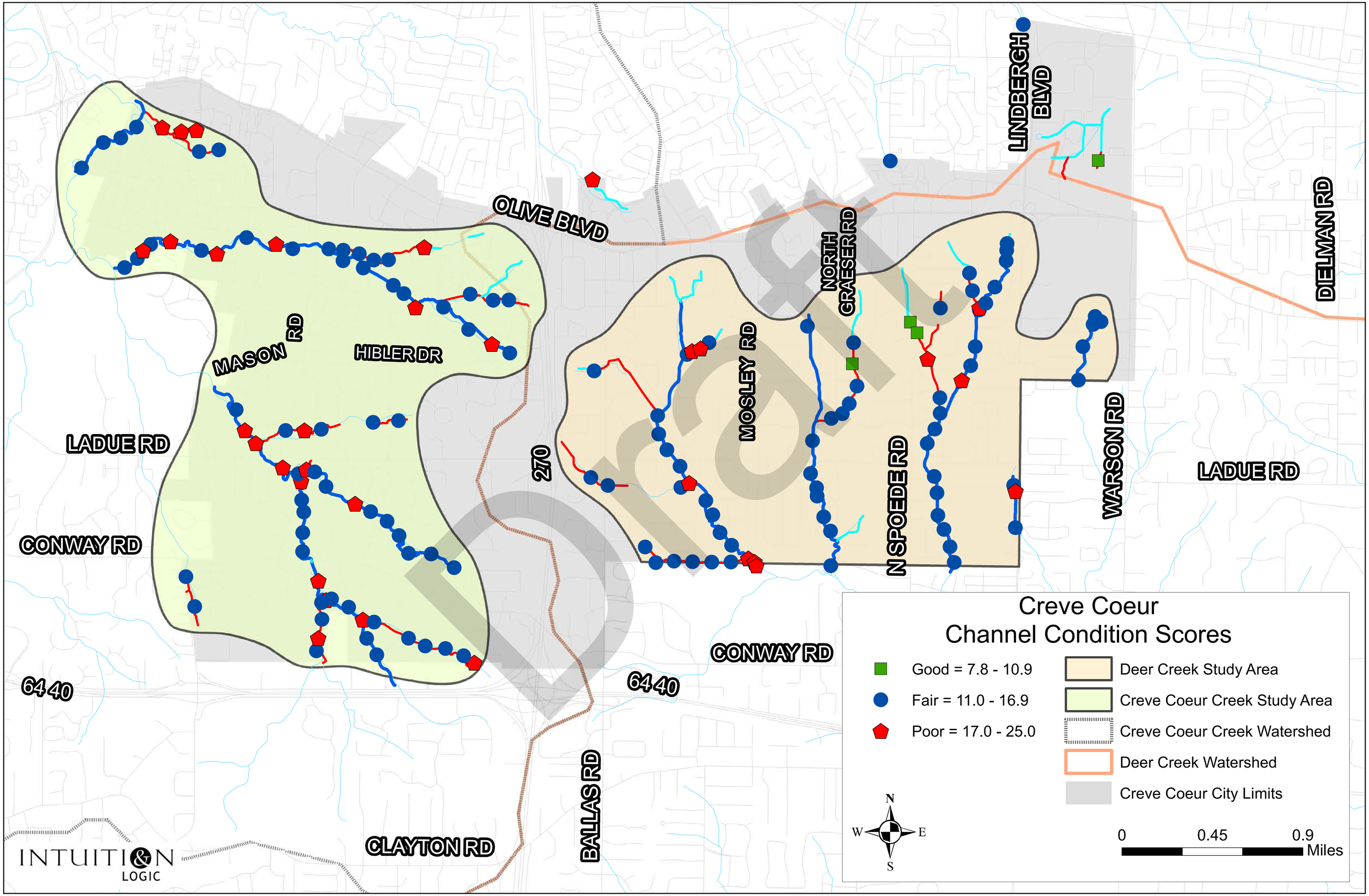
Project Websites

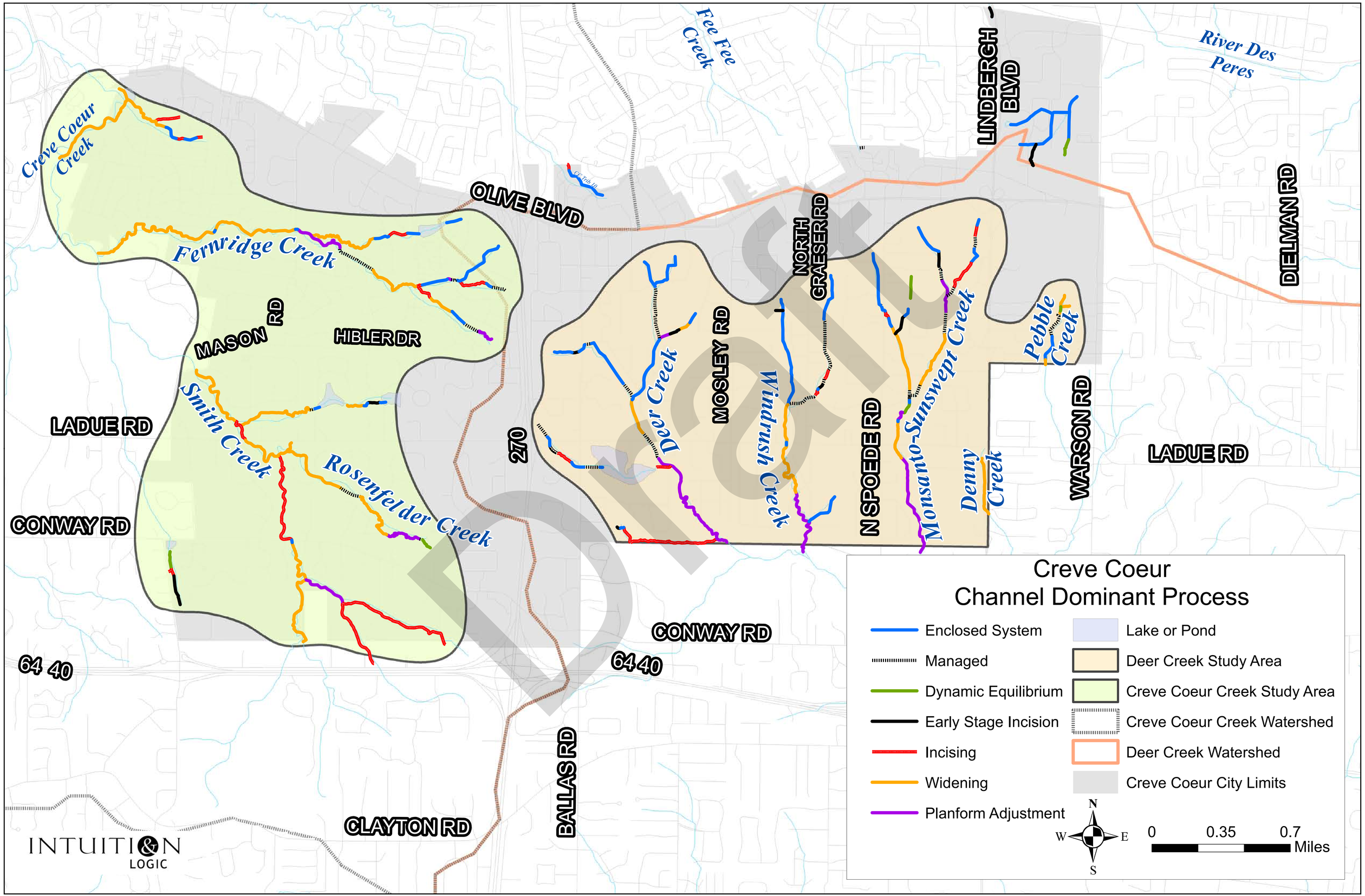
https://ampm.mysocialpinpoint.com/creve-coeur-storm-water-master-plan#/

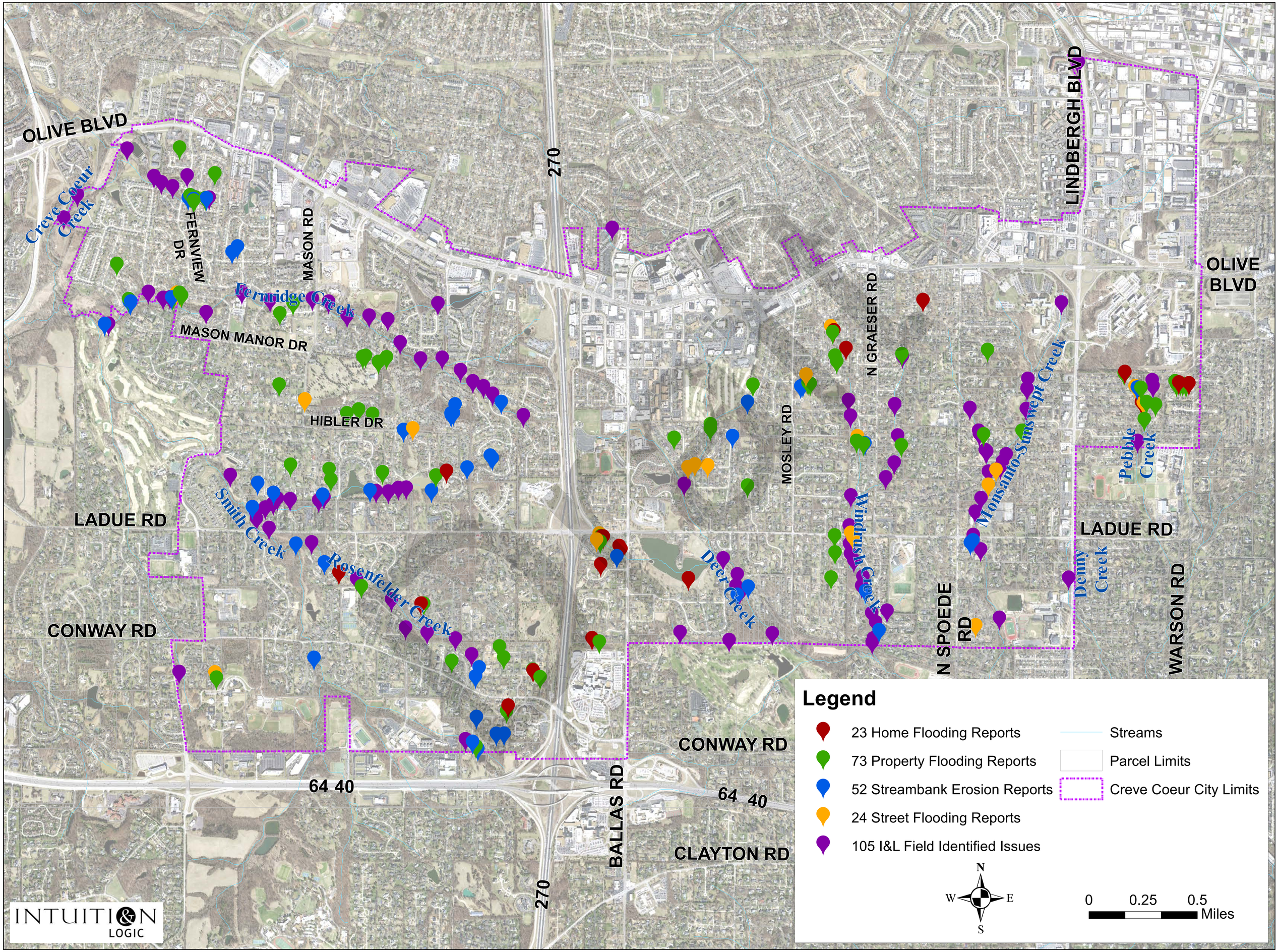


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LINDBERGH BLVD
DIELMAN RD
OLIVE BLVD
NORTH CRAESER RD
MOSLEY RD
N SPOEDE RD
WARSON RD
LADUE RD
MASON RD
HIBLER DR
LADUE RD
CONWAY RD
270
64 40
CONWAY RD
64 40
BALLAS RD
CLAYTON RD
Creve Coeur
Channel Condition Scores
Good = 7.8 - 10.9
Fair = 11.0 - 16.9
Poor = 17.0 - 25.0
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur Creek Watershed
Deer Creek Watershed
Creve Coeur City Limits
N
W
E
S
0
0.45
0.9
Miles
INTUITION & LOGIC


Creve Coeur Creek
Fernridge Creek
Smith Creek
Rosenfelder Creek
Fee Fee Creek
River Des Peres
Deer Creek
Windtrush Creek
Monsanto-Sunswept Creek
Denny Creek
Pebble Creek
OLIVE BLVD
LINDBERGH BLVD
DIELMAN RD
NORTH GRAESER RD
MOSLEY RD
N SPOEDE RD
WARSON RD
MASON RD
HIBLER DR
LADUE RD
CONWAY RD
CLAYTON RD
BALLAS RD
270
64 40
INTUITION LOGIC
Creve Coeur
Channel Dominant Process
Enclosed System
Managed
Dynamic Equilibrium
Early Stage Incision
Incising
Widening
Planform Adjustment
Lake or Pond
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur Creek Watershed
Deer Creek Watershed
Creve Coeur City Limits
N
W
E
S
0
0.35
0.7
Miles


OLIVE BLVD
270
LINDBERGH BLVD
OLIVE BLVD
Creve Coeur Creek
FERNVIEW DR
MASON RD
Ferntridge Creek
MASON MANOR DR
HIBLER DR
MOSLEY RD
N GRAESER RD
Monsanto-Sunswept Creek
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WARSON RD
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64 40
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CLAYTON RD
270
INTUITION & LOGIC
Legend
23 Home Flooding Reports
73 Property Flooding Reports
52 Streambank Erosion Reports
24 Street Flooding Reports
105 I&L Field Identified Issues
Streams
Parcel Limits
Creve Coeur City Limits
N
W
E
S
0
0.25
0.5
Miles

OLIVE BLVD
LINDBERGH BLVD
OLIVE BLVD
270
Creve Coeur Creek
FERNVIEW DR
MASON RD
Fernridge Creek
MASON MANOR DR
HIBLER DR
MOSLEY RD
N GRAESER RD
Monsanto-Sunswept Creek
Pebble Creek
LADUE RD
LADUE RD
Smith Creek
Rosenfelder Creek
Deer Creek
Wimbrush Creek
N SPOEDE RD
Denny Creek
WARSON RD
CONWAY RD
CONWAY RD
64 40
64 40
BALLAS RD
CLAYTON RD
270

Legend

- Home Flooding
- Property Flooding
- Streambank Erosion
- Street Flooding
- I&L Field Identified Issues
- Streams
- Parcel Limits
- Problem Areas
- Creve Coeur City Limits

N
W E
S

0 0.25 0.5 Miles

INTUITION & LOGIC

Open House #3

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Draft





Project CC-27: Fabius Dr

Problem Description: In an upper tributary to Fernridge Creek between Oak Hollow Dr and Woodline Dr several issues were reported as follows. Erosion along the ROB threatening the stability of the road. Bank failure at the outlet of a storm pipe. Sediment and debris accumulating in the channel around 2324 Fabius St S. The affected parcels are private.

Recommendation: Stabilize the ROB along Oak Hollow Dr and install grade controls at the minor tributary confluences.



Conceptual Layout of CC-27

Project CC-26: Mason Forest

Problem description: Yard flooding at 412534 Mason Forest Drive and 4416 Hilltop Woods Court due to poor grading and adjacent runoff. Street and structural flooding at 352822 Mason Forest Drive which may be partially due to flow bypassing inlets.

Recommendation: Construct swales to the rear of 412534 and install a manhole with a skirted cover over the existing storm sewer. Open all four sides of inlet 1795-B1320. Modify either inlets as needed to minimize bypass and increase inlet capacity.

Special Considerations: Hydraulic analysis of storm sewer system is needed that accounts for potential bypass at inlets and inlet capacity. Analysis should include culvert at Hilton Road and the open channel on 412414 Mason Forest Drive. Initial analysis shows adequate capacity of 36" pipe at 412414.



Conceptual Layout of CC-26

Project CC-25: Auriumdale

Problem description: Street flooding on North Mason Road at Auriumdale Drive.

Recommendation: Construct shoulder and swale on both sides of the road from North Walling Drive to Mason Forest Drive. Construct a 6' wide paved trail from north hallway to North Walling Drive from existing side. 1795-D1120. Overlay North Mason Road with a better defined cross slope and possibly adjust the street profile.

Special Considerations: Be the east side south of Auriumdale Drive grading may limit limits sit over the existing storm sewer. North of Auriumdale Drive on the east side a curb maybe needed due to the adjacent sidewalk and the elevation difference between the street pavement and the sidewalk.





Conceptual Layout of CC-25

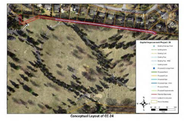
Project CC-24: Hiram Cemetery

Problem description: Houses on the south side of Hilltop Dr lower than the cemetery to the south. The majority of the cemetery has a swale and berm along the property line and being a cemetery has little stormwater area.

Recommendation: Construct or reconstruct the berm and swale along the north property line. Swale should be reinforced with Ironsand SharpTurn. Construct berm around existing tree 1795-D0D0.

Special Considerations: Recommendation is for surface flow, for groundwater and wet spots does after rains an underdrain system is recommended for those property owners that have this issue.





Conceptual Layout of CC-24

Project CC-23: Royal Valley Dr

Problem Description: In Fernridge Creek between Royal Valley Dr and Hilltop Ct several issues were observed as follows. Erosion along the ROB in the rear yard of lot 12192 Royal Valley Dr. Perched outfall and erosion threatening residential fence in the rear lot of 12186 Royal Valley Dr. Knickpoint and pipe section failure at the upstream end of the channel. The affected parcels are private.

Recommendation: Install a step-grade control and stilling basin in the rear lot of 12192 Royal Valley Dr. Install a step grade control and stilling basin at the upstream end of the channel.





Conceptual Layout of CC-23

Project CC-22: Blackhoofs Ct and Coventry Manor Ln

Problem Description: In an upper tributary to Fernridge Creek erosion was observed along the ROB in the rear lot of 12295 Coventry Manor Ln. Undermining of 12295 Coventry Manor Lane was also reported. The affected parcels are private.

Recommendation: Stabilize the ROB and rock armor the pipe outfall.





Conceptual Layout of CC-22

Project CC-21: Fabius Dr

Problem Description: In Fernridge Creek between Cross Creek Dr and Royal Valley Dr several issues were observed as follows. Erosion along the ROB threatening the stability of downstream of Cross Creek Dr. Knickpoint caused by an exposed utility line. Knickpoint at the upstream outfall. The affected parcels are private.

Recommendation: Install step grade controls at the knickpoints downstream of Cross Creek Dr and a stilling basin at the outfall. Install a step grade control at the exposed utility line. Install a step grade control and stilling basin at the upstream outfall.







Conceptual Layout of CC-21

Project CC-20: Quosseer Ln

Problem Description: In Fernridge Creek between Quosseer Ln and Prairie Forest Dr several issues were observed as follows. Erosion along the ROB in the rear of Stratford Ridge Ct. Exposed utility pipe, failing grade control riprap, and an undermined abutment at the 66in Quosseer Ln driveway crossing. Undermining of the 108in storm sewer with an exposed manhole at 12380 Whitworth Terrace Ct. Knickpoint and perched concrete outflow downstream of 12481 Meridian Green Pl. Knickpoint and perched concrete outflow southeast of 12380 Whitworth Terrace Ct. Knickpoint along tributary south of Prairie Forest Dr and a scour hole at the outfall. The affected parcels are private.

Recommendation: Install a grade control at the knickpoint behind 12402 Stratford Ridge Ct. Stabilize the ROB and install a retaining wall at the rear lot line to protect the manhole and utility pedestal and rock armor the outfall swale. Install a step grade control at the knickpoint southeast of 12380 Whitworth Terrace Ct. Install a step grade control and stilling basin downstream of the knickpoint. Install a step grade control and stilling basin at the tributary knickpoint and outfall.







Conceptual Layout of CC-20

Project CC-19: 12426 Stratford Ridge Ct

Problem Description: In Fernridge Creek behind 12426 Stratford Ridge Ct failing rock mat and grouted riprap was observed. The affected parcels are private.

Recommendation: Install a grade control and stilling basin.





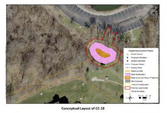
Conceptual Layout of CC-19

Project CC-18: 12344 Mulberry Tree Ct

Problem Description: In a tributary to Fernridge Creek south of Lighthouse Way 6in bare perched outfalls and a 24in perched concrete outfall were observed. The affected parcels are private.

Recommendation: Install a step-grade control and stilling basin.





Conceptual Layout of CC-18





Project CC-17: Fabius Dr

Problem Description: Erosion along a wooded tributary to Fernridge Creek between Fabius Dr and Hilltop Dr. The affected parcels are private.

Recommendation: Install a step-pool system.













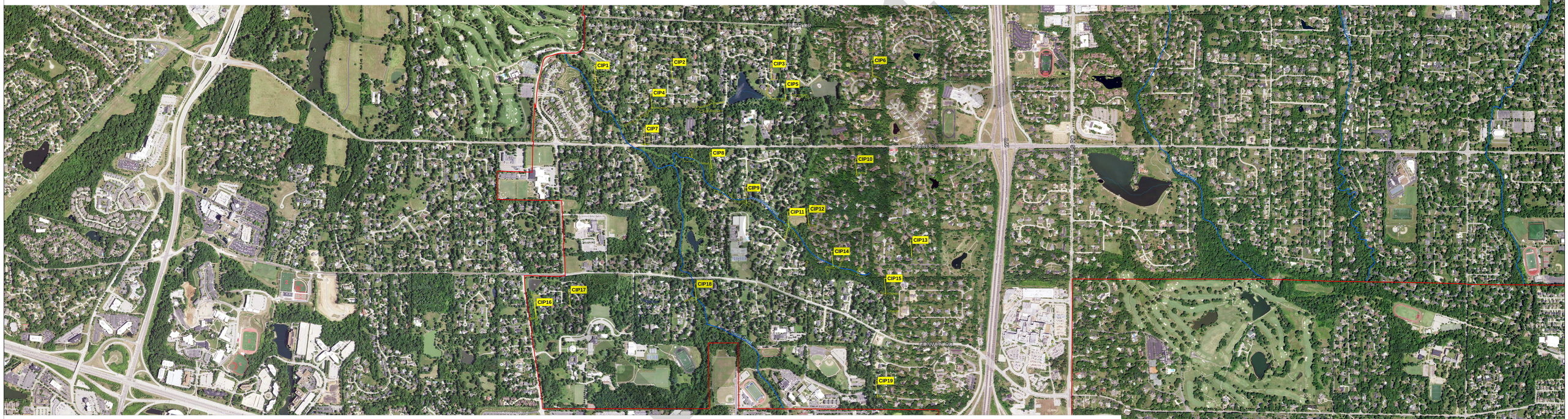














Project CC-12: 212 Bellington Lane

Problem description: Yard and basement flooding at 4252 Bellington Lane due to flow from uphill properties.

Recommendation: Construct a berm and swale with underdrain to intercept the flow from the south and direct it to the street to the west. Swap out an existing inlet grate with a dome inlet grate to minimize clogging.


Pre-berm

Project CC-13: 12225 Ladue Woods Drive

Problem description: Yard flooding at 912229 Ladue Woods Drive.

Recommendation: Construct berm to intercept flow from hillside that is flowing towards the east end of the house.

Special Considerations: Need additional information from Metro Owner not home during field visit. Yard drains to main flow path through property that is blocked by the pool.


Yard drain uphill of pool

Project CC-14: Conway Holmes Cir

Problem Description: In Rosenbilder Creek between Conway Holmes Cir and Hewlett Ct multiple issues were observed as follows. There is a perched pipe with fallen segments located east of 12341 Conway Holmes Cir. Additionally, a concrete bridge with a pedestrian walkway is located in the tributary north of 300 Bel Arbor Ln. There is erosion along an outside bend threatening embankment to the rear. Most of 291 Bellington Ln, 12288 Conway Holmes Cir, and 297 Hewlett Ct. The existing bridge abutments, a brickpaved downstream of the bridge, and erosion along the RDB upstream of the bridge, is also a concern for owners of 288 Hewlett Ct. The affected parcels are private.


Obstacle band erosion


Pedestrian bridge

Recommendation: Install a grade control at the perched pipe. Stabilize the LDB at the tributary confluence and install a grade control at the footprint. Stabilize the eroding RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a stop grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two stop grade controls at the knickpoint southwest of 296 Hewlett Ct.

Project CC-15: Williamsburg

Problem Description: There is bank erosion along Rosenbilder Creek threatening the fence and pool in rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. The affected parcels are private.


Threatened fence and pool

Recommendation: Stabilize the LDB along the rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. Re-shape and stabilize the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.

Project CC-16: 12 Broadview Farm Rd

Problem Description: Several knickpoints were observed along a tributary to Green Creek which runs parallel to 1 Mount Rd. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Rd. The affected parcel is private.


Bank mass wasting

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Rd.

Project CC-17: Broadview Farms Subdivision

Problem descriptions: Water ponds along the northeast side of the roadway in front of 1 Broadview Farms Rd. At the intersection of Broadview Farms Rd and Broadview Farms Rd, there is a 24" CMP that drains the area. A curb inlet (CI) uphill has significant business potential and the curb along the east side of Broadview Farms Rd. has the potential to be overtopped allowing additional flow to this area.


Ponding at end of driveway

Recommendation: Re-line water ponding along the curb, mill and overlay the street and adjust the pavement slope to drain across the street. At #1 Broadview Farms Rd., reset the CI top and reconstruct the curb along Broadview Farms Rd.

Special Considerations: Concrete should be considered in lieu of asphalt to provide a more precise grade and cross slope on the street to ensure proper drainage. The hydraulic grade line for the storm sewer downstream of the FES needs to be checked to ensure water isn't backing up into this area. A check valve in the adjacent MH4 on the pipe should be considered.

Project CC-18: 435 Twin Creek Rd

Problem Description: In Sarah Creek behind 438 Twin Creek Rd erosion was reported along the LDB. The affected parcels are private.


LDB Erosion

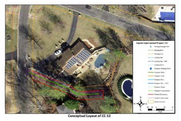
Recommendation: Stabilize the LDB.

Project CC-19: Ratson Estates

Problem Description: In the unnamed tributary along Ratson Estates sewer along the RDB is threatening the driveway of 24 Ratson Estates. The affected parcels are private.


Sewer Daylighting Driveway

Recommendation: Stabilize the RDB and install a grade control.


Conceptual Layout of CC-12


Conceptual Layout of CC-13


Conceptual Layout of CC-14


Conceptual Layout of CC-15


Conceptual Layout of CC-16


Conceptual Layout of CC-17


Conceptual Layout of CC-18


Conceptual Layout of CC-19

Project CC-1: Conway Downs Dr

Problem Description: In Rosenbilder Creek between Conway Downs Dr and Hewlett Ct multiple issues were observed as follows. There is a perched pipe with fallen segments located east of 12341 Conway Holmes Cir. Additionally, a concrete bridge with a pedestrian walkway is located in the tributary north of 300 Bel Arbor Ln. There is erosion along an outside bend threatening embankment to the rear. Most of 291 Bellington Ln, 12288 Conway Holmes Cir, and 297 Hewlett Ct. The existing bridge abutments, a brickpaved downstream of the bridge, and erosion along the RDB upstream of the bridge, is also a concern for owners of 288 Hewlett Ct. The affected parcels are private.

Recommendation: Install a grade control at the perched pipe. Stabilize the LDB at the tributary confluence and install a grade control at the footprint. Stabilize the eroding RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a stop grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two stop grade controls at the knickpoint southwest of 296 Hewlett Ct.

Project CC-2: 332 Cabin Grove Ln

Problem Description: There is bank erosion along Rosenbilder Creek threatening the fence and pool in rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. Re-shape and stabilize the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.

Project CC-3: 12 Broadview Farm Rd

Problem Description: Several knickpoints were observed along a tributary to Green Creek which runs parallel to 1 Mount Rd. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Rd. The affected parcel is private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Rd.

Project CC-4: Conway Downs Dr

Problem descriptions: Water ponds along the northeast side of the roadway in front of 1 Broadview Farms Rd. At the intersection of Broadview Farms Rd and Broadview Farms Rd, there is a 24" CMP that drains the area. A curb inlet (CI) uphill has significant business potential and the curb along the east side of Broadview Farms Rd. has the potential to be overtopped allowing additional flow to this area.

Recommendation: Re-line water ponding along the curb, mill and overlay the street and adjust the pavement slope to drain across the street. At #1 Broadview Farms Rd., reset the CI top and reconstruct the curb along Broadview Farms Rd.

Special Considerations: Concrete should be considered in lieu of asphalt to provide a more precise grade and cross slope on the street to ensure proper drainage. The hydraulic grade line for the storm sewer downstream of the FES needs to be checked to ensure water isn't backing up into this area. A check valve in the adjacent MH4 on the pipe should be considered.

Project CC-5: 438 Twin Creek Rd

Problem Description: In Sarah Creek behind 438 Twin Creek Rd erosion was reported along the LDB. The affected parcels are private.

Recommendation: Stabilize the LDB.

Project CC-6: Ratson Estates

Problem Description: In the unnamed tributary along Ratson Estates sewer along the RDB is threatening the driveway of 24 Ratson Estates. The affected parcels are private.

Recommendation: Stabilize the RDB and install a grade control.

Project CC-7: Hubbert Ln

Problem Description: In Hubbert Creek between Conway Downs Dr and Hubbert Ln, multiple issues were observed as follows. There is a perched pipe with fallen segments located east of 12341 Conway Holmes Cir. Additionally, a concrete bridge with a pedestrian walkway is located in the tributary north of 300 Bel Arbor Ln. There is erosion along an outside bend threatening embankment to the rear. Most of 291 Bellington Ln, 12288 Conway Holmes Cir, and 297 Hewlett Ct. The existing bridge abutments, a brickpaved downstream of the bridge, and erosion along the RDB upstream of the bridge, is also a concern for owners of 288 Hewlett Ct. The affected parcels are private.

Recommendation: Install a grade control at the perched pipe. Stabilize the LDB at the tributary confluence and install a grade control at the footprint. Stabilize the eroding RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a stop grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two stop grade controls at the knickpoint southwest of 296 Hewlett Ct.

Project CC-8: Conway Downs Dr

Problem Description: In Rosenbilder Creek between Conway Downs Dr and Hewlett Ct multiple issues were observed as follows. There is a perched pipe with fallen segments located east of 12341 Conway Holmes Cir. Additionally, a concrete bridge with a pedestrian walkway is located in the tributary north of 300 Bel Arbor Ln. There is erosion along an outside bend threatening embankment to the rear. Most of 291 Bellington Ln, 12288 Conway Holmes Cir, and 297 Hewlett Ct. The existing bridge abutments, a brickpaved downstream of the bridge, and erosion along the RDB upstream of the bridge, is also a concern for owners of 288 Hewlett Ct. The affected parcels are private.

Recommendation: Install a grade control at the perched pipe. Stabilize the LDB at the tributary confluence and install a grade control at the footprint. Stabilize the eroding RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a stop grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two stop grade controls at the knickpoint southwest of 296 Hewlett Ct.

Project CC-9: 12 Broadview Farm Rd

Problem Description: Several knickpoints were observed along a tributary to Green Creek which runs parallel to 1 Mount Rd. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Rd. The affected parcel is private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Rd.

Project CC-10: Faber Ln

Problem Description: There is bank erosion along Rosenbilder Creek threatening the fence and pool in rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. Re-shape and stabilize the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.

Project CC-11: Hubbert Ln

Problem Description: There is bank erosion along Rosenbilder Creek threatening the fence and pool in rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. Re-shape and stabilize the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.

Project CC-12: 212 Bellington Lane

Problem description: Yard and basement flooding at 4252 Bellington Lane due to flow from uphill properties.

Recommendation: Construct a berm and swale with underdrain to intercept the flow from the south and direct it to the street to the west. Swap out an existing inlet grate with a dome inlet grate to minimize clogging.

Project CC-13: 12225 Ladue Woods Drive

Problem description: Yard flooding at 912229 Ladue Woods Drive.

Recommendation: Construct berm to intercept flow from hillside that is flowing towards the east end of the house.

Special Considerations: Need additional information from Metro Owner not home during field visit. Yard drains to main flow path through property that is blocked by the pool.

Project CC-14: Conway Holmes Cir

Problem Description: In Rosenbilder Creek between Conway Holmes Cir and Hewlett Ct multiple issues were observed as follows. There is a perched pipe with fallen segments located east of 12341 Conway Holmes Cir. Additionally, a concrete bridge with a pedestrian walkway is located in the tributary north of 300 Bel Arbor Ln. There is erosion along an outside bend threatening embankment to the rear. Most of 291 Bellington Ln, 12288 Conway Holmes Cir, and 297 Hewlett Ct. The existing bridge abutments, a brickpaved downstream of the bridge, and erosion along the RDB upstream of the bridge, is also a concern for owners of 288 Hewlett Ct. The affected parcels are private.

Recommendation: Install a grade control at the perched pipe. Stabilize the LDB at the tributary confluence and install a grade control at the footprint. Stabilize the eroding RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a stop grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two stop grade controls at the knickpoint southwest of 296 Hewlett Ct.

Project CC-15: Williamsburg

Problem Description: There is bank erosion along Rosenbilder Creek threatening the fence and pool in rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. Re-shape and stabilize the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.

Project CC-16: 12 Broadview Farm Rd

Problem Description: Several knickpoints were observed along a tributary to Green Creek which runs parallel to 1 Mount Rd. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Rd. The affected parcel is private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Rd.

Project CC-17: Broadview Farms Subdivision

Problem descriptions: Water ponds along the northeast side of the roadway in front of 1 Broadview Farms Rd. At the intersection of Broadview Farms Rd and Broadview Farms Rd, there is a 24" CMP that drains the area. A curb inlet (CI) uphill has significant business potential and the curb along the east side of Broadview Farms Rd. has the potential to be overtopped allowing additional flow to this area.

Recommendation: Re-line water ponding along the curb, mill and overlay the street and adjust the pavement slope to drain across the street. At #1 Broadview Farms Rd., reset the CI top and reconstruct the curb along Broadview Farms Rd.

Special Considerations: Concrete should be considered in lieu of asphalt to provide a more precise grade and cross slope on the street to ensure proper drainage. The hydraulic grade line for the storm sewer downstream of the FES needs to be checked to ensure water isn't backing up into this area. A check valve in the adjacent MH4 on the pipe should be considered.

Project CC-18: 435 Twin Creek Rd

Problem Description: In Sarah Creek behind 438 Twin Creek Rd erosion was reported along the LDB. The affected parcels are private.

Recommendation: Stabilize the LDB.

Project CC-19: Ratson Estates

Problem Description: In the unnamed tributary along Ratson Estates sewer along the RDB is threatening the driveway of 24 Ratson Estates. The affected parcels are private.

Recommendation: Stabilize the RDB and install a grade control.

Project CC-1: Conway Downs Dr

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Problem Description: There is bank erosion along Rosenbilder Creek threatening the fence and pool in rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. Re-shape and stabilize the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.

Project CC-3: 12 Broadview Farm Rd

Problem Description: Several knickpoints were observed along a tributary to Green Creek which runs parallel to 1 Mount Rd. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Rd. The affected parcel is private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Rd.

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Recommendation: Install a grade control at the perched pipe. Stabilize the LDB at the tributary confluence and install a grade control at the footprint. Stabilize the eroding RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a stop grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two stop grade controls at the knickpoint southwest of 296 Hewlett Ct.

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Recommendation: Stabilize the LDB.

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Project CC-9: 12 Broadview Farm Rd

Problem Description: Several knickpoints were observed along a tributary to Green Creek which runs parallel to 1 Mount Rd. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Rd. The affected parcel is private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Rd.

Project CC-10: Faber Ln

Problem Description: There is bank erosion along Rosenbilder Creek threatening the fence and pool in rear lot of 332 Cabin Grove Ln along with a 2 ½ knickpoint. There is also erosion in the northwest corner of 32 Williamsburg Ct threatening the rear yard and may need to be channel. Re-shape and stabilize the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.

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Project CC-16: 12 Broadview Farm Rd

Problem Description: Several knickpoints were observed along a tributary to Green Creek which runs parallel to 1 Mount Rd. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Rd. The affected parcel is private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Rd.

Project CC-17: Broadview Farms Subdivision

Problem descriptions: Water ponds along the northeast side of the roadway in front of 1 Broadview Farms Rd. At the intersection of Broadview Farms Rd and Broadview Farms Rd, there is a 24" CMP that drains the area. A curb inlet (CI) uphill has significant business potential and the curb along the east side of Broadview Farms Rd. has the potential to be overtopped allowing additional flow to this area.

Recommendation: Re-line water ponding along the curb, mill and overlay the street and adjust the pavement slope to drain across the street. At #1 Broadview Farms Rd., reset the CI top and reconstruct the curb along Broadview Farms Rd.

Special Considerations: Concrete should be considered in lieu of asphalt to provide a more precise grade and cross slope on the street to ensure proper drainage. The hydraulic grade line for the storm sewer downstream of the FES needs to be checked to ensure water isn't backing up into this area. A check valve in the adjacent MH4 on the pipe should be considered.

Project CC-18: 435 Twin Creek Rd

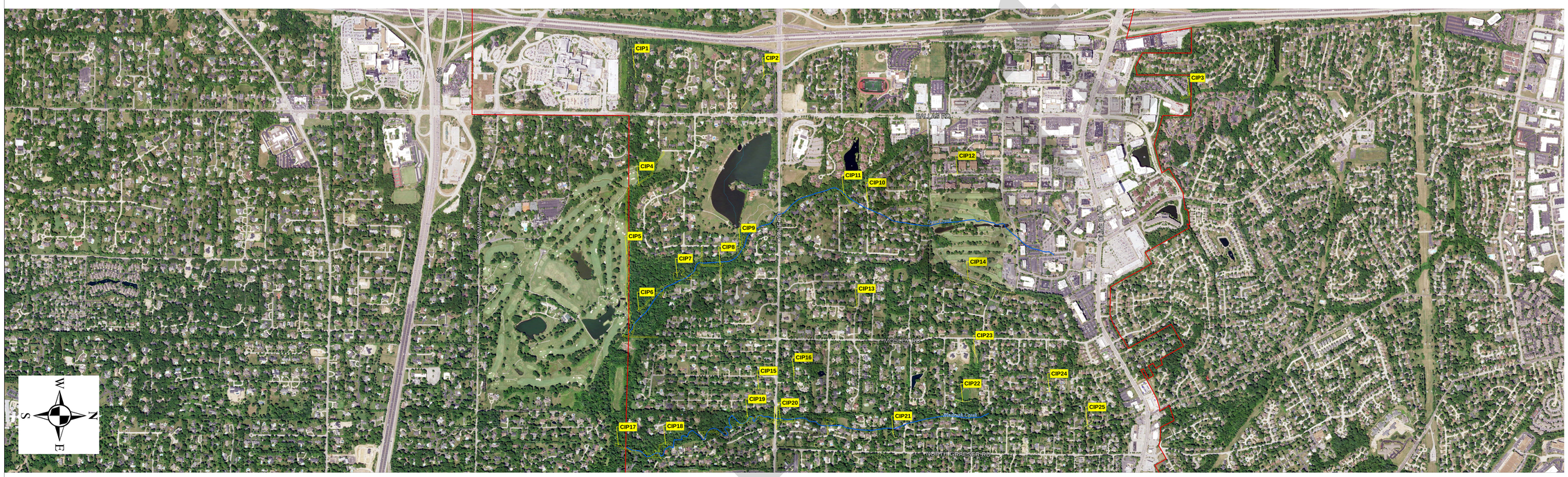
Problem Description: In Sarah Creek behind 438 Twin Creek Rd erosion was reported along the LDB. The affected parcels are private.

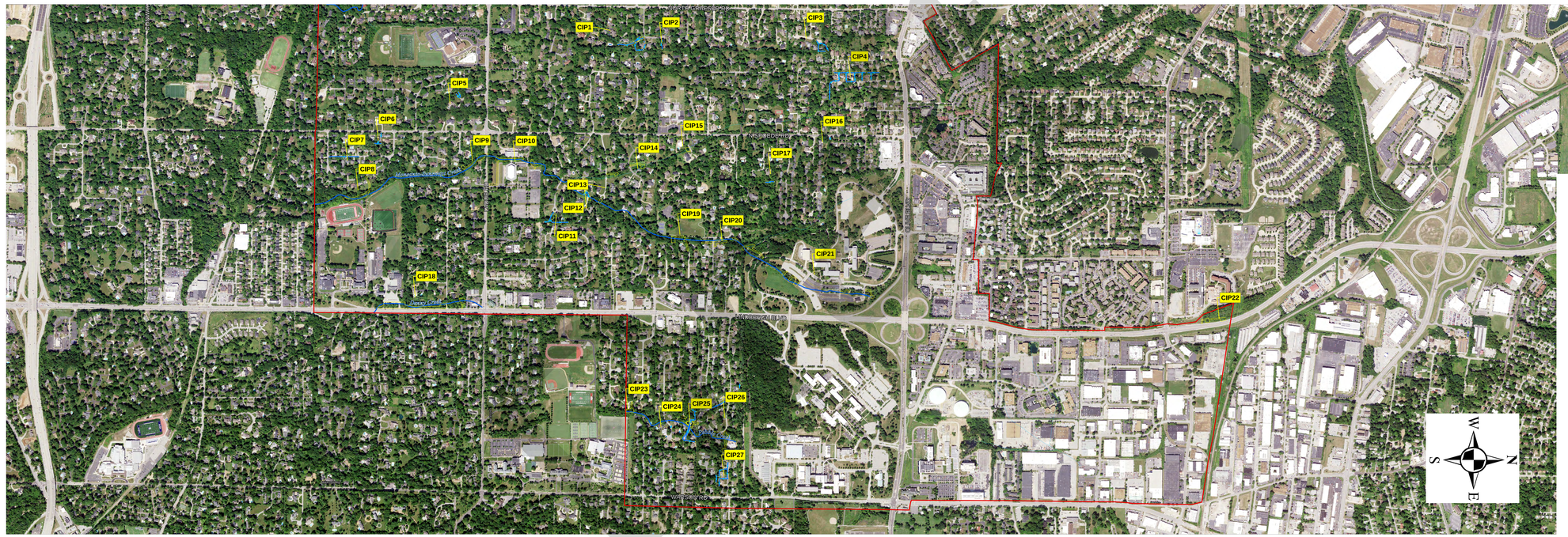
Recommendation: Stabilize the LDB.

Project CC-19: Ratson Estates

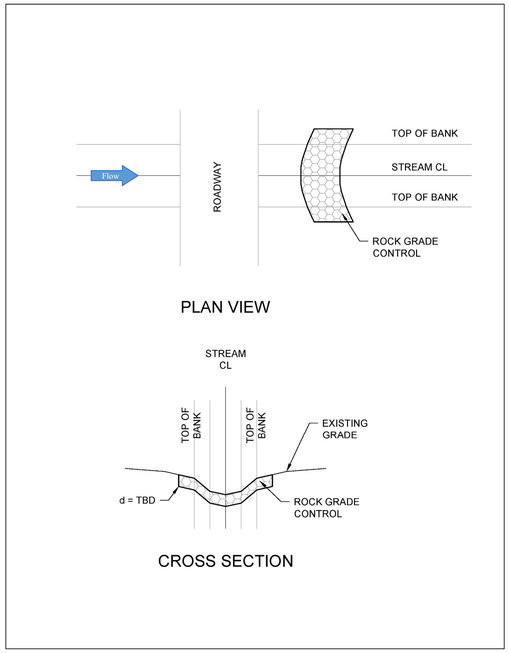
Problem Description: In the unnamed tributary along Ratson Estates sewer along the RDB is threatening the driveway of 24 Ratson Estates. The affected parcels are private.

Recommendation: Stabilize the RDB and install a grade control.


CIP1
CIP2
CIP3
CIP4
CIP5
CIP6
CIP7
CIP8
CIP9
CIP10
CIP11
CIP12
CIP13
CIP14
CIP15
CIP16
CIP17
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Bridle Path
Bridle Path
Bridle Path

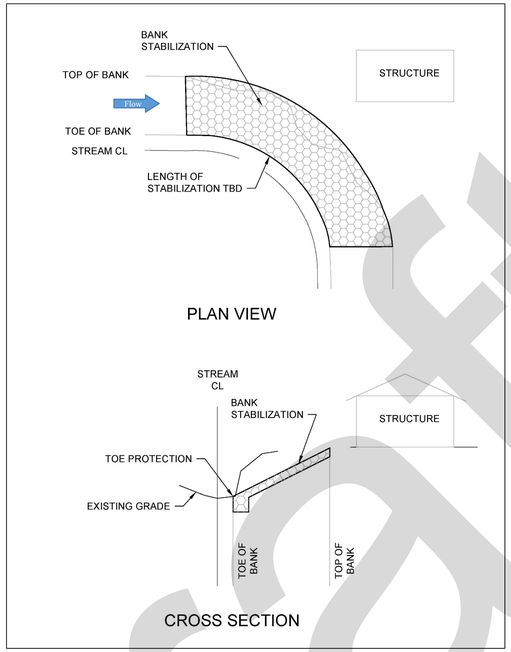

CIP1
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CIP19
CIP20
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CIP22
CIP23
CIP24
CIP25
CIP26
CIP27
Spokane Falls Blvd
Howard St
Wall St
Mallon Ave
Sunset Blvd
Maple St
Ash St
Walnut St
Broadway Ave
Riverside Ave
Sprague Ave
Main Ave
Spokane River
Monroe St
Division St
Post St
Lincoln St
Cedar St
Bernard St
Stevens St
Washington St
Madison St
Jefferson St
Adams St
Jackson St
Lincoln St
Cedar St
Bernard St
Stevens St
Washington St
Madison St
Jefferson St
Adams St
Jackson St
Riverside Ave
Sprague Ave
Main Ave
Spokane River
Monroe St
Division St
Post

Grade Control Detail





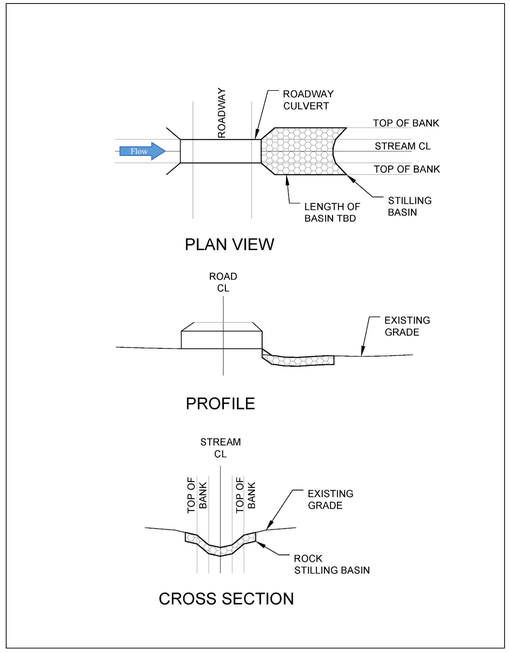
Bank Stabilization Detail







Rock Armor and Scour Protection Detail













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SWALES AND BERMS



RAIN GARDENS



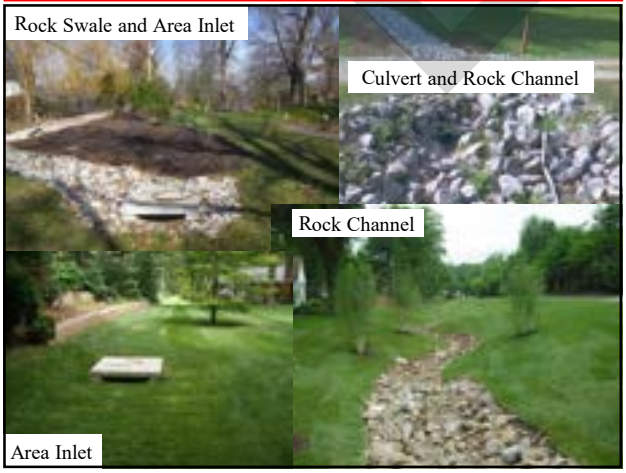
YARD DRAINS AND DRIVEWAYS



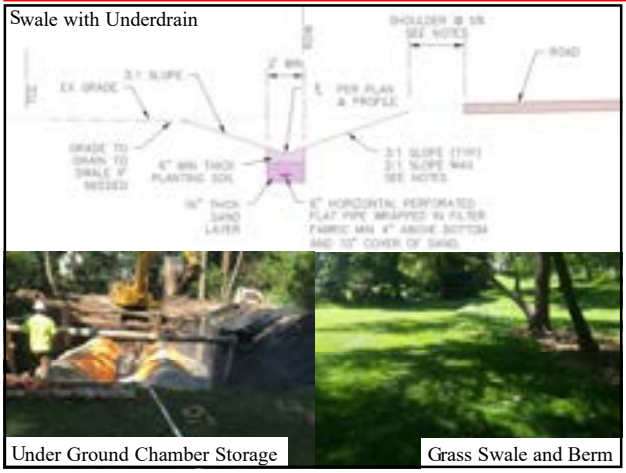
STREET INLETS AND STORM SEWERS

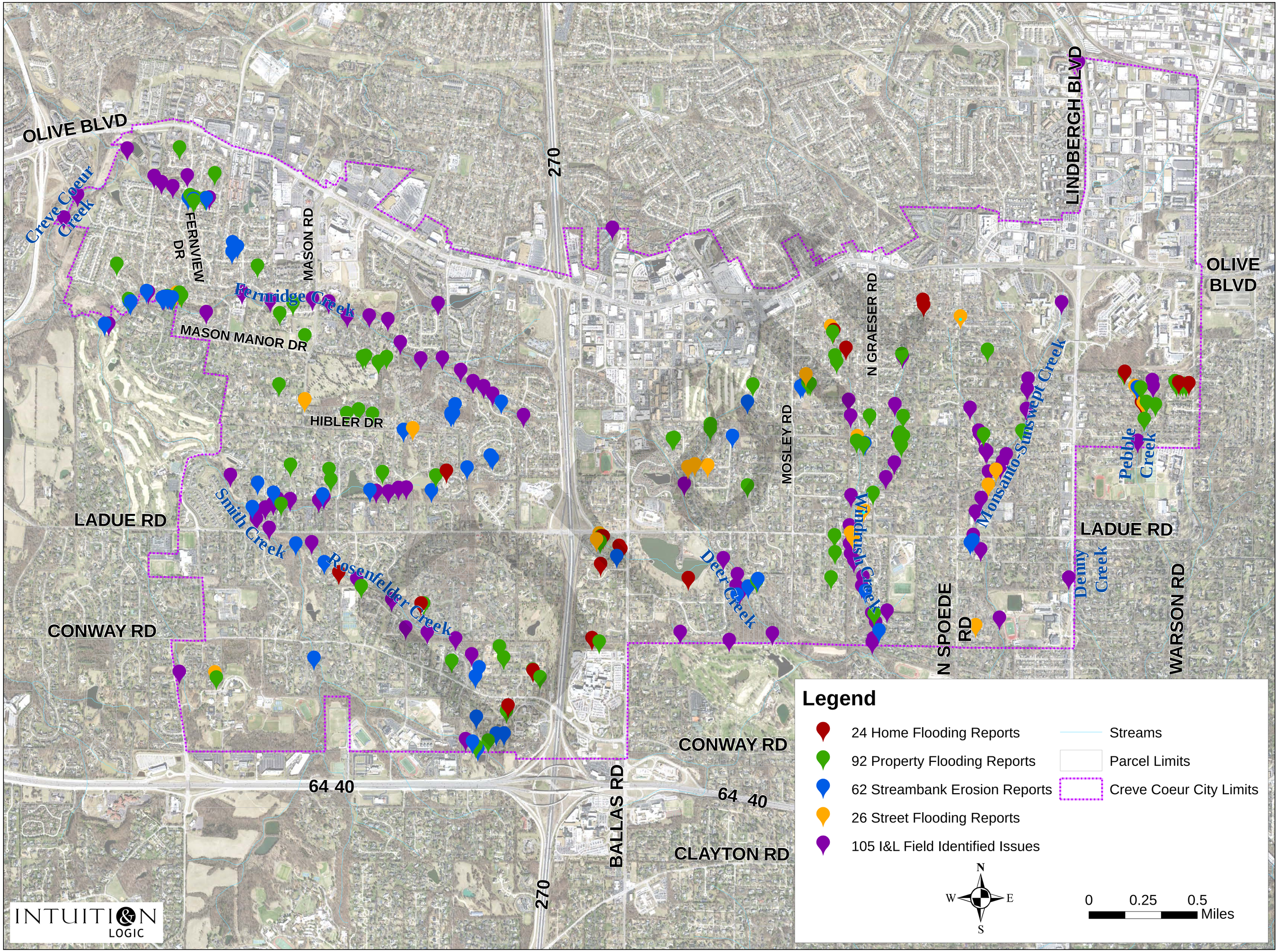


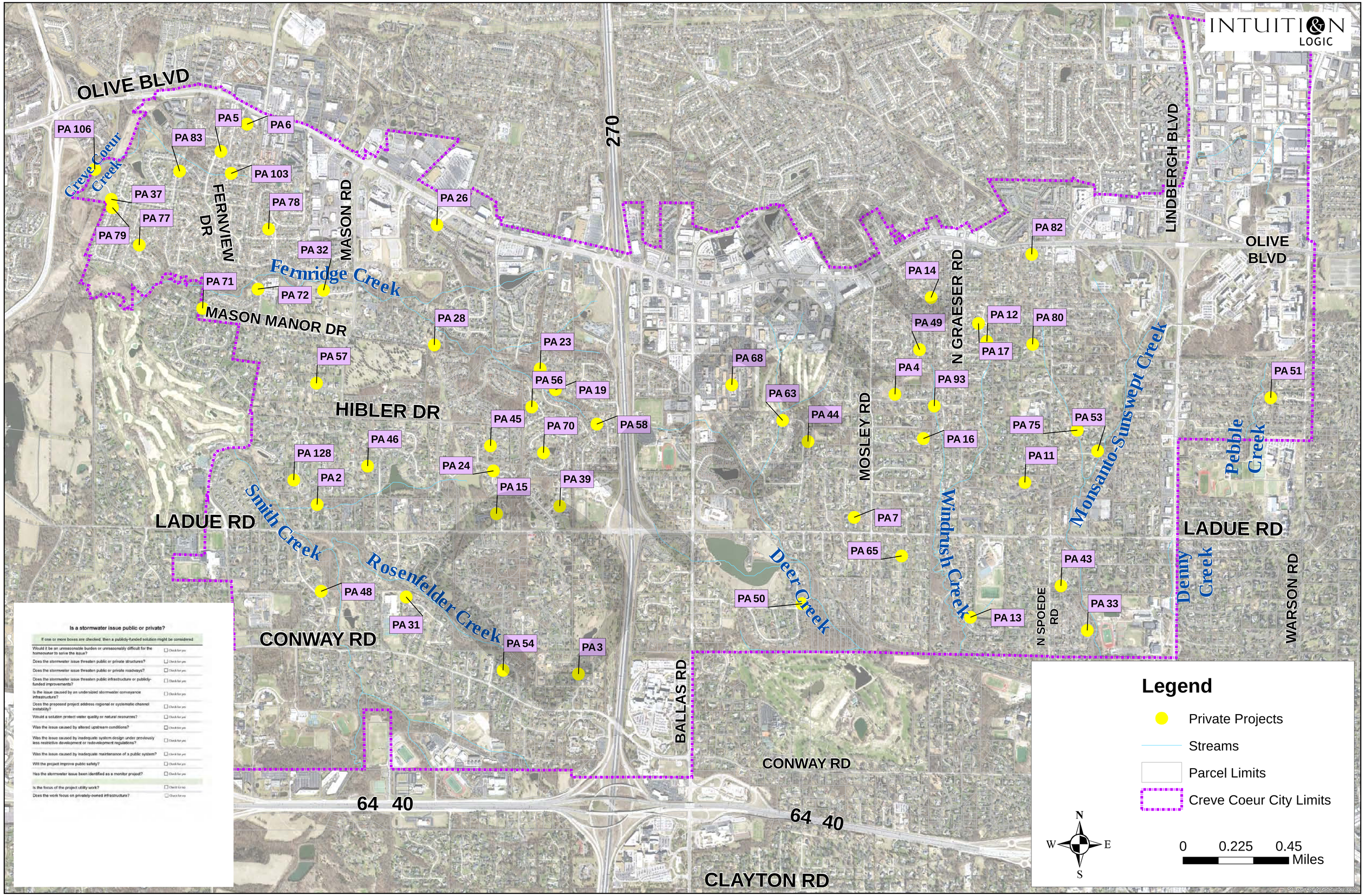
ROCK SWALES AND AREA INLETS



GRASS SWALES AND UNDERGROUND STORAGE




OLIVE BLVD
Creve Coeur Creek
FERNVIEW DR
MASON RD
270
Ferguson Creek
MASON MANOR DR
HIBLER DR
LINDBERGH BLVD
OLIVE BLVD
N GRAESER RD
MOSLEY RD
Monsanto-Sunswept Creek
Pebble Creek
LADUE RD
Denny Creek
WARSON RD
N SPOEDE RD
Windrush Creek
Deer Creek
Smith Creek
Rosenfelder Creek
CONWAY RD
64 40
BALLAS RD
CLAYTON RD
INTUITION LOGIC
Legend
24 Home Flooding Reports
92 Property Flooding Reports
62 Streambank Erosion Reports
26 Street Flooding Reports
105 I&L Field Identified Issues
Streams
Parcel Limits
Creve Coeur City Limits
N
W
E
S
0
0.25
0.5
Miles



Is a stormwater issue public or private?

If one or more boxes are checked, then a publicly-funded solution might be considered

Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue?	☐ Check for yes
Does the stormwater issue threaten public or private structures?	☐ Check for yes
Does the stormwater issue threaten public or private roadways?	☐ Check for yes
Does the stormwater issue threaten public infrastructure or publicly-funded improvements?	☐ Check for yes
Is the issue caused by an undersized stormwater conveyance infrastructure?	☐ Check for yes
Does the proposed project address regional or systematic channel instability?	☐ Check for yes
Would a solution protect water quality or natural resources?	☐ Check for yes
Was the issue caused by altered upstream conditions?	☐ Check for yes
Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations?	☐ Check for yes
Was the issue caused by inadequate maintenance of a public system?	☐ Check for yes
Will the project improve public safety?	☐ Check for yes
Has the stormwater issue been identified as a monitor project?	☐ Check for yes
Is the focus of the project utility work?	☐ Check for no
Does the work focus on privately-owned infrastructure?	☐ Check for no

Legend

- Private Projects
- Streams
- Parcel Limits
- Creve Coeur City Limits

N W E S

0 0.225 0.45 Miles

St. Louis County GIS Service Center

Project Number	Address	Reported Issue	Notes	Public/Private	Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue? (Y/N)	Does the stormwater issue threaten public or private structures? (Y/N)	Does the stormwater issue threaten public or private roadways? (Y/N)	Does the stormwater issue threaten public infrastructure or publicly-funded improvements? (Y/N)	Is the issue caused by an undersized stormwater conveyance infrastructure? (Y/N)	Does the proposed project address regional or systematic channel instability? (Y/N)	Would a solution protect water quality or natural resources? (Y/N)	Was the issue caused by altered upstream conditions? (Y/N)	Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations? (Y/N)	Was the issue caused by inadequate maintenance of a public system? (Y/N)	Will the project improve public safety? (Y/N)	Has the stormwater issue been identified as a monitor project? (Y/N)	Is the focus of the project utility work? (Y/N)	Does the work focus on privately-owned infrastructure? (Y/N)
2	116 WEXLER MANOR CT	Property Flooding	We are concerned about the run-off from ladue lake. In a hard rain it floods chasselle and at least four yards - including ours.	Private	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y
3	20 WILLIAMSBURG RD	Property Flooding	Area between this home and the home to the east floods during heavy rains. Stormwater sewer between the homes is not able to move it away. Water comes down the hill from the area above the home to the east.	Private	N	N	N	N	?	N	N	N	?	N	N	N	N	N
	21 WILLIAMSBURG RD	Property Flooding	The run off from the rain water in the backyard has become a deeper chasm (1ft depth). The neighbor that backs up to the property has tried to create a leaf barrier to provide ground cover.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	38 Williamsburg Rd	Standing water between the homeowner's and the neighbor's home.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	40 WILLIAMSBURG RD	Property Flooding	Ponding in yard from neighbor yard	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	43 WILLIAMSBURG RD	Property Flooding	When rains, water floods the property and floods basement as a result	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	43 WILLIAMSBURG RD	Home Flooding	House floods when bad rains / storms															
4	16+ Mosley Acres Dr	Asphalt overlay of concrete street has reduced gutter capacity and resulted in erosion behind the curb		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
5	1020 & 1028 Fernview Dr	Yard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
6	12921 Fernway Ln	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7	104 Ladue Meadows Ln	Erosion in yard and near street inlet	Needs Site Visit (KLE)	Private & MSD	N - for yard erosion	N	N	N	N	N	N	N	N	N	N	N	N	N

Draft

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11	10835 Rondelay Dr	Channel erosion upstream of inlet in backyard, asphalt overlay has reduced the gutter capacity causing creek erosion		Private & MSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12	10921 CHALET CT	Property Flooding	Backyard flooding in heavy rain.	Private - Cost Share	N - If problem can be solved with grading the yard. Y - If solution is to add an MSD inlet in the yard or redirect flow uphill to existing inlets.	N	N	N	N?	N	N	N	N	N	N	N	N	N
	531 Chalet Ct	The homeowner reports spending approximately $60,000 trying to solve stormwater issues.	Any remaining issues result of deficent design or improperly installed system. Proper grading and installation of system could solve issue.	Private	n	?house?	n	n	N?	N	N	N	N	N	N	N	N	y
	10921 Chalet Ct		Sinkhole near area inlet	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
13	248 Brooktrail Ct		Sinkholes around inlet structure	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
14	11076 Graeser Ln	Yard flooding from runoff from Graser Ln		Monitor	N - If viable solution is grading yard and adding a speed bump to driveway. Y - If solution needed is street inlet upstream of driveway.	N	N	N	N	N	N	N	N	N	N	N	N	N
15	111 Worthington Oaks	Failing MSD structure on a neighboring site		MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
16	11205 Tureen Dr	Yard erosion		Private	N	N	N	N	N	N	N	N	N	Y - For issue at inlet.	N	N	N	N
17	12 Wedgewood	Erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Draft

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19	12121 & 12135 Royal Valley Dr	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	12234 Royal Valley Dr	Dry detention maintenance. The HOA also asked what, if anything, could be done to reduce flows coming from other subdivisions and 270.		Private	N - May need professional advice	N	N	N	N	N	Y?	N	N	N	N	N	N	Y
	12234 ROYAL VALLEY DR	Streambank Erosion	Erosion near the MSD stand pipe and the drain channel has been an issue for many years. HOA maintenance has only fixed erosion for a few short years.	Private	N	N	N	N	N	N	N	N		N	N	N	N	N
	12233 Royal Valley Dr		Sinkholes around curb inlet across the street	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
23	12318 Halsgame Ln	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
24	12365 MONTSOURIS DR	Home Flooding	Ponding occurs in the yard every time it rains. In addition, every time it rains the basement leaks/flood depending on the amount of rain that occurs. MSD was contacted and they said the sewer system near the residence cannot handle more than 3 in of rain, however, the house leaks/floods and the yard ponds every time it rains. There is also a creek in the behind the house.	Private	N	N	N	N	N?	N	N	N	N	N	N	N	N	N
	12372 MONTSOURIS DR	Property Flooding	Drainage area between the two ponds/lakes overflows during heavy rains into the surrounding yards. Also causes excessive rise in receiving pond/lake.	Private - Cost Share	Y - However HOA maybe responsible for lake outfall	N	N	N	N	N	N	N	N	N	N	N	N	N
26	12503 Questover Lane	Concerns about standing water and minor erosion within the condo complex.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
28	12502 TRAMMELL CT	Property Flooding	Water typically pools heavily during storms through this area. Ground remains moist for long periods after storms have ceased.	Private														
31	12643 CONWAY DOWNS DR	Property Flooding	Whenever it rains, a pool of water forms in the far corner of my property. There is a creek on the other side of our fence. I am concerned about the mosquitoes breeding in this standing water.	Private	n	N	N	N	N	N	N	N	N	N	N	N	N	N

Draft

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32	12721 CREEKSIDE VIEW DR	Property Flooding	The area behind our home floods during heavy rains. The water comes up from a drain pipe or overflow from Fernridge Creek. In addition, a new subdivision (Duever Estates) is being built to the north and we are concerned that this will make the flooding worse. https://crevecoeurmo.portal.civicclerk.com/event/7234/overview	Natural Floodplain Area														
	12739 CREEKSIDE VIEW DR	Property Flooding	The common ground north of our home floods during heavy rains. Some of this comes from Fernridge Creek via a 12" rain pipe or from the creek overflowing its banks. A sub division (Duever Estates) is planned on the North side of Fernridge Creek and we are concerned that this will make the flooding worse.https://civicclerk.blob.core.windows.net/stream/CREVECOEURMO/604f5ec7-9be7-45de-9a05-a30753403b2c.pdf?sv=2021-10-04&st=2023-03-23T00%3A36%3A07Z&se=2024-03-23T00%3A41%3A07Z&sr=b&sp=r&sig=WKJlBRjA															
	801 N MASON RD	Property Flooding	During heavy rains the four 4-way drains are unable to handle the storm water running off our neighbors ponds and property. It has dislodged the rip-rap several times in the last 3 years. The board believes it would be helpful if our neighbor (Steven Leiber) would take measures to slow down the water before it leaves his property.	Private - Cost Share	N - Alternatives to the rock are available that the HOA could install from the property line to the inlets.	N	N	N	N	N	N	N	N	N	N	N	N	N
33	16 Chaminade	Street runoff causing erosion on his property.		Private	N	N	N		N	N	N	N	N	N	N	N	N	N
37	13210 Autumn Trails	Erosion in backyard		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
39	174 Belle Maison Ct	Stormwater flows from 178 Belle Maison Ct		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
43	2 Spoede Acres St	Runoff from surrounding area causes ponding and erosion	Install berm along west property line so inlet intercepts water, regrade yard for ponding issues and potentially have MSD swap out solid manhole cover for slotted cover and lower the frame if needed.	Private	n	N	N	N	N	N	N	N	N	N	N	N	N	N

Draft

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44	201 & 434 Runnymede Dr	Resident is concerned about runoff created by 237 Runnymede addition project		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	434 Runnymede Dr	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	450 RUNNYMEDE DR	Streambank Erosion	Lac du bois subdivision and others which have retaining basins: In several of these subdivisions the shoreline of these water retention "ponds" is eroding badly. These subdivisions need both management and perhaps financial assistance in order to avoid retention dike failure and damage to roadways	Private	N	N	N	N	N	N	Y	N		N	N	N	N	Y
45	219 Hibler Oaks	Backyard erosion		Private - Cost Share	N - If solution is permanent erosion control Y - If solution is extension of storm sewer	N	N	N	N	N	N	N	N	N	N	N	N	N
46	220 CLION LN	Property Flooding	heavy streams in the back yard with rains;	Monitor	Y - Regional solution needed if warranted.	N	N	N	N	N	N	N	N	N	N	N	N	N
	230 Clion Ln	Concerns about roadside drainage		Monitor	Y	N	Y	N	?	N	N	N	?	N	N	N	N	N
	Clion Lane & Ladue Lake Dr	Gully erosion and ponding in multiple back yards.		Private - Cost Share	Y - Regional solution needed if warranted.	N	N	N	N	N	N	N	N	N	N	N	N	N
	225 LADUE LAKE DR	Property Flooding	Extensive flooding on west side of lot coming from the north with moderate to heavy rain.	Private - Cost Share	Y - Regional solution needed if warranted.	N	N	N	N	N	N	N	N	N	N	N	N	N
48	240 Laduemount Dr	Creek erosion		Private	N	N	N	N	N	N	N	N		N	N	N	N	N
49	25 MORWOOD LN	Property Flooding	Yard floods during almost every rain event. Excessive water flowing on south side of yard. North side water ponds, City wanted to install an inlet in the 1990s or 1980s between 23 and 25 in the back, but the previous owner of 23 would not allow the work to proceed.	Monitor	Y - If pipe is a solution would likely cross property lines	N	N	N	N	N	N	N	N	N	N	N	N	N
50	258 NEW SALEM DR	Streambank Erosion	Resident report to the City: Streambank erosion	Private	n-Currently working with contractor to fix	N	N	N	N	Y	Y	N	N	N	N	N	N	Y
51	49 Beaver Dr	The homeowner is concerned about water ponding in the front yard.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
53	7 Middlebrook Ln		Erosion threatening shed (relocate shed)	Private	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y

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54	307 Cabin Grove	Sheet flows from an uphill neighbor causing erosion		Private	N - Erosion control with shade tolerant ground cover and proper grading of yard.	N	N	N	N	N	N	N	N	N	N	N	N	N
	307 CABIN GROVE LN	Property Flooding	storm water runs from the property located on Windsor Oaks Drive and accumulates in the backyard of the property.	Monitor	Y - Issue not on complaintants property	N	N	N	N	N	N	N	N	N	N	N	N	N
56	359 Country Glen	Concerns about creekside backyard erosion.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
57	36 AUBURNDALE DR	Property Flooding	Property flooding due to rain not flowing to storm drain east to west but down through yards southern direction	Private	N - grading can solve issue on the property	N	N	N	N	N	N	N	N	N	N	N	N	N
58	373 Hibler Ct	Existing concrete cannel is undersized		Private	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N
63	477 MARFORD DR	Property Flooding	During and after rain, water pools up in this back corner of the yard	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	482 STAINES CT	Property Flooding	Our backyard turns into a river during heavy rain. We live where the creek was supposedly buried many years ago, but now all the water just runs above ground where the creek should have been.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
65	5 Ladue Estates	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	55 E LADUE ESTATES DR	Property Flooding	Water pools & runs over wall onto sidewalk.	Private	Y - If wall is public or issue is water on the sidewalk N - If wall is private	N	N	N	N	N	N	N	N	N	Y	N	N	N
68	561 Sarah Ln	Ponding on Sarah Ln and in front of garage doors. Garages are downgrade from road.		Public/Private	N - for onsite issues Y - for street ponding	Y	N	N	N	N	N	N	N	N	N	N	N	Y - For on-site issues
70	12228 WINROCK DR	Streambank Erosion	Resident reports that the conveyance channel to the detention basin has been receiving more flows than it did in the past. As a result, the channel has widened, trees have fallen, and the sides of the channel have eroded.	Private	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N
	12228 WINROCK DR	Streambank Erosion	A culvert conveying street stormwater daylights here with open surface draining towards as MSD stand pipe, however there is standing water.	Private	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N

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Project Number	Address	Reported Issue	Notes	Public/Private	Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue? (Y/N)	Does the stormwater issue threaten public or private structures? (Y/N)	Does the stormwater issue threaten public or private roadways? (Y/N)	Does the stormwater issue threaten public infrastructure or publicly-funded improvements? (Y/N)	Is the issue caused by an undersized stormwater conveyance infrastructure? (Y/N)	Does the proposed project address regional or systematic channel instability? (Y/N)	Would a solution protect water quality or natural resources? (Y/N)	Was the issue caused by altered upstream conditions? (Y/N)	Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations? (Y/N)	Was the issue caused by inadequate maintenance of a public system? (Y/N)	Will the project improve public safety? (Y/N)	Has the stormwater issue been identified as a monitor project? (Y/N)	Is the focus of the project utility work? (Y/N)	Does the work focus on privately-owned infrastructure? (Y/N)
71	625 Lampadaire Dr	Yard erosion		Private - Cost Share	N- If permanent erosion control is a viable option	N	N	N	N	N	N	N	N	N	N	N	N	N
72	667 Rue De Fleur Dr	Ponding in common area near the creek		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
75	7 SHERWYN LN	Property Flooding	The resident reports flows from neighbor's driveway entering a swale near the property line. Flows from the swale enter the creek on this property, and erosion is seen on the path from the swale to the creek.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
77	741 GASCOGNE DR	Property Flooding	Gullies have developed near the sewer that was installed (approx 15 years ago) that water collects in and doesn't fully drain. Ground needs to be regraded for better drainage.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
78	753 TIMBER RUN DR	Streambank Erosion	CMP is collapsed and causing bank/yard erosion and erosion of the pond banks. Pipe may be collapsed causing surcharge of manhole, runs into pond and causes erosion Erosion is contaminating waters with mud too. Ground is eroding through the trees to the sewer. That's water runoff from the backyards up the street.	MSD	Y	N	N	N	Y	N	Y	N	N	Y	N	N	Y	N
79	761 Turrentine Trail	Stormwater creating an approximate four-foot wide stream as it passes through the homeowner's yard. Homeowner wants to know if this is how the yards were designed to convey water.		Monitor	N	N	N	N	N	N	N	N	N	N	N	N	N	N
80	77 Colonial Hills Dr	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
82	859 Larkin Ave	Yard ponding		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
83	920 Bellerive Manor Dr	Failing French drain and improperly directed downspouts.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N

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Project Number	Address	Reported Issue	Notes	Public/Private	Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue? (Y/N)	Does the stormwater issue threaten public or private structures? (Y/N)	Does the stormwater issue threaten public or private roadways? (Y/N)	Does the stormwater issue threaten public infrastructure or publicly-funded improvements? (Y/N)	Is the issue caused by an undersized stormwater conveyance infrastructure? (Y/N)	Does the proposed project address regional or systematic channel instability? (Y/N)	Would a solution protect water quality or natural resources? (Y/N)	Was the issue caused by altered upstream conditions? (Y/N)	Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations? (Y/N)	Was the issue caused by inadequate maintenance of a public system? (Y/N)	Will the project improve public safety? (Y/N)	Has the stormwater issue been identified as a monitor project? (Y/N)	Is the focus of the project utility work? (Y/N)	Does the work focus on privately-owned infrastructure? (Y/N)
93	455 Ridgecorde Pl		Inlet in rear yard completely covered and property owner mentioned that it gets bypassed during storms	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
	9 Mosley Acres Dr		Sinkholes near/around area inlet															
103	946 FERNGATE LN	Property Flooding	Standing water in backyard in heavy rain	Private	N	N	N	N	N	N	N	N		N	N	N	N	Y
106	1070 Toreador Dr		Potential cso, has active flow	Private	Y	N	N	Y	N	N	Y	N		N	Y	N	Y	N
128	215 CHASSELLE LN	Streambank Erosion	Im not sure if this is considered stream bank erosion but after storms our drinking water tastes very bad. Undrinkable. We go weeks experiencing a bad smell/taste from the water. We have to resort to drinking bottled water during these times. We have contacted the water company a few times regarding this issue. They even sent someone out to test the water at one point. They never found undesirable levels, but the issue still persists after the storms.	Private	N	N	N	N	N	N	N	N	N	N	N	N	Y	N

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Open House #4

Draft

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Watershed Management Plan

1

Watershed Master Planning

- City Planning Effort
- Previous Efforts
  - 1999 Stormwater Evaluation Report
  - 2010 Stormwater Questionnaire
  - 2012 Stormwater Master Plan Update
- Overall Goals
  - Updated Master Plan
  - Integrate Public Input
  - Develop Prioritization Ranking Methodology



2

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Watershed Management Plan
Goals & Objectives

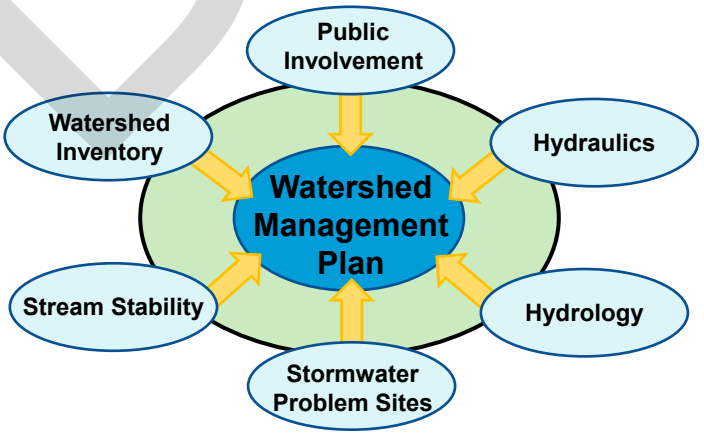
Goal - Develop planning tools and capital improvement projects to address water quality, stream stability, and stormwater infrastructure and drainage issues.

Study Objectives

- Maintain a proactive public involvement process
- Identify needed Capital Improvement Projects (CIPs) for stormwater issues
- Quantify existing hydrologic and hydraulic data
- Map stream corridors
- Evaluate stormwater problem sites
- Develop prioritization ranking method

3

Watershed Management Plan
Major Study Components



4

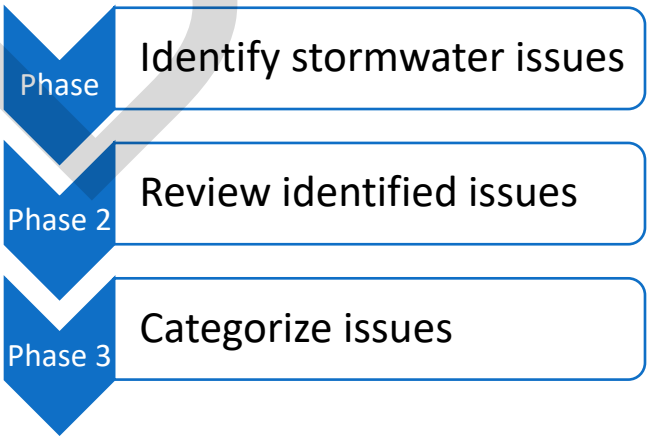
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Watershed Management Plan
Benefits

- Engineering-based tool to guide the City in choosing projects for the Stormwater program
- Maximize benefits to residents
- Reduction of risks to public safety, public health, and damage to public infrastructure and private property
- Allows the City to secure grant funding
  - More funding allows the City to complete more projects in a shorter period of time

5

Watershed Management Plan Overview
Phases



The planning process – in all phases – has been collaborative, transparent, and inclusive

6

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Phase 1 – Identify Stormwater Issues

- Issues reported on Social Pinpoint. (A total of 407 responses were received)
  - 216 erosion and channel related
  - 191 flooding issues
  - 24 Home Flooding
  - 87 Property Flooding
  - 60 Streambank Erosion
  - 26 Street Flooding

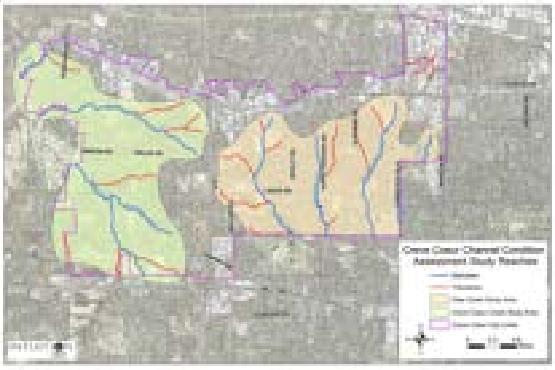


- Historical information provided by the City
- Open House events for residents to provide information about known stormwater issues

7

Phase 1 – Identify Stormwater Issues

- Engineers conducted channel condition assessments
  - Over 22 miles of stream field observation
  - Methodical, engineering-based assessment system
  - Consistent Scoring
- I&L has completed 53 watershed management plans
- I&L and EDM have assessed over 1,000 miles of creeks and streams (boots on the ground)



8

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Phase 2 – Review Identified Issues

- Review and Group issues
  - 407 reported issues
  - Grouped into 132 problem areas
- Conduct Site Visits at all locations
- Complete Desktop Review
  - Historical info
  - FEMA maps
  - MSD Databases
- Develop Solutions
- Create Cost Estimates





9

Phase 3 – Categorize Issues

- Public vs. Private checklist
  - Public Input/Feedback
    - Stormwater Committee
    - Residents
    - Open House Events
  - Review and Categorize Projects
    - 132 problem areas became
    - 53 Private issues
    - 102 Public Projects


Is a stormwater issue public or private?

10

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Phase 3 – Categorize Issues

- Residents who want to solve their private stormwater issues may receive funding assistance from the City's new Stormwater Management Cost Share Program
- The Deer Creek Watershed Alliance and MSD also have grant opportunities for individual homeowners



11

Phase 3 – Categorize Issues

- Prioritization Ranking System
  - Based on MSD's system
    - An established, widely-used scoring system in our area
    - Solid engineering basis
    - Aligning with MSD helps with possible future funding opportunities
    - City tailored the system to Creve Coeur
  - This ranking system was consistently applied to all identified issues across the City
  - The system will be consistently applied moving forward to score issues that will come up in the future
  - Every project has an equal chance of becoming a public project because it is scored under the same system
- **<u>Higher scores do not guarantee that an issue will have a publicly-funded solution</u>**

12

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Phase 3 – Categorize Issues

- Adjustments from MSD
  - Flooding and Erosion threats to Structures. Eligible structures are ones that would typically require a building permit.
  - Threatened Roadway – weighting factor for type of roadway (heavily traveled road versus lightly used side streets)
  - Threats to Natural Resources (parks, wetlands, continuous woods, etc.)
  - Condition of existing stormwater system.
  - Preservation of natural resources
  - Conservation Easements
  - Ease of implementation

13

Phase 3 – Categorize Issues

- Prioritization Ranking System
  - Projects are scored based on risks, benefits, and estimated costs
    - Higher risks can earn higher scores – for example: structural flooding scores higher than yard erosion
    - Scores are not based on the number of years a problem has existed
  - Priority is Structural Flooding and Public Safety Issues.
  - Followed by Highest Benefit
    - More affected residents, higher score
  - The system is a guide and decision-making tool, not a guarantee a project will be completed
  - Re-Scoring only if site conditions have changed

14

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Phase 3 – Categorize Issues

- Project Categories:



1. Structures/Culverts



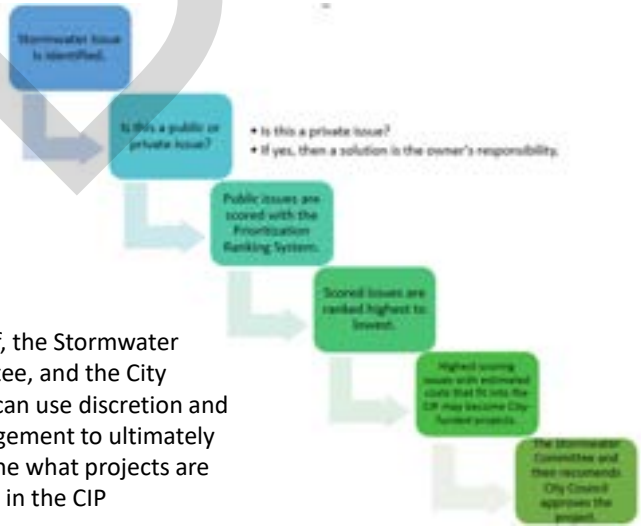
2. Bank Stabilization



3. Overland Flooding

15

How identified stormwater issues can become City-funded projects



- City staff, the Stormwater Committee, and the City Council can use discretion and best judgement to ultimately determine what projects are included in the CIP

16

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Phase 3 Program Results

Project Type	Quantity	Cost (in millions)
1. Structures/Culverts	20	$12.6
2. Bank Stabilization	48	$16.7
3. Overland Flooding	34	$4.6
Program Totals	**102**	**$33.9**



1. Structures/Culverts



2. Bank Stabilization



3. Overland Flooding

17

Next Steps

Stormwater Management Plan

- The report will be finalized and presented to Council for review and adoption.
- Tentative City Council work session to review the draft report is anticipated to be held on February 26th.
- Possible adoption by City Council near the end of April.

Implementation

- The ranking of identified issues will be used by City Staff, the Stormwater Committee, and City Council to select and approve projects
- Projects will be listed in the City's Capital Improvement Program, a five-year financial planning tool that directs how the City's budget is used
- New stormwater issues will be reviewed, ranked, and added to the list as needed. (Residents should continue to report stormwater issues.)
- The City intends to refresh the list and plan in about five years.

18

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Thank You!!!

- Thank you all for your participation in the process and support of the half-cent sales tax
- Before the sales tax, the City generally did not have the funds needed to address many stormwater issues
- The City was putting out fires – responding not planning
- Thanks to the tax, the City now has the ability to plan and proactively solve problems
- The Watershed Management Plan gives us a clear, thoroughly-researched, fact-and-engineering-based, methodical, consistent, and impartial guide for shaping the City's Stormwater Program

19

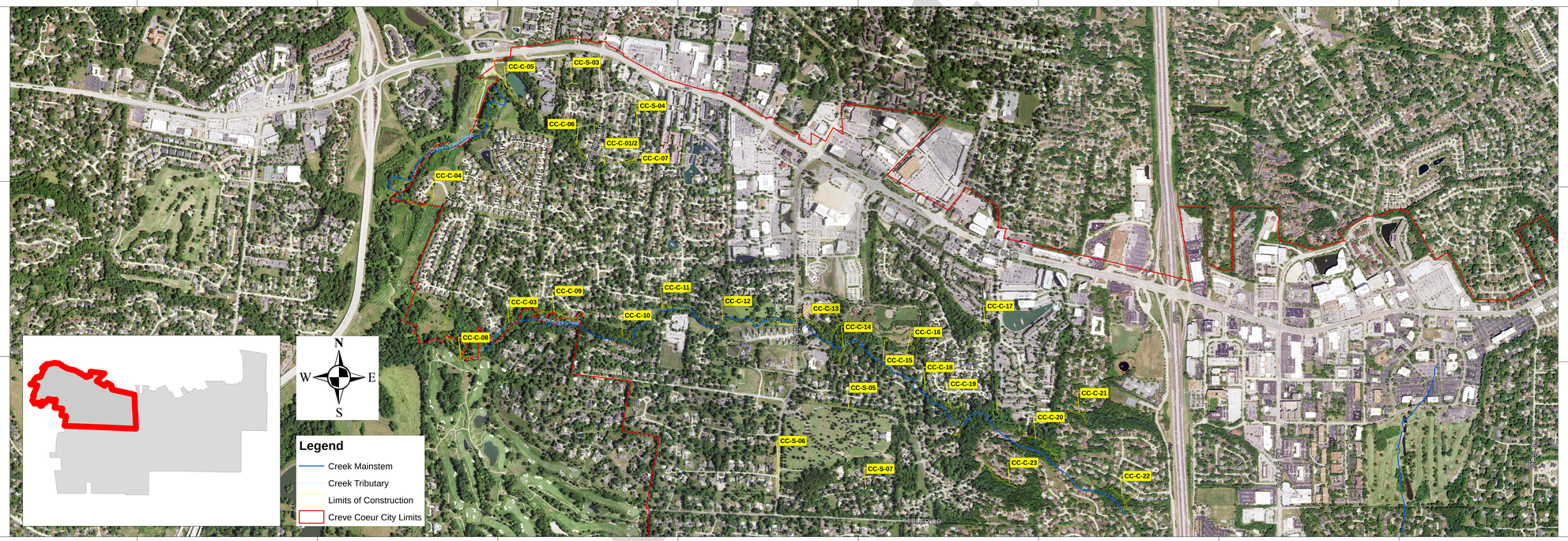
Questions?

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20

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CC-C-01 **Oak Hollow Drive**

Problem Description: In an upper tributary to Fernridge Creek between Oak Hollow Drive and Woodline Drive several issues were reported as follows. Erosion along the RDB threatening the backyards of 12340, 12346, and 12353 Oak Hollow Drive. Two minor tributaries downcutting in the common ground (524 Kelsea Drive). The affected parcels are private.

Recommendation: Stabilize the RDB along Oak Hollow Drive and install grade controls at the minor tributary confluences.


Conceptual Layout of CC-C-01

CC-C-02 **Mason Forest Drive**

Problem Description: Yard flooding at 12574 Mason Forest Drive and 406 Hilder Woods Court due to yard grading and adjacent runoff. Street and structural flooding at 12601 Mason Forest Drive which may be partially due to flow bypassing inlets.

Recommendation: Construct swale in the rear of 412574 Mason Forest Drive to convey runoff to the nearest existing storm sewer. Open all four sides of inlet 13PS-01220. Modify other inlets as needed to minimize bypass and increase inlet capacity.

Special Considerations: Hydraulic analysis of storm sewer system is needed that accounts for potential bypass at inlets and inlet capacity. Analysis should include culvert at Hilder Road and the open channel on 21614 Mason Forest Drive. Initial analysis shows adequate capacity of 36" pipe at 412614.

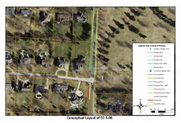

Conceptual Layout of CC-C-02

CC-C-03 **Auriondale Drive**

Problem Description: Street flooding on North Mason Road at Auriondale Drive.

Recommendation: Construct shoulder and swale on both sides of the road from North Walling Drive to Mason Forest Drive and extend a storm sewer on the west side north halfway to North Walling Drive from existing inlet 13PS-01220. Construct a new inlet at the low point of existing storm sewer. Open all four sides of inlet 13PS-01220. Modify other inlets as needed to minimize bypass and increase inlet capacity.

Special Considerations: On the east side south of Auriondale Drive grading may dictate rises set over the property line. Coordination with Auriondale Drive on the east side a curb maybe needed due to the adjacent sidewalk and the elevation difference between the street pavement and the sidewalk.

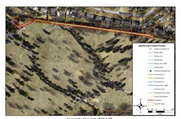

Conceptual Layout of CC-C-03

CC-C-04 **740 North Mason Road**

Problem Description: House on the south side of Hilltop Hill Lane is lower than the cemetery to the south. The majority of the cemetery has a swale and berm along the property line and being a cemetery has little impervious area.

Recommendation: Construct or reconstruct a little berm and swale along the cemetery property line. Swale should be reinforced with Installed Sheet Mulch. Construct berm around existing inlet 13W-0430.

Special Considerations: Recommendation is for surface flow, for groundwater and wet ponds may after rains an underdrain system is recommended for those property owners that have this issue.


Conceptual Layout of CC-C-04

CC-C-05 **Royal Valley Drive**

Problem Description: In Fernridge Creek between Royal Valley Drive and Hilder Court several issues were observed as follows. Failed pipe segment with a knockpoint in the rear lot of 12182 Royal Valley Drive. Knickpoint and pipe section failure at the upstream end of the channel in the rear lot of 12148 Royal Valley Drive. Knickpoint and pipe section failure at the upstream end of the channel. The affected parcels are private.

Recommendation: Install a step grade control and stilling basin in the rear lot of 12182 Royal Valley Drive. Install a step grade control at the perched outfall. Install a step grade control and stilling basin at the upstream end of the channel.


Conceptual Layout of CC-C-05

CC-C-06 **Shadowlark Court and Coventry Manor Lane**

Problem Description: In an upper tributary to Fernridge Creek erosion was observed along the RDB in the rear yard of 12200 Shadowlark Court. Erosion at the outfall behind 12205 Coventry Manor Lane was also reported. The affected parcels are private.

Recommendation: Stabilize the RDB and rock armor the pipe outfall.


Conceptual Layout of CC-C-06

CC-C-07 **Fairbo Drive**

Problem Description: In Fernridge Creek between Cross Creek Drive and Royal Valley Drive several issues were observed as follows. Erosion in the rear lot of 12442 Stratford Ridge Court. Exposed utility pipe, failing retaining wall and grouted riprap was observed at the upstream outfall. Erosion at the outfall behind 12441 Quietover Lane. Erosion along the RDB in the rear lot of the channel with an exposed utility pipe. Erosion at the outfall behind 12441 Quietover Lane. Meadow Wood Place. Incipient gully at outfall. Erosion at spillway southwest of 12260 Whitworth Terrace Court. Knickpoint along tributary south of Prairie Forest Drive and a scour hole at the outfall. The affected parcels are private.

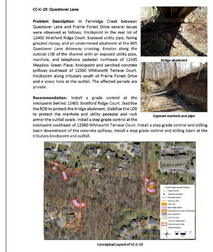
Recommendation: Install a grade control at the knickpoint behind 12442 Stratford Ridge Court. Stabilize the RDB to protect the bridge abutment. Stabilize the LDB at the outfall. Install a step grade control at the rear lot of 12441 Quietover Lane. Install a step grade control at the knickpoint southeast of 12260 Whitworth Terrace Court. Install a step grade control and stilling basin downstream of the concrete spillway. Install a step grade control and stilling basin at the tributaries knickpoint and outfall.


Conceptual Layout of CC-C-07

CC-C-08 **Quietover Lane**

Problem Description: In Fernridge Creek behind Quietover Lane and Prairie Forest Drive several issues were observed as follows. Erosion in the rear lot of 12442 Stratford Ridge Court. Exposed utility pipe, failing retaining wall and grouted riprap was observed at the upstream outfall. Erosion at the outfall behind 12441 Quietover Lane. Erosion along the RDB in the rear lot of the channel with an exposed utility pipe. Erosion at the outfall behind 12441 Quietover Lane. Meadow Wood Place. Incipient gully at outfall. Erosion at spillway southwest of 12260 Whitworth Terrace Court. Knickpoint along tributary south of Prairie Forest Drive and a scour hole at the outfall. The affected parcels are private.

Recommendation: Install a grade control at the knickpoint behind 12442 Stratford Ridge Court. Stabilize the RDB to protect the bridge abutment. Stabilize the LDB at the outfall. Install a step grade control at the rear lot of 12441 Quietover Lane. Install a step grade control at the knickpoint southeast of 12260 Whitworth Terrace Court. Install a step grade control and stilling basin downstream of the concrete spillway. Install a step grade control and stilling basin at the tributaries knickpoint and outfall.


Conceptual Layout of CC-C-08

CC-C-09 **Lonejanette Drive**

Problem Description: Two outgrowing storm sewer pipes under private concrete at the backyard.

Recommendation: Install new pipes in trench.


Conceptual Layout of CC-C-09

CC-C-10 **Fernridge Court to Ventura Drive**

Problem Description: Erosion on existing swale from Fernridge Court (2227 and 2229 Fernridge Court) to Ventura Drive (2224 and 2228 Ventura Drive). Erosion on the RDB on Ventura Drive (2224 and 2228 Ventura Drive) and the LDB on Fernridge Court (2227 and 2229 Fernridge Court

CC-S-01 2511 Bellington Lane

Problem description: Yard and basement flooding at 2511 Bellington Lane due to flow from upfich properties.

Recommendation: Construct a berm and swale with underdrain to intercept the flow from the south and direct it to the street to the west. Swap out an existing inlet grate with a dome inlet grate to minimize clogging.

Existing swale

Conceptual Layout of CC-S-01

CC-S-10 12229 Ladue Woods Drive

Problem description: Yard flooding at 12229 Ladue Woods Drive.

Recommendation: Construct berm to intercept flow from hillside that is flowing towards the east end of the house.

Special Considerations: Need additional information from Owner on home during field visit. Yard drains to main flow path through property that is blocked by the pool.

Yard drains uphill of pool

Conceptual Layout of CC-S-10

CC-C-33 Bellington Lane

Problem description: At Rosenfelder Creek between Conway Holmes Circle and Hewlett Court multiple issues were observed as follows. There is a perched pipe with fallen segments located east of 12311 Conway Holmes Circle, a footbridge with undermined concrete abutments and a knickpoint to the tributary north of 1321 Bell Arbor Lane. There is erosion along an outside bend threatening the footbridge between the rear lot of 297 Bellington Lane. The Rosenfelder Bridge Creek and perched Creek in lots 296 Bellington Lane, 12311 Conway Holmes Circle and 1321 Bell Arbor Lane. There is a knickpoint downstream of the bridge, and erosion along the RDB upstream of the bridge, and erosion along the RDB upstream of 296 Hewlett Court. The affected parcels are private.

Recommendation: Install a grade control at the perched pipe. Stabilize the LDB at the tributary confluence and install a grade control at the footbridge. Stabilize the entire RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a step grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two step grade controls at the knickpoint southeast of 296 Hewlett Court.

Eroded bank at bend

Perched pipe

Pedestrian bridge

Conceptual Layout of CC-C-33

CC-C-34 Williamsburg Road

Problem Description: There a barrel erosion along Rosenfelder Creek threatening the fence and pool in rear lot of 922 Cabin Grove Lane along with a 2 ft knickpoint. There is also erosion in the northwest corner of 30 Williamsburg Road threatening the rear lot and undermining the channel. The affected parcels are private.

Recommendation: Stabilize the LDB along the rear lot of 922 Cabin Grove Ln and install a step grade control at the knickpoint. Rock armor the outfall at large size and install a grade control at the confluence.

Threatened fence and pool

Conceptual Layout of CC-C-34

CC-S-02 12 Broadview Farm Road

Problem Description: Several knickpoints were observed along a tributary to Smith Creek which runs parallel to South Mason Road. Bank mass wasting was seen along the rear lot of 29 Broadview Farm Road. The affected parcels private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 29 Broadview Farm Road.

Bank mass wasting

Conceptual Layout of CC-S-02

CC-S-03 Broadview Farms Subdivision

Problem description: Water ponds along the northrear 1B, 1B, 21 and 23 Broadview Farms Road. At 3 Broadview Farms Road, there is a 12" CMP that drains to a drain with a 24" RD that drains to the area. A curb inlet (DI-upNE) has significant buoys potential and the curb along the east side of Broadview Farms Road, has the potential to be overtopped allowing additional flow to this area.

Recommendation: For the water ponding along the yards, infill and overlay the street and adjust the pavement slope to drain across the street. At 3 Broadview Farms Road, reset the CI top and reconstruct the curb along Broadview Farms Road.

Special Considerations: Concrete should be considered in lieu of asphalt to provide a more precise grade and cross slope on the street to ensure proper drainage. The hydraulic grade line for the storm sewer downstream of the FES needs to be checked to ensure water isn't backing up into this area. A check valve in the adjacent MH6 on the pipe should be considered.

Flooding at end of driveway

Conceptual Layout of CC-S-03

CC-C-36 438 Twin Creek Road

Problem description: In Smith Creek behind 438 Twin Creek Road erosion was reported along the LDB. The affected parcels are private.

Recommendation: Stabilize the LDB.

LDB Erosion

Conceptual Layout of CC-C-36

CC-C-37 Baron Estates

Problem Description: In the unnamed tributary along Baron Estates occur along the RDB is threatening the driveway of 24 Baron Estates. The affected parcels are private.

Recommendation: Stabilize the RDB and install a grade control.

Scour threatening driveway

Conceptual Layout of CC-C-37

CC-C-38 Cheesecake Lane

Problem Description: There is trees obstructing flow in the channel and the rear lot of 327 Cheesecake Lane. Also, trash in the rear lot is causing localized ponding in the channel and the rear lot is prone to flooding.

Recommendation: Remove the debris found in the channel and remove the trees. Regrade the rear lot to drain towards the channel.

Debris and trees in channel

Conceptual Layout of CC-C-38

CC-C-39 Delong Lane

Problem Description: Yard ponding at 238 Delong Lane and flow path over and through the property.

Recommendation: Construct a 2ft x 2ft x 2ft inlet at the low point of the yard and connect to the storm sewer in the street to the south.

Yard ponding at 238 Delong Lane

Conceptual Layout of CC-C-39

CC-C-40 Chesterfield Valley Crossing

Problem Description: Trash and debris found in the channel at the Chesterfield Valley Crossing.

Recommendation: Remove the trash and debris.

Trash and debris in channel

Conceptual Layout of CC-C-40

CC-C-41 Chesterfield Valley Crossing

Problem Description: Trash and debris found in the channel at the Chesterfield Valley Crossing.

Recommendation: Remove the trash and debris.

Trash and debris in channel

Conceptual Layout of CC-C-41

CC-C-42 Chesterfield Valley Crossing

Problem Description: Trash and debris found in the channel at the Chesterfield Valley Crossing.

Recommendation: Remove the trash and debris.

Trash and debris in channel

Conceptual Layout of CC-C-42

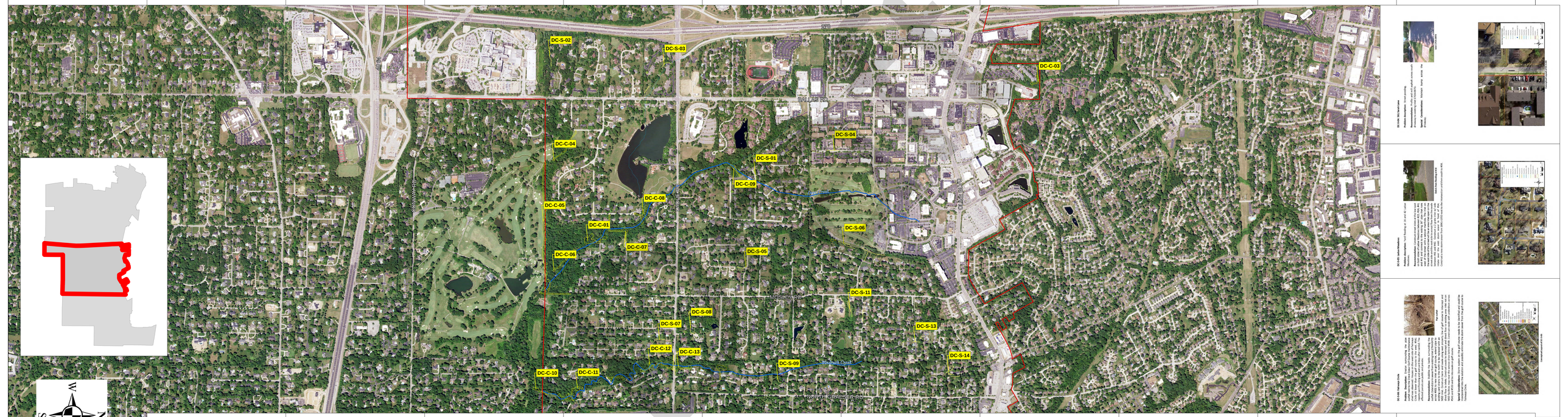
CC-C-43 Chesterfield Valley Crossing

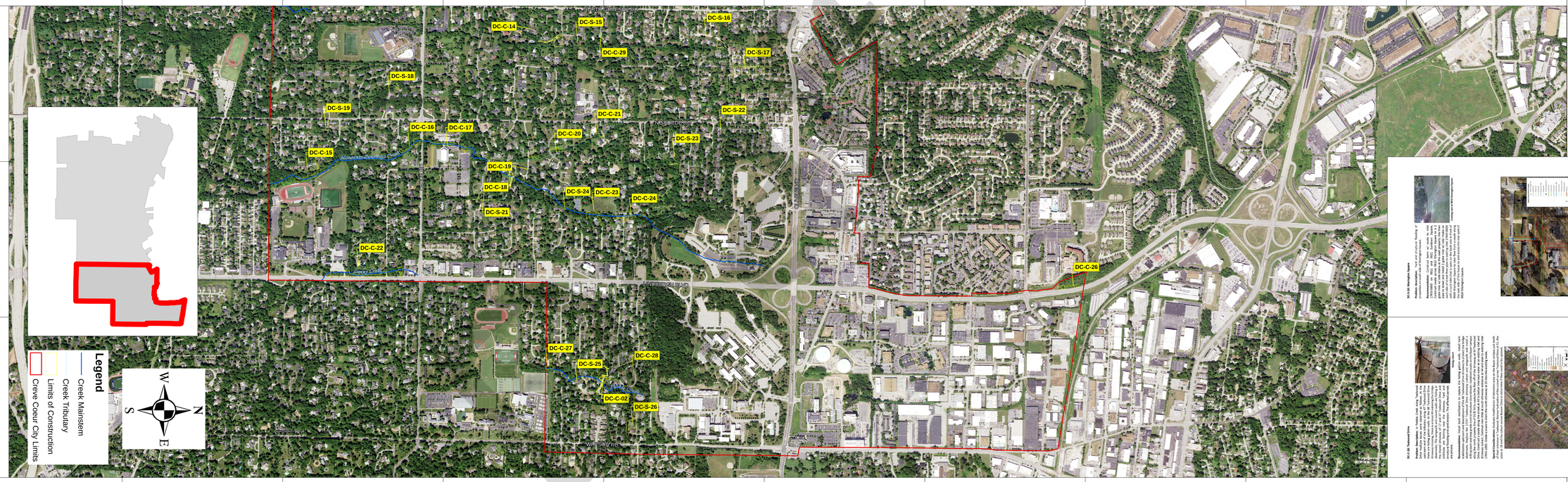
Problem Description: Trash and debris found in the channel at the Chesterfield Valley Crossing.

Recommendation: Remove the trash and debris.

Trash and debris in channel

Conceptual Layout of CC-C-43


DC-S-02
DC-S-03
DC-C-03
DC-S-04
DC-C-04
DC-S-01
DC-C-09
DC-C-08
DC-C-05
DC-C-01
DC-S-06
DC-C-07
DC-C-06
DC-S-05
DC-S-11
DC-S-08
DC-S-07
DC-S-13
DC-C-12
DC-C-13
DC-S-14
DC-S-09
DC-C-10
DC-C-11
Wilmshire Creek
Wilmshire Creek
Wilmshire Creek



DC-C-01 1009N Country View Drive

Problem Description: In Monarchs-Sunswept Creek downstream of the culvert crossing Country View Drive, failing grouted riprap and bank erosion threatening the fence along the property line of 1009N Country View Drive was observed. The affected parcels are private.

Recommendation: Install a step grade control structure to replace the failing grouted riprap. Stabilize the banks on either side of the channel.


Failing grouted riprap

Bank erosion threatening fence


Conceptual Layout of DC-C-01

DC-S-12 North Spoede Road & Mission Hills Court

Problem Description: Street flooding near this intersection.

Recommendation: Construct 2 grate inlets w/ curb intake on north side of Mission Hills Court approximately 50 feet east of North Spoede Road and connect to existing storm sewer with a manhole with a solid lid cover.

Special Considerations: Hydraulic analysis of storm sewer system is needed that accounts for potential bypass at inlets and inlet capacity on the street and review spread if additional inlets are warranted on North Spoede Road.


Conceptual Layout of DC-S-12

DC-S-13 N Spoede Ridge Lane

Problem Description: Water backs up onto 19 Spoede Hills Drive potentially due to erosion from construction at 4 Ridges Lane sitting in channel.

Recommendation: Construct better defined rock channel on 0 Spoede Ridge Lane and 4 Ridge's Lane.


Inlet in channel


Conceptual Layout of DC-S-13

DC-C-22 Denny Creek

Problem Description: In Denny Creek along Lindbergh Boulevard multiple issues were observed as follows. Upstream of the Lindbergh Boulevard crossing, erosion was observed along the riverbank and 20ft wingwall, undermining the concrete footing. At the 1000ft footpath, erosion was observed along both banks. There was a footpath upstream of the southern entrance and Whitebridge Lane, erosion was observed along the LDS church and was also observed towards the upstream end of the reach on the ROW. Between the northern entrance and Whitebridge Lane, erosion was observed along the LDS throughout the reach threatening the roadway and two utility poles. Tension cracks were seen forming near the sidewalk and along the top of bank. Two knickpoints were observed at the upstream end of the reach on the ROW. Along the knickpoints, a 24in and 12in storm sewer outlet was observed along with erosion threatening the wingwalls and roadway. At the upstream end of Denny Creek, a perched outfall and knickpoint were observed. The affected parcels are private.

Recommendation: Stabilize the LDS upstream of the Lindbergh Boulevard crossing. Stabilize both banks between the church entrances and install grade controls at the knickpoints. Stabilize the LDS between the northern church entrance and Whitebridge Lane. Stabilize the ROW upstream of the northern entrance and install two step grade controls. Stabilize the ROW downstream of Whitebridge Lane and install a step grade control and stilling basin. Stabilize both banks at the upstream end of Denny Creek and install a grade control.


Left erosion between church entrances


Conceptual Layout of DC-C-22

DC-S-06 7 Southwyck Drive

Problem Description: Erosion, sinkholes and failing retaining wall.

Recommendation: Impact pipe from existing inlets in rear yard for potential cause of sinkhole. Make necessary repairs. Replace retaining wall.


Failing retaining wall


Conceptual Layout of DC-S-06

DC-C-23 10620 Coventry View Drive

Problem Description: Within Dr. Phillip Venable Memorial Park multiple issues were observed along Monarchs-Sunswept Creek as follows. Behind 455 Deadybrook Drive there is a 8 ft knickpoint, failing grouted riprap, and gabion baskets. Upstream and downstream of the pedestrian bridge crossing behind 450 Treebrook Drive, the grouted riprap structure protecting the pipe outfall is failing. The affected parcels are private and public.

Recommendation: Install a step grade control structure and bank stabilization to replace the failing gabions and retaining wall. Install bank stabilization along the private property lines with bank stabilization. Bridge work will be combined with the planned Venerable Park project.


Failing gabions and retaining wall


Failing grouted riprap


Conceptual Layout of DC-C-23

DC-C-24 Sunswept Drive

Problem Description: Along Sunswept Drive multiple issues were observed along Monarchs-Sunswept Creek as follows. Along the driveway of 18 Sunswept Drive there is a failing gabion wall. Where the creek crosses 15 Sunswept Drive there is a failing gabion wall and erosion is nearing the road and failing grouted riprap and gabion baskets upstream of the Sunswept Drive crossing. In the Sunswept Drive culvert, there is a hole in the concrete below a pipe outfall. Downstream of the Sunswept Drive culvert, there is a failing wall. The affected parcels are private.

Recommendation: Install bank stabilization along the driveway of 18 Sunswept Drive to replace the failing gabion wall. Install bank stabilization along the creek at 15 Sunswept Drive to address the bank erosion, failing grouted riprap, and gabion baskets. Patch the concrete below the pipe outfall in the culvert. Replace the gabion wall along 0 Sunswept Drive.


15 Sunswept Drive gabion wall


15 Sunswept Drive erosion


Conceptual Layout of DC-C-24

DC-C-25 Lindbergh Boulevard

Problem Description: In the unnamed tributary along the Lindbergh Boulevard ROW, an asphalt swale conveying drainage from the roadway is failing and being bypassed causing bank erosion. At the downstream end of the asphalt swale, a concrete swale is undermined. The issues are contained within Lindbergh Boulevard ROW.

Recommendation: Replace the asphalt swale and stabilize the banks. Install a stilling basin and step grade control structure at the downstream end of the tributary.


Failing asphalt swale


Undersized and scour hole


Conceptual Layout of DC-C-25

DC-C-27-33 South Textbrook Drive

Problem Description: In Pebble Creek there is bank erosion present at the outfall and along the rear lot of 22 South Textbrook Drive. The affected parcels are private.

Recommendation: Install a step grade control structure, stabilize both banks, and armor the drainage channel. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.


Outfall


Bank erosion along rear lot of 22 South Textbrook Drive


Conceptual Layout of DC-C-27

DC-S-35 Haven View Drive

Problem description: Curb and gutters have been filled in due to pavement overlay and flows overtop curb and flows onto 19 Haven View Drive.

Recommendation: Mill out gutters and construct three 2 yard inlet w/ side intake on south side of the street. One to connect to manhole 17543-0003 on the southeast, one to connect to manhole 17543-0004 on the south and one in front of 4749 to connect to that 17543-0004.

Special Considerations: The inlet in front of #19 could be connected directly to the 72"x72" box culvert that traverses #19.


Haven View Drive


Conceptual Layout of DC-S-35

DC-C-01 Beaver Drive Crossing

Problem Description: The downstream end of the Pebble Creek culvert under Beaver Drive has rusted out and the north headwall has undermined where the culvert is crossing and there is a limited amount of cover over the corrugated metal pipe. The culvert is also undersized. Over the past 2 years, downstream of the culvert have rusted out and are failing. In the project vicinity, there is structural flooding at 17 Beaver Drive and 40 Beaver Drive and there is bank erosion at 40 and one in front of 4749 to connect to that 17543-0003.

Special Considerations: The outlet in front of #19 could be connected directly to the 72"x72" box culvert that traverses #19.


Downstream end of culvert


Upstream end of culvert


Conceptual Layout of DC-C-01

DC-S-28 Elm Knolls Lane

Problem Description: Rusted CMP at Elm Knolls Lane and Elmridge Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-28

DC-S-29 Elm Knolls Lane

Problem Description: Undersized CMP at Elm Knolls Lane and Elmridge Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-29

DC-S-30 Sunswept Drive

Problem Description: Storm flows exiting Sunswept Drive Subdivision are causing bank erosion and undermining of the headwall of the culvert crossing Sunswept Drive. The affected parcels are private.

Recommendation: Construct a new 2 yard inlet w/ side intake on the south side of the street. Connect to the existing storm sewer system at the intersection of Sunswept Drive and Dunn Road. Construct a storm sewer manhole with a solid lid cover over the existing pipe. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-30

DC-S-31 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.


Upstream end of culvert

Bank erosion


Conceptual Layout of DC-S-31

DC-S-32 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-32

DC-S-33 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-33

DC-S-34 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-34

DC-S-36 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-36

DC-S-37 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-37

DC-S-38 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-38

DC-S-39 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-39

DC-S-40 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-40

DC-S-41 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-41

DC-S-42 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-42

DC-S-43 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-43

DC-S-44 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Conceptual Layout of DC-S-44

DC-S-45 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-45

DC-S-46 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-46

DC-S-47 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-47

DC-S-48 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-48

DC-S-49 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-49

DC-S-50 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-50

DC-S-51 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-51

DC-S-52 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-52

DC-S-53 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-53

DC-S-54 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-54

DC-S-55 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-55

DC-S-56 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-56

DC-S-57 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-57

DC-S-58 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-58

DC-S-59 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-59

DC-S-60 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-60

DC-S-61 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Conceptual Layout of DC-S-61

DC-S-62 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-62

DC-S-63 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-63

DC-S-64 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-64

DC-S-65 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-65

DC-S-66 Dunn Road

Problem Description: Undersized CMP at Dunn Road and Sunswept Drive has failed and structural flooding of properties and bank slide of Elmridges Country.

Recommendation: Replace the CMP with a new RCP culvert. Stabilize the banks on either side of the culvert. Install a step grade control structure at the downstream end of the culvert to protect the culvert entrance.

Upstream end of culvert

Bank erosion

Conceptual Layout of DC-S-66

Draft

Appendix C
Stormwater Problem Sites

Content:

- Stormwater Problem Site Project Areas
- Criteria for Public Projects
- Public or Private Checklist
- List of Private Projects

Draft

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Stormwater Problem Site Project Areas

Draft

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Introduction

The following problem areas (PA) were developed by grouping the reported issues. The PA numbers were assigned for initial tracking of the reported issues. The Potential Project number that this area is addressed under is listed in parentheses in the title. Some problem areas were also classified as private issues.

PA-1 – Woodbridge Manor Road (Overland) (DC-S-03)

Stormwater issues in Woodbridge Manor Road include flooding in basements, garages, and on streets and yards during heavy rain events. The main cause of the basement flooding is stormwater back-up in the sanitary sewer, which is an MSD issue. During heavy rainfall events 8 Woodbridge Manor has had up to 15 inches of water on the garage door and water inside the garage. Analysis is needed to determine the intensity of rainfall that leads to the flooding to make sure the storm sewer system is properly sized. The 15-year flowrate is 380 cubic feet per second and 100-year flowrate is 513 cubic feet per second. The MSD basemap does not have invert elevations for the 72-inch outfall into the detention basin. It is estimated that the pipe is adequately sized for the 15-year but the 100-year would likely surcharge on to Woodbridge Manor. Based on the two-foot contours, the overland flow path maybe constricted leading to the garage flooding. Additional analysis should include the detention basin and outfall structure to ensure these structures do not contribute to the flooding and that drainage from I-270 is properly accounted for.

PA-2 – Chasselle and Chamblee Lane (Channel) (CC-C-25)

Five streambank erosion issues were reported either to the City or on Social Pinpoint affecting the following properties:

3 Chasselle Lane
5 Chasselle Lane
6 Chasselle Lane
10 Chamblee Lane
606 Chamblee Lane
622 Chamblee Lane

These issues are located along a tributary to Smith Creek which runs under Chasselle Lane and south of Chamblee Lane. Reported issues include an undermining headwall, a sinkhole caused by a possible pipe failure, creek erosion, streambank erosion, and flooding of a pool area and home.

The City has reported the sinkhole and pipe failure issue to MSD. I&L identified active incision along this reach as well as undermined pedestrian bridge abutments and erosion threatening a retaining wall. Erosion on both sides of the Chasselle Lane culvert was also identified in the field.

Draft

PA-3 – Williamsburg Road (Overland/Channel) (CC-C-34)

The Williamsburg subdivision project area has several different issues.

10 Williamsburg Road –	Streambank erosion is located at the upstream end of Rosenfelder Creek which runs between Cabin Grove Lane and Williamsburg Road. Reported issues include gully erosion where overland drainage enters the channel and outfall erosion and undermining of an 18-inch pipe on the north side of the property.
14 Williamsburg Road –	Inlet maintenance and capacity analysis are both recommended.
20 Williamsburg Road –	Yard flooding from 69-acre drainage area (DA). Analysis is needed to determine the intensity of rainfall that leads to the flooding to make sure the storm sewer system is properly sized and an overland flow path is provided. The estimated flows in the 48-inch reinforced concrete pipe are 15-year flowrate is 146 cubic feet per second and 100-year flowrate is 197 cubic feet per second. The MSD basemaps show that the 48-inch pipe downstream of this property has a 6% slope and thus adequate capacity for these flows. Additional analysis is needed to determine if there is bypass flows upstream and that drainage from I-270 is properly accounted for in pipe-sizing calculations.
21 Williamsburg Road –	Yard erosion on a graded hillside was reported.
38 Williamsburg Road –	Yard ponding was reported.
40 Williamsburg Road –	Yard ponding was reported.
43 Williamsburg Road –	Structural flooding results from the front yard sloping towards the house. There exists the potential for flow from the street at the gap in the curb at the sidewalk and off the driveway to the west.

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PA-4 – Mosley Acres (Overland/Channel) (Private)



Overtopping of the dam causes erosion and damage to the dam. The primary outfall pipe is likely undersized and prone to blockage. The emergency overflow is also likely undersized. There is little freeboard between the primary outfall on the top of the dam. At 16 Mosley Acres Drive, yard erosion behind the curb was reported. Asphalt has reduced the capacity of the curb. The yard at 16 Mosley Acres Drive does not have turf grass. Other nearby yards with turf grass did not exhibit erosion.

PA-5 – Fernview Drive (Overland) (Private)

Yard erosion was reported at 1020 & 1028 Fernview Drive. The drainage area for 1028 Fernview Drive is about 0.75 acres and there is a 8:1 slope from 1020 Fernview Drive.

PA-6 – Fernpark Drive (Overland) (CC-S-04)

Different issues were reported at the following addresses:

1032 Fernpark Drive –	Yard flooding is evident on the side yard from about a 0.4-acre DA with about a 2.4% slope along the house. Owners have added a French drain to prevent water from coming into basement windows.
12921 Fernway Lane –	Yard erosion is evident.
12921 Fernway Lane –	Yard ponding is evident.

PA-7 – Ladue Meadows (Overland) (DC-S-05)

Various stormwater issues were reported at the following addresses:

104 Ladue Meadows Lane –	Yard erosion is happening near an inlet. This is a maintenance-related issue.
16 Ladue Meadows Lane –	The yard is flooding from 45-acre DA. A debris line of mulch just inside the yard near the driveway entrance was evident on 4-20-23. Based on the LiDAR flow paths and areas, the storm sewer is capturing a drainage area of 32.87 acres. Based on estimated flows, the storm sewer should have adequate capacity. Additional inlets are likely warranted to capture the drainage area downhill of the existing inlets. An analysis is also likely needed to determine if an adequate overland flow path is provided.



Draft

PA-8 – Brooktrail Court North (Overland/Channel) (DC-C-12)

Reported issue of water in the street after and during heavy rains. Sod on both sides of the road is above the pavement. Possible bypass of inlets up the hill may also contribute to the amount of water on the roadway. The capacity of the 72-inch reinforced concrete pipe (RCP) should be reviewed for the level of service for the 467-acre DA.

I&L identified a channel erosion issue in need of systemic repair consisting of failing grouted riprap, knickpoints, and a scour pool in Windrush Creek from South Graeser Road to Ladue Road. This reach crosses between two common ground lots.

PA-9 – 10671 Country View Drive (Overland) (Private)



The existing swale was disturbed by development and no longer functions properly. Without a functioning swale, the back yard floods

PA-10 – Ladue Road and South Spoede Road (Channel) (DC-C-16)

Three streambank erosion issues were reported either to the City or on Social Pinpoint. The issues affect the following properties:

10656 Ladue Road
10677 Spoede View Court

Streambank erosion issues were reported along Monsanto Sunswept Creek just south of the Ladue Road crossing. As surface flows drain to the creek, the runoff causes gully erosion in yards.

In this location, I&L also identified a channel erosion issue in need of systemic repair consisting of knickpoints, bank erosion, culvert undermining, and roadside swale erosion. I&L also noted that the Ladue Road culvert wall was bulging and cracking, and active seepage was flowing from the cracks.

PA-11 – 10835 Rondelay Drive (Overland) (Private)

Yard erosion in the front due to flow overtopping the curb. The curb has reduced capacity due to an asphalt overlay. Yard erosion is evident in the back yard near an inlet. This issue can likely be resolved with MSD maintenance activities.

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PA-12 – Chalet Court (Overland) (Private)

This project area includes:



531 Chalet Court – The owner reports spending $60,000 trying to resolve stormwater issues. Drainage area to the backyard is about 0.44 acre.

10921 Chalet Court – Reported issue of yard flooding during heavy rain. A 42-inch sewer traverses the property with inlets near both property lines. The yard slopes towards the downhill inlet but is uneven. The drainage area between the inlets is about 3.2 acres.

PA-13 – Brooktrail Court South (Channel) (DC-C-11)

Two streambank erosion issues were reported on Social Pinpoint affecting the following common ground lots between South Graeser Road and Brooktrail Court and along Windrush Creek between Villa Coublay Drive and South Graeser Road:

252 South Graeser Road
10954 Brooktrail Court

Reported issues include erosion at the Graeser Road crossing, yard erosion, ponding in the common area, and streambank erosion.

I&L also identified channel erosion issues in need of systemic repair including failing grouted riprap, knickpoints, and bank erosion.

PA-14 – 11076 Graeser Lane (Overland) (Private)

Yard flooding from flow onto driveway from Graeser Lane. The drainage area is about 0.5 acre.

PA-15 – 111 Worthington Oaks Drive (Overland) (Private)

A sinkhole has formed on the backside of the street inlet and this is an MSD maintenance issue.

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PA-16 – 11205 Tureen Drive (Overland) (Private)



A sinkhole is in front of an area inlet near the eastern property line. Ponding occurs at end of private drain pipe. A 30-inch reinforced concrete pipe runs through the backyard. Unrelated water was observed seeping onto the street from 11218 Tureen Drive.

PA-17 – Wedgewood Lane (Overland) (DC-S-16)

Yard erosion and yard ponding were reported at the following addresses:

6 & 7 Wedgewood Lane –	Yard ponding is likely due to poor grading between houses.
12 Wedgewood Lane –	Yard erosion was reported.

PA-18 – 121 Mystic Meadows Lane (Overland) (DC-S-08)

Residents report yard erosion along the driveway which slopes about 6.7%. The drainage area at the top of the driveway is about 4.5 acres, and the drainage area at the bottom of the driveway is about 5 acres.

PA-19 – Creve Coeur Place (Royal Valley) (Overland) (Private)

Yard erosion was reported at 12121 & 12135 Royal Valley Drive. The Home Owner Association (HOA) has concerns about the dry detention basin and long-term maintenance of the basin due to silt and other debris collecting in the basin. The basin's drainage area is more than 50 acres and includes portions of I-270.

PA-20 – 12229 Ladue Woods Drive (Overland) (CC-S-10)

Yard ponding with about a 0.9 acre DA. A pool is likely constricting flow path.

PA-21 – Blackheath Court and Country Manor Lane (Channel) (CC-C-21)

Streambank erosion issues were reported at the following addresses:

12242 Blackheath Court
689 Country Manor Lane
12295 Country Manor Lane

The erosion issues are found along a tributary to Fernridge Creek between Country Manor Lane and Coeur De Ville Drive. Reported issues include the creek rising near the property and outfall erosion undermining a 12-inch pipe.

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PA-22 – Boothbay Court (Channel) (CC-C-31)

Two streambank erosion issues were reported to the City affecting the following properties:

12310 Boothbay Court
12318 Boothbay Court

These issues are located along an unnamed creek between Boothbay Court and Bellington Lane which drains into an enclosed system. Reported issues include outfall erosion undermining an 18-inch pipe and creek bank erosion threatening yards.

PA-23 – 12318 Halsgame Lane (Overland) (Private)

Yard erosion. This property doesn't have a significant DA but does have steep slopes.

PA-24 – Montsouris Drive (Overland/Channel) (CC-C-27)

This project area consists of different issues at the following addresses:

12335 Gaillard Drive –	The owner reports that channel erosion started after the Belle Maison subdivision was constructed. MSD shows as-builts dated November 2014.
12365 Montsouris Drive –	Water leaks into the basement through the walls or floor. During heavy rain events, water also leaks through the garage floor. The owner reports that the yard ponds during every rain event. Trees are threatened due to channel erosion. The owner suspects underground springs may be present.
12372 Montsouris Drive –	The owners report yard flooding from the lake.
12450 Montsouris Drive –	Residents report shore erosion that the subdivision has taken steps to prevent by recently placing rock to protect the bank. Sediment is being transported into the lake.

Three streambank erosion issues were reported on Social Pinpoint affecting the following properties:

12335 Gaillard Drive
12365 Montsouris Drive
12450 Montsouris Drive

These issues are located along an unnamed creek which drains to a lake at the upstream end of a tributary to Smith Creek and the lake itself. The lake is directly west of Montsouris Drive. Reported issues include streambank erosion nearing a retaining wall, backyard erosion, and erosion along the lake shoreline.

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PA-25 – Oak Hollow Drive (Channel) (CC-C-23)

Four streambank erosion issues were reported on Social Pinpoint affecting the following properties:

12345 Woodline Drive
12351 Woodline Drive
524 Falaise Drive
12340 Oak Hollow Drive
12346 Oak Hollow Drive

These issues are located along an unnamed creek between Woodline Drive and Oak Hollow Drive which eventually drains to Fernridge Creek. Reported issues include drainageways to the creek deepening and widening causing yard erosion plus sinkholes. Reported channel bank erosion is causing trees to fall and loss of yard.

PA-26 – Questover Crossing (Overland) (Private)

Residents report standing water and minor erosion within the condo complex.

PA-27 – Villa Hill Lane (Channel) (CC-C-16)

Two streambank erosion issues were reported either to the City or on Social Pinpoint. These issues are located along a tributary to Fernridge Creek and along Fernridge Creek and affect the following properties:



12517 Villa Hill Lane
12495 Villa Hill Lane

Reported issues include erosion in backyards and bank erosion threatening a residential fence and wall.

PA-28 – 740 North Mason Road (Overland) (CC-S-05)

Multiple properties report wet yards and yard ponding on Villa Hill Lane, which sits north of the Bellerive Garden Cemetery. These properties sit downhill from the cemetery and are graded into the hillside. Residents suggest that perhaps the pond on the cemetery is contributing to stormwater issues.

PA-29 – Royal Manor Drive (Overland/Channel) (CC-C-29)

Overland flow was reported at the following addresses:

12568 Royal Manor Drive – Reports of basement flooding. LiDAR and two-foot contours indicate yard is graded towards the house. Re-grading the yard near the back of the property could solve the issue.

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Four streambank erosion issues were also reported either to the City or on Social Pinpoint affecting approximately two lots.

12554 Royal Manor Drive
12650 Royal Manor Drive

These issues are located along a tributary to Smith Creek which crosses Royal Manor Drive. Reported issues include creek erosion; home flooding; and streambank erosion that is threatening a pedestrian bridge, trees, a community walking path, and a culvert.

I&L identified a channel erosion issue in need of systemic repair consisting of knickpoints along this reach as well as erosion threatening a pedestrian bridge, undermining a retaining wall, threatening a trail, and causing a pedestrian bridge's wing walls to fail.

PA-30 – Mason Forest Drive (Overland) (CC-S-07)

Yard flooding and ponding issues at multiple properties. Residents at 12602 Mason Forest Drive report structural flooding and flooding of their pool. A 36-inch pipe is shown on the MSD basemaps with a 31-acre DA. The pool is located in the overland flow path. The 15-year flowrate is 63 cubic feet per second and 100-year flowrate is 84 cubic feet per second. The MSD basemap shows a pipe slope of 1.1% for the 36-inch pipe. It is estimated that the pipe is adequately sized for the 15-year and the 100-year flows. Analysis is needed to determine if an adequate overland flow path is provided while taking into account the potential for bypass flows at the inlets in the system.

PA-31 – 12643 Conway Downs Drive (Overland) (Private)

Yard ponding in a low spot in the yard with a 2.25-acre DA. Potential to include in PA-29.

PA-32 – Creekside at Mason (Overland) (Private)

Two issues are reported. The first issue is flooding in the common ground on the north side of the subdivision. The second issue is flow from a lake south of the subdivision. The common ground is in a FEMA floodplain with a 600-acre DA. MSD has an approved floodplain study for a new subdivision to the north. The flow from the lake overwhelms the area inlet and dislodges riprap.



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PA-33 – Chaminade (Overland/Channel) (DC-C-15)

This project area consists of different issues at the following addresses:

16 Chaminade Drive –	Street runoff is causing yard erosion due to possible inadequate inlet capacity at low point in street and flow to leave street at the driveway.
13 & 14 Chaminade Drive –	Streambank erosion caused the retaining wall to collapse.

One streambank erosion issue was reported to the City, and this erosion issue affects the following properties:

13 Chaminade Drive
14 Chaminade Drive
425 S Lindbergh Boulevard

These issues are located along Monsanto Sunswept Creek between Chaminade Drive and Chaminade College Preparatory School. Reported issues include retaining wall failure and creek erosion.

I&L identified a channel erosion issue in need of systemic repair consisting of knickpoints, undermined retaining wall, a failed bridge, and bank erosion along this reach.

PA-34 – 13 Sona Lane (Overland) (DC-S-17)

Reported structural flooding of home that sits at the bottom of a cut slope with a 0.44-acre DA similar to neighboring properties.

PA-35 – Ambois Drive (Channel) (CC-C-09)

Three streambank erosion issues were reported on Social Pinpoint affecting the following properties:

13006 Ambois Drive
13010 Ambois Drive
12996 Ambois Drive

These issues are located along Fernridge Creek south of Ambois Drive. Reported issues include property flooding, street flooding, and creek bank widening.

In this location, I&L identified a channel erosion issue in need of systemic repair consisting of erosion threatening residential fence, knickpoints, yard erosion, fence failure, and a scour hole.

PA-36 – Ferntrails Lane (Overland) (CC-S-03)

Yard ponding in an area that is known to be a sinkhole. Residents have concerns about structural flooding during large, infrequent rain events. Based on the LiDAR information, the

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sinkhole drains 7.6 acres; however, curbs and other infrastructure may impact the area that drains to the sinkhole. The estimated 100-year flowrate is 23.2 cubic feet per second and it appears that the overland flow path may not be adequate to pass this flow. Additional analysis is needed to determine the amount of freeboard that is provided.

PA-37 – Autumn Trails Court (Overland/Channel) (CC-C-04)

Yard erosion was reported at 13210 Autumn Trails Court. Contours show 6% grade that steepens in the woods with a 0.56-acre DA.

Along a tributary to Creve Coeur Creek just west of Autumn Trails Court, I&L identified a channel erosion issue in need of systemic repair consisting of a knickpoint and failing grade control.

PA-38 – Alden Lane (Overland) (DC-C-18)

Street flooding happens in the flat area between the two channels that lack curbs. Area to the east up the hill has curbs. In this area with curbs, flows bypass the channel, which significantly adds to the flow between channels. The east box culvert and the street from the box culvert to the cul-de-sac was replaced in 2017. Sod is high along street preventing local water from draining off the street. A gully is forming on the south side of the street near 6 Alden Lane.



Along Monsanto-Sunswept Creek and a tributary to Monsanto-Sunswept Creek just north of the Alden Lane crossings, I&L identified a channel erosion issue in need of systemic repair consisting of failing grouted riprap and failing railroad tie wall.

PA-39 – 174 Belle Maison Court(Overland) (Private)

Water flows through the backyard to the north onto 178 Belle Maison Court. Improvements at 178 Belle Maison Court have blocked the flow path. At the time of the initial report, the flow path was completely blocked. 178 Belle Maison Court has partially remediated the issue, but the flow path is still partially blocked. The drainage area leaving 174 Belle Maison Court is about 0.88 acre.

PA-40 – 18 Sackston Woods Lane (Overland) (DC-S-02)

Residents report structural flooding and flooding of the pool. The flow path is through the pool, and the estimated drainage area is 6 acres.

PA-41 – Balcon Estates (Channel) (CC-C-37)

Five streambank erosion issues were reported either to the City or on Social Pinpoint affecting the following properties:

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7 Balcon Estates
19 Balcon Estates
24 Balcon Estates
26 Balcon Estates
27 Balcon Estates
30 Balcon Estates
32 Balcon Estates

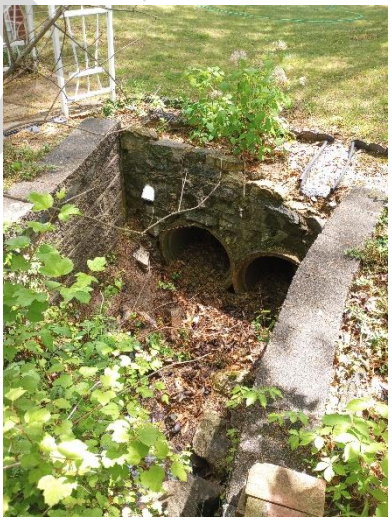
These issues are located in the Balcon Estates subdivision where a tributary to Smith Creek runs on the southwest side and an unnamed sub-tributary runs through the middle of the subdivision. Reported issues include property flooding, home flooding, streambank erosion, threatened pool decks, and a threatened driveway bridge.

I&L identified a channel erosion issue in need of systemic repair consisting of scour threatening the driveway at 25 Balcon Estates.

PA-42 – Tealwood Drive (Overland/Channel) (DC-C-28)

This project area consists of different issues at the following addresses:

19 Tealwood Drive – A 29.6-acre DA flows into a culvert with estimated 15-year flowrate of 59 cubic feet per second and 100-year flowrate of 80 cubic feet per second. The MSD basemaps do not show the culvert. An analysis is needed to determine the intensity of rainfall that could lead to structural flooding and if the overflow path is adequate. In addition to potential structural and problematic flooding, flow comes across the street, down the driveway, and around the backside of the culvert headwall. Across the street, driveway culverts that had been constructed to maintain flow and connect to an inlet are no longer visible.



51 Tealwood Drive – A 23.5-acre DA flows into a culvert with an estimated 15-year flowrate of 47 cubic feet per second and 100-year flowrate of 64 cubic feet per second. The MSD basemaps do not show the culvert. An analysis is needed to determine the intensity of rainfall that could lead to

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	structural flooding and if there is an adequate overflow path. Two-foot contours indicate that there is less than two feet from house and a low point in road. A potential location for a detention basin is on the Bayer campus. A basin in this location could control approximately 19 acres.
53 Tealwood Drive –	Residents report structural flooding in the basement and water leaking through the basement walls and floor. The house sits south of the Bayer campus and at the bottom of hill. The drainage area that flows towards the house is about 1.35 acres.

Two streambank erosion issues were reported to the City affecting 47 North Tealwood Drive. These issues are located along Pebble Creek directly east of Tealwood Drive. Reported issues include erosion at culvert headwall, outlet, and along banks.

Along this reach, I&L identified channel erosion issues in need of systemic repair consisting of undermined and failing wingwalls, sinkholes, a failing driveway, knickpoints, failing gabion baskets, and yard erosion.

PA-43 – 2 Spoede Acres (Overland) (Private)

Yard ponding and erosion issues were reported. A 36-inch RCP traverses the property with an inlet near the uphill property line. A manhole is located near the downhill property line, and an inlet is nearby on the neighboring property. There is about a two-acre DA downhill from the inlet on the property. The two-foot contours indicate potential for ponding.

PA-44 – Runnymede Drive (Overland) (DC-S-01)

This project area consists of different issues at the following addresses:

201 Runnymede Drive –	Residents reported concerns about runoff from 237 Runnymede Drive; however, LiDAR does not indicate that flow goes onto property from 237 Runnymede Drive. Any flow from 237 Runnymede would be minor.
434 Runnymede Drive –	Yard erosion. Yard slopes 10% with a drainage area of 0.4 acre.
424 Magna Carta Drive –	Yard ponding. The home sits at the bottom of a cut slope with a 0.6 acre DA similar to neighboring properties.

PA-45 – 219 Hibler Oaks Drive (Overland) (Private)

Yard erosion. Yard slopes 10% with a drainage area of 3.4 acres. An MSD inlet is located downhill about 30 feet with a 15-inch pipe.

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PA-46 – Clion Lane & Ladue Lake Drive (Overland) (Private)

General report of gully erosion and ponding in multiple yards. There is no storm sewer system for this area that drains nearly 12 acres. Particular issues reported at:

220 Clion Lane –	Yard flooding with a 4.2 acre DA.
230 Clion Lane –	Concerned about street drainage. Single inlets on each side of street at what may be a low spot in the road with 1.55 acre DA.
225 Ladue Lake Drive –	Yard flooding. Drainage from the two subdivisions is split and flows along the back property lines and combine here with a total drainage area of 9 acres.

PA-47 – Falling Leaves Court (Channel) (CC-C-26)

Silt depositing into the lake and erosion along the edge of the lake was reported on Social Pinpoint affecting the following properties:

215 Falling Leaves Court
221 Falling Leaves Court

The erosion issues are found along the lake bordered by Ladue Lake Drive and Falling Leaves Court. The lake drains into a tributary to Smith Creek.

Along the tributary between the lake and Falaise Drive, I&L identified a channel erosion issue in need of systemic repair consisting of exposed manholes, knickpoints, threatened utility pole, bank erosion, failing retaining walls, and a scour hole.

PA-48 – 240 Laduemont Drive (Channel) (Private)

One streambank erosion issue was reported to the City affecting 240 Laduemont Drive. This issue is located along an unnamed tributary to Smith Creek that flows between Laduemont Drive and Royal Manor Drive. Yard erosion was reported at the north section of the backyard where a storm pipe discharges.

PA-49 – Morwood Lane (Overland) (DC-S-13)

This project area consists of various issues at the following addresses:

25 Morwood Lane –	Yard flooding on south side and ponding on north side. MSD basemaps show that a flared end section should be located near the southwest corner of lot with 6.4-acre DA. An inlet is near the northwest corner of the lot with 0.26-acre DA. During the field visit, neither the flared end section nor the pipe could be seen or located, and it appears unlikely that these stormwater conveyance features exist. The neighbor to the north of 25 Morwood

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	Lane stated that the inlet had been blocked for years until the middle of April 2023.
50 Morwood Lane –	For an extended period after a rain event, water seeps from a pop-up to the street.
55 Morwood Lane –	Street ponding likely due to asphalt in the rolled curb. The street has a 2% slope.

PA-50 – New Salem Drive (Channel) (DC-C-07)

Streambank erosion was reported on Social Pinpoint affecting 258 New Salem Drive. This issue is located along Deer Creek just east of New Salem Drive.



Along this reach, I&L identified a channel erosion issue in need of systemic repair consisting of an outfall with a rusted invert, undercut bank, perched outfall, exposed manhole, and a leaning utility pole.

PA-51 – Beaver Drive (Overland) (DC-C-02)

This project area consists of various issues at the following addresses:

27 Beaver Drive –	Structural flooding was reported going into the garage. Approximately 2.2-acre DA flows onto the property. Flow continues down the driveway onto the street and into the yard across the street at 41 Beaver Drive.
41 Beaver Drive –	Yard erosion behind the house and along the street.
49 Beaver Drive –	Yard ponding reported in front yard but field visit did not confirm potential for ponding.

PA-52 – 3 Oak Park Court (Overland) (DC-S-18)

A resident reported property flooding from an undersized stormwater inlet. The MSD basemaps do not show an inlet at this location. The LiDAR data indicates potential flow onto the driveway with a 0.33-acre DA. There is a small grated inlet at the end of the street on the left side that was observed to be covered. Overflow from this inlet is causing erosion. Flows from the right side of the street go into an old asphalt swale that was installed along the hillside.



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PA-53 – Middlebrook Lane (Channel) (DC-C-19)

Along a tributary to Monsanto Sunswept Creek where the tributary crosses Middlebrook Lane, residents report bank erosion upstream and downstream of a culvert. The issue affects the following properties:

3 Middlebrook Lane
4 Middlebrook Lane
5 Middlebrook Lane
6 Middlebrook Lane

Along this reach, I&L identified a channel erosion issue in need of systemic repair consisting of a failing bridge abutment and erosion threatening a shed.

PA-54 – 307 Cabin Grove (Overland) (Private)



Residents report multiple issues. The primary issue is yard erosion due to water from the uphill properties. LiDAR data indicates about a third of an acre drains onto the property for the area that drains to the west. The affected area is shaded and lacks good ground cover. The lack of ground cover makes the area susceptible to erosion. An area east of the property line located upgrade of an inlet shows signs of erosion. This area has a 0.4-acre DA and a slope of about 10%. In the backyard, water ponds on the flat top of the hill. Another issue reported was on the neighboring property next to Windsor Oak Drive and standing water. An older private inlet with what appears to be an 8-inch pipe collects water from a two-acre DA.

PA-55 – 308 South Spoede Road (Overland) (DC-S-19)

Resident reports concerns about runoff from neighboring property located uphill and to the north. LiDAR shows distributed drainage from the property to the north. The largest indicated drainage area is 0.07 acres.

PA-56 – 359 Country Glen Lane (Channel) (Private)

Backyard streambank erosion at 359 Country Glen Lane was reported to the City. The erosion is found along an unnamed creek that runs from Country Glen Lane to Falaise Drive and eventually drains to Fernridge Creek.

PA-57 – Auburndale Drive (Overland) (CC-S-06)

Residents report water ponds in the street after and during heavy rains. Sod on both sides of the road is higher than the pavement. LiDAR indicates 25.8-acre DA to the intersection with Mason Road, which is a low point along Mason Road. The MSD Basemap shows 36-inch Storm pipe leaving the intersection. Google Street View historical photos of the south entrance to

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Bellerive Gardens show a driveway culvert pipe. This pipe is now buried, and the swale downhill is not as well defined.

The estimated flows in the MSD 36-inch RCP are 15-year flowrate of 50 cubic feet per second and 100-year flowrate of 67 cubic feet per second with 15-year flowrate of 38 cubic feet per second and 100-year flowrate of 51 cubic feet per second in a 30-inch pipe. It appears that the storm sewer is adequately sized; therefore, it appears that the issue is inadequate drainage off the street due to the sod being higher than the pavement and/or an inadequate number of inlets.

Yard flooding was also reported due to flow not being captured by inlet near 33 Auburndale Drive. The back property line has a berm and swale; however, flow may not be contained or captured by the inlet.

PA-58 – 373 Hibler Court (Channel) (Private)

The City received a report of yard erosion at 373 Hibler Court. This issue is located along an undersized concrete channel that outlets into Fernridge Creek.

PA-59 – 4 Benwood Lane (Overland) (Private)

Residents report street ponding. Asphalt was laid in curb, which blocks flow causing ponding at the driveway.

PA-60 – 438 Twin Creek Road (Channel) (CC-C-36)

One streambank erosion issue, yard erosion along the creek, was reported to the City affecting 438 Twin Creek Road. This issue is located along Smith Creek directly east of Twin Creek Road.

PA-61 – Fourwynd Drive (Overland) (DC-S-15)

This project area consists of various issues at the following addresses:

451 Fourwynd Drive –	Residents report sheet flow from uphill onto property runs towards the house. The DA is 0.5 acre.
7 Pine Manor Drive –	Residents report street flooding which flows into the yard. MSD basemap shows 84-inch pipe with a 198 acre DA. The 15-year flowrate is 451 cubic feet per second and 100-year flowrate is 608 cubic feet per second. The MSD basemap invert elevations for the pipes in this area are inconsistent. It is estimated that the 84-inch pipe is adequately sized. Analysis is needed to determine if an adequate overland flow path is provided while taking into account the potential for bypass flows at inlets in the system.
8 Pine Manor Drive –	Yard erosion was reported. The backyard has a 10% grade with a 1.25-acre DA.

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PA-62 – Villa Coublay Drive (Channel) (DC-C-10)

Four streambank erosion issues were reported to the City affecting the following properties:

44 Villa Coublay Drive
47 Villa Coublay Drive
50 Villa Coublay Drive
60 Villa Coublay Drive

These issues are located along Windrush Creek from the confluence with Deer Creek to the Villa Coublay Drive crossing. Reported issues include erosion along the Villa Coublay bridge and yard erosion.

Along this reach, I&L identified a channel erosion issue in need of systemic repair consisting of knickpoints and cracking bridge abutments.

PA-63 – Runnymede North (Overland) (Private)

This project area consists of various issues at the following addresses:

477 Manford Drive–	Yard ponding was reported in the southwest corner of the property. The two-foot contours show a depression in this location.
482 Staines Court –	Residents report yard flooding. A 90-inch RCP traverses the property with a 187- acre DA. Another 3.9 acres drains through the yard. The resident reports that all the water runs above ground. The pipe should be inspected for a potential blockage.

PA-64 – Chilton Lane (Overland) (DC-S-21)

Residents reported that a sinkhole is forming over the culvert; however, a sinkhole was not evident during a field visit. There was erosion where water runs off the road to the channel on the south side of the road.

8 Chilton Lane –	Residents reported concerns about stormwater runoff from a recently developed site on Country Fair Lane. Aerial photos show the new house to east and uphill is larger than the home that had been replaced and the new home extends further back on the lot. The estimated drainage area from the redeveloped lots onto this property is about 0.16 acres.

PA-65 – East Ladue Estates Drive (Overland) (DC-S-07)

This project area consists of various issues at the following addresses:

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5 Ladue Estates Drive – Yard erosion was reported at this address. The rear yard drops off to South Mosley Road.

55 East Ladue Estates Drive – Water pools and runs over the retaining wall onto sidewalk that runs alongside Ladue Road. LiDAR shows two flow paths over the retaining wall with drainage areas of 1.2 acres and 0.1 acres.

59 East Ladue Estate Drive – Residents report yard erosion and wet yard. There is sheet flow from the west and concentrated flow from the north with 1.15- acre DA near the low end of the back yard. The property sits lower than the property to the west by about 12 feet.

65 East Ladue Estates Drive – Yard ponding was reported in low spots in southwest corner of property. The DA is 1.5 acres.

71 & 73 East Ladue Estates Drive– Yard ponding was reported. LiDAR indicates less than 1% slope with a drainage area of 0.42 acre to 1.44 acres across the two properties.

PA-66 – Fairways Circle (Overland/Channel) (DC-S-06)

This project area consists of various issues. Overland flow issues affect the following addresses:

541 Fairways Circle – Yard flooding was reportedly caused by runoff from golf course and house to the north. LiDAR indicates that the drainage area at the south or low end of the yard is 2.8 acres, and the drainage area at the north property line is 1.64 acres.

Three streambank erosion issues were reported either to the City or on Social Pinpoint affecting the following properties:

519 Fairways Circle
527 Fairways Circle
631 Fairways Circle
647 Fairways Circle

Reported issues including creek erosion threatening fence, erosion at the pipe outfall, backyard erosion, and ponding along the creek are found along a tributary to Deer Creek between the Creve Coeur Golf Course and Fairways Circle.

I&L identified a channel erosion issue in need of systemic repair consisting of headwall erosion and a threatened maintenance bridge.

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PA-67 – 554 North Mosley Road (Overland) (DC-S-11)



Resident reports yard ponding and erosion forming a channel. Resident felt that flow has increased since new subdivision to the south was built. The as-built plans show depressed inlets and a berm that routes runoff from the subdivision to a BMP that discharges to the east. Flow from North Mosley Road discharges onto the property with about a 1.25 acres DA. Erosion on the south side of the house is threatening a deck.

PA-68 – 561 Sarah Lane (Overland) (DC-S-04)

Residents report ponding on Sarah Lane and in front of the garage doors of the two condominium buildings. Google Street view shows ponding on the street uphill from the south driveway entrance. There are trench drains in front of each garage at the bottom of the driveway, but the trench drains have small outlet pipes that may be undersized and/or need to be cleaned.

PA-69 – 6 Spoede Ridge Lane (Overland) (DC-S-23)

Resident reports yard flooding. The property sits at the upper end of a valley and a 21-inch pipe outlets onto the property near the rear property line shared with the subdivision to the north. An inlet appears to not capture much flow, and as a result stormwater enters the yard to the west of the outfall. LiDAR indicates a DA of 4.75 acres with 0.55 acre of the DA bypassing the inlet.

PA-70 – 12228 Winrock Drive (Channel) (Private)

Two streambank erosion issues were reported on Social Pinpoint affecting 12228 Winrock Drive. Creek widening, fallen trees, bank erosion, and standing water can be found along an unnamed channel between Winrock Drive and Prince Towne Drive.

PA-71 – Maison Manor (Overland) (Private)

This project area consists of various issues at the following addresses:

607 Lampadaire Drive –	Resident reports clogged drains downstream based on neighbor's investigation of system with Town & Country. Refer to MSD as maintenance issue.
625 Lampadaire Drive –	Yard erosion reported at this address. Contours show steep valley with 4:1 slope and DA of 1.67 acres.

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PA-72 – 667 Rue De Fleur Drive (Channel) (Private)

One streambank erosion issue was reported to the City affecting 667 Rue De Fleur Drive. Ponding in the common area near the creek is seen along Fernridge Creek just west of the Ambois Drive crossing.

PA-73 – 69 Notre Dame Drive (Overland) (Private)

Resident reports a constant stream of water in front of the home which is eroding the cement driveway. The DA is about 0.9 acre, and the street curb has deteriorated. The issue was referred to the Missouri American Water Company for a potential water leak, and the roadway has been added to the City's Pavement Maintenance Program

PA-74 – 7 Quailways Drive (Overland) (DC-S-24)

A possible sinkhole was reported to be over a private storm sewer. Yard erosion is seen along and behind the backyard fence that runs parallel to the creek. Retaining wall blocks have washed away, and some have fallen into the creek. The yard serves as the overland flow path to the creek if the MSD double inlet at the end of the cul-de-sac is overwhelmed.

PA-75 – Sherwyn Lane (Overland/Channel) (DC-C-20)

Overland flow is reported to be causing erosion at 7 Sherwyn Lane. Runoff from the neighboring house flows in a swale along the north property line, and the homeowner reports erosion in the swale.

A concrete channel runs through 7 Sherwyn Lane. This channel is part of a tributary to Monsanto Sunswept Creek and crosses Sherwyn Lane at this location.

Along this reach, I&L identified a channel erosion issue in need of systemic repair consisting of erosion threatening a fence and driveway.

PA-76 – Bellerive Estates (Overland) (Private)

Residents report issues of runoff from properties on Nimes Drive. Residents at 741 & 749 Beauvais Court report flooding and backyard erosion. The properties sit about six feet lower than the quarter-acre lots on Nimes Drive.

PA-77 – 741 Gascogne Drive (Overland) (Private)

Residents report yard erosion and ponding. Gullies have formed near the stormwater sewer that collects water but doesn't fully drain. LiDAR indicates about 0.29 acre DA, and the yard slopes about 1.5%.

PA-78 – 753 Timber Run Drive (Channel) (Private)

Three streambank erosion issues including a collapsed corrugated metal pipe causing bank and yard erosion were reported on Social Pinpoint. These issues affect 753 Timber Run Drive and

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are located along a pond between Somerton Ridge Drive, Nimes Drive, Timber Run Drive, and Haverton Drive.

PA-79 – 761 Turrentine Trail (Overland) (Private)

Resident inquiry about the design of the storm water conveyance through their yard. The stormwater is creating about a four-foot wide stream as it passes through the yard. The drainage area is about 0.73 acre at the lower end of the lot and drains three other properties.

PA-80 – 77 Colonial Hills (Overland) (Private)

Resident reports yard erosion. There are two areas of concern, one has a 5.8 acre DA with a 5-6% slope and the other has a 2.3 acre DA and an 8% slope.

PA-81 – 808 Mary Meadows (Overland) (DC-S-14)

Residents reported structural flooding of the house during the July 2022 storm event. A new larger house to the east was built in 2022. The property sits about eight feet lower than the lot with the newer home. About 0.8 acre drains onto the yard which slopes about 2.5% to the south. Contours show a low spot near the northeast corner of the house.

PA-82 – 859 Larkin Avenue (Overland) (Private)

Homeowners report yard ponding. Contours show a low spot in the front yard.

PA-83 – 920 Bellerive Manor (Overland) (Private)

Report of failing french drain and improperly directed downspouts from the City's list; however, ownership changed March 2022.

PA-84 – Warington Square (Overland) (DC-S-26)

One resident reported yard and structural flooding of the houses on the south side of Warington Square. The homes sit about ten feet lower than the homes to the south on Sundown Square. In general, the ground slopes towards the southeast corner of each house. Resident reports flow from Warson Road which has a vertical curb and an inlet near the southeast corner of 9800 Warington Square with a drainage area of 4.1 acre. Another 2.8 acre drains towards the houses west of Warson Road. Yard erosion and soggy turf was also observed during a field visit during a dry period at 9800 Warington Square. The storm system runs along the back property line but is up the hill.

PA-85 – Hibler Road (Overland) (Private)

Residents report street flooding. This issue will be resolved with the City's Hibler Road Drainage Improvements project. Construction for this project is expected to begin in the early spring of 2024.

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PA-86 – Millenium Park (Channel) (CC-C-15)

Along tributary to Fernridge Creek south of Millenium Park. I&L identified channel erosion issues in need of systemic repair consisting of a potentially threatened sculpture, threatened trail, knickpoints, threatened fence, and threatened wall.

PA-87 – Westwood Country Club (Channel) (DC-C-05)

Along Deer Creek and a tributary to Deer Creek north of the Westwood Country Club, I&L identified channel erosion issues in need of systemic repair consisting of a threatened golf course path (erosion is ten feet from the path), sanitary crossing, knickpoints, potentially threatened utility manhole, bank erosion, and threatened abutments.

PA-88 – 11572 New London Drive (Channel) (DC-C-04)

In a tributary to Deer Creek southwest of New London Drive, I&L identified channel erosion issues in need of systemic repair consisting of a failing concrete grade control and asphalt debris.

PA-89 – Malcolm Terrace Park (Channel) (DC-C-06)

Along Deer Creek in the southeast portion of Malcolm Terrace Park, I&L identified channel erosion issues in need of systemic repair consisting of bank erosion threatening a trail

PA-90 – New Salem Drive and Camfield Square Drive (Channel) (DC-C-08)

Along Deer Creek and a tributary to Deer Creek between New Salem Drive and Camfield Square Drive, I&L identified channel erosion issues in need of systemic repair including a failing concrete apron, exposed sanitary crossing turning flow, tributary erosion nearing house, failing grouted riprap, failing bank armament, and scour along outside bend of creek.

PA-91 – 281 Magna Carta Drive (Channel) (DC-C-09)

I&L identified channel erosion issues in need of systemic repair along Deer Creek west of 281 Magna Carta Drive. These issues consist of failing grouted riprap and a potentially threatened gabion wall.

PA-92 – Executive Estates Drive (Channel) (DC-C-13)

I&L identified channel erosion issues in need of systemic repair along Windrush Creek west of Executive Estates Drive. These issues consist of bank erosion upstream of the Ladue crossing, knickpoints, and a scour hole.

PA-93 – Mosley Acres & Ridgecorde (Overland) (Private)

Field identified issue of inlet being covered at 455 Ridgecorde Place and a sinkhole near the inlet at 9 Mosley Acres Drive. Refer to MSD for inlet maintenance.

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PA-94 – East Windrush Creek (Overland/Channel) (DC-C-14)



The 42” CMP is rusted out per the owner and is not properly designed to handle the flow from the north. The drainage area is about 90 acres into the pipe and another 8 acres is added before flowing of the property.

I&L identified a channel erosion issue in need of systemic repair consisting of failing grouted riprap, knickpoints, bank erosion, failing driveway, and failing concrete slabs along a tributary to Windrush Creek between Graeser Road and Wyndtop Lane.

PA-95 – The Knolls Lane (Channel) (DC-C-29)

I&L identified channel erosion issues in need of systemic repair consisting of a broken curb where the road drainage enters the tributary to Windrush Creek.

PA-96 – 10675 Ladue Road (Channel) (DC-C-17)

I&L identified channel erosion issues in need of systemic repair consisting of perched pipe and bank cutting, failing gabion walls, erosion threatening fence at top of slope, knickpoints, two utility poles with bases rotting out and one pole failing along Monsanto-Sunswept Creek between Ladue Road and Chilton Lane.

PA-97 – 10694 Country View Drive (Channel) (DC-C-21)

I&L identified channel erosion issues in need of systemic repair consisting of failing grouted riprap and bank erosion downstream of the Country View Drive culvert along a tributary to Monsanto-Sunswept Creek.

PA-98 – 10620 Country View Drive (Channel) (DC-C-23)

I&L identified channel erosion issues in need of systemic repair consisting of failing gabions, failing retaining wall, knickpoints, failing pipe, and failing honeycomb material that stabilizes the channel along Monsanto-Sunswept Creek east of Dr. H. Phillip Venable Memorial Park.

PA-99 – Sunswept Drive (Channel) (DC-C-24)

I&L identified channel erosion issues in need of systemic repair consisting of an undermined pipe outfall in culvert, undermined grouted riprap around outfall, and failed gabion wall along Monsanto-Sunswept Creek where it crosses Sunswept Drive.

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PA-100 – 10300 Olive Boulevard (Channel) (Private)



Along Monsanto-Sunswept Creek and a tributary to Monsanto-Sunswept Creek on the former Bayer property (10300 Olive Blvd), I&L identified channel erosion issues in need of systemic repair consisting of failing wire face geogrid reinforced slope, exposed pipe with the end section detached, a sinkhole, failed bank armament sliding into channel, bank erosion between parking lots, an undermined culvert, failing grouted riprap, a scour hole, an undermined swale, and an undermined outfall.

PA-101 – Denny Creek (Channel) (DC-C-22)

Along Denny Creek, I&L identified channel erosion issues in need of systemic repair consisting of erosion and knickpoints threatening Lindbergh Road, nearby properties, and culverts.

PA-102 – 22 South Tealbrook Drive (Channel) (DC-C-27)

Along Pebble Creek in the rear lot of 22 South Tealbrook Drive, I&L identified channel erosion issues in need of systemic repair consisting of outfall and swale erosion.

PA-103 – Ferngate Lane (Channel) (CC-C-07)

One streambank erosion issue was reported on Social Pinpoint affecting 946 Ferngate Lane. This issue is located along a tributary to Creve Coeur Creek between Ferngate Lane and Fernway Lane. Reported issues include creek erosion and standing water in the backyard.

In this reach, I&L identified a channel erosion issue in need of systemic repair consisting of perched outfalls, failing residential fence, failed grouted riprap, knickpoint, and threatened wing walls.

PA-104 – 1009 Fernview Drive (Channel) (CC-C-06)

Gully erosion was reported to the City. The issue is at 1009 Fernview Drive, which is along a tributary to Creve Coeur Creek between Ferntrails Lane and Bellerive Farm Drive.

Along this reach, I&L identified a channel erosion issue in need of systemic repair consisting of a scour hole, knickpoints, an incising tributary, six -foot tall drop at a pipe outfall, an undermined sanitary crossing, and bank erosion.

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PA-105 – Olive Boulevard (Channel) (CC-C-05)



I&L identified channel erosion issues in need of systemic repair consisting of bank erosion, knickpoints, bank erosion threatening a driveway, failing grade controls, and bank erosion threatening a high tower. I&L also observed a failed grade control that is turning flow into the bank along Creve Coeur Creek and a tributary to Creve Coeur Creek along Village Du Lac Lane.

PA-106 – 1070 Toreador Drive (Channel) (Private)

I&L identified a potential combined sewer outfall along Creve Coeur Creek south of Toreador Drive.

PA-107 – Bellerive County Club (Channel) (CC-C-08)

Along Smith Creek and the downstream reach of Fernridge Creek, I&L identified channel erosion issues in need of systemic repair consisting of a fully exposed sanitary line, failed riprap on banks, and knickpoints.

PA-108 – Lampadaire Drive (Channel) (CC-C-10)

I&L identified channel erosion issues in need of systemic repair including knickpoints along Fernridge Creek north of Lampadaire Drive.

PA-109 – Fernridge Creek at Bellerive Estates Drive (Channel) (CC-C-11)

One streambank erosion issue was reported to the City, and this issue affects the following properties:



12912 Bellerive Estates Drive
12918 Bellerive Estates Drive
12824 Bellerive Estates Drive
12832 Belerive Estates Drive

This issue is located along Fernridge Creek between Ambois Drive and Bellerive Estates Drive. Reported issues include erosion and flooding.

Along this reach, I&L identified a channel erosion issue in need of systemic repair consisting of knickpoints, failing grouted riprap, as well as erosion threatening fences, utility pole, and yards.

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PA-110 – 680 Bellerive Estates Drive (Channel) (CC-C-12)

Along Fernridge Creek east of Bellerive Estates Drive, I&L identified channel erosion issues in need of systemic repair consisting of bank erosion and an undercut shed.

PA-111 – North Mason Road (Channel) (CC-C-13)

Along Fernridge Creek where the watercourse crosses North Mason Road near 858 North Mason Road, I&L identified channel erosion issues in need of systemic repair consisting of a threatened old structure, exposed utility pipe, knickpoints, exposed sanitary line, threatened abutment, and bank erosion. These erosion issues are threatening the Hope Educational & Research Center's sports court.

PA-112 – 840 Angleterre Drive (Channel) (CC-C-14)

Along Fernridge Creek north of Angleterre Drive, I&L identified channel erosion issues in need of systemic repair including an exposed utility pipe and knickpoints.

PA-113 – 12426 Stratford Ridge Court (Channel) (CC-C-18)

Along Fernridge Creek southwest of Stratford Ridge Court, I&L identified channel erosion issues in need of systemic repair including a knickpoint, failing reno mat, and failing grouted riprap.

PA-114 – Questover Lane (Channel) (CC-C-19)

Along Fernridge Creek south of Questover Lane, I&L identified channel erosion issues in need of systemic repair consisting of knickpoints, five-foot high aerial sanitary crossing, failing grouted riprap, a threatened bridge abutment, undermining of a private driveway bridge, exposed pipes and manhole on bank, failing/undermined concrete encasement, and an exposed telephone pedestal.

PA-115 – Falaise Drive (Channel) (CC-C-20)

Along Fernridge Creek between Falaise Drive and Royal Valley Drive, I&L identified channel erosion issues in need of systemic repair including knickpoints, threatened culvert outfall wing walls, a scour hole, exposed utility pipe along the channel toe, and an exposed sanitary line encasement.

PA-116 – Royal Valley Drive (Channel) (CC-C-22)

Along Fernridge Creek between Royal Valley Drive and Hibler Drive, I&L identified channel erosion issues in need of systemic repair consisting of knickpoints, a failed pipe segment, a perched outfall, rusted corrugated metal pipe, a threatened fence, pipe section failure, a scour hole, and failed grouted riprap.

PA-117 – 12344 Mulberry Tree Court (Channel) (CC-C-17)

Along a tributary to Fernridge Creek between Tempo Drive and Questover Lane, I&L identified channel erosion issues in need of systemic repair that includes two perched outfalls and a large flanking hole next to box culvert.

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PA-118 – 17 Chamblee Lane (Channel) (CC-C-24)

Along a Smith Creek west of 17 Chamblee Lane, I&L identified channel erosion issues in need of systemic repair consisting of sinkholes, bank slotting, and potentially threatened manhole.

PA-119 – 2 Chasselle Lane (Channel) (CC-C-28)

On the north side of Ladue Road between Chasselle Lane and Wexler Manor Court, I&L identified channel erosion issues in need of systemic repair that includes bank cutting in the roadside swale that is threatening the roadway and a knickpoint along a roadside swale.

PA-120 – 151 Royal Gate Drive (Channel) (CC-C-30)

Along Rosenfelder Creek south of Royal Gate Drive, I&L identified channel erosion issues in need of systemic repair consisting of knickpoints, an exposed sanitary line along toe of slope, and a perched pipe.



PA-121 – Conway Downs Drive (Channel) (CC-C-32)

Along Rosenfelder Creek northeast of Conway Downs Drive, I&L identified channel erosion issues in need of systemic repair consisting of knickpoints, a scour hole, threatened bridge abutments, an exposed utility line, and two perched outfalls.

PA-122 – Bellington Lane (Channel) (CC-C-33)

Along Rosenfelder Creek between Conway Holmes Circle and Hewlett Court, I&L identified channel erosion issues in need of systemic repair consisting of two fallen pipe segments, knickpoints, a failing fence along outside bend, a scour hole, a failing abutment, and outfall erosion.

PA-123 – 12 Broadview Farm Road (Channel) (CC-C-35)

Along a tributary to Smith Creek between Broadview Farm Road and Mason Road, I&L identified channel erosion issues in need of systemic repair consisting of knickpoints, tributary erosion, and bank mass wasting.

PA-124 – 996 East Rue De La Banque Street (Channel) (DC-C-03)

Along a tributary to Creve Coeur Creek between West Rue De La Banque Street and Charter Oak Parkway, I&L identified channel erosion issues in need of systemic repair consisting of outfall erosion, knickpoints, a scour hole, an exposed sanitary line, and an exposed MSD manhole (035S).

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PA-125 – Lindbergh Boulevard (Channel) (DC-C-26)

Along a tributary to Fee Fee Creek west of Lindbergh Boulevard, north of Schuetz Road, I&L identified channel erosion issues in need of systemic repair consisting of bank erosion, a failing asphalt swale from Lindbergh which is being bypassed, knickpoints, and a scour hole.

PA-126 – Haven View (Overland) (DC-S-25)

The street has been overlaid which has decreased the capacity of the rolled curb. Flow from the roadway carries mulch and dirt onto the driveway and yard at 19 Haven View Drive. MSD basemaps shows a 72-inch x 72-inch box culvert on the west side of the house, which is also near the low point on the street. Three inlets are on the north side of the street spanning from the low point to the cul-de-sac to near the top of the hill. No inlets have been installed on the south side of the street.

PA-127 – 252 Bellington Lane (Overland) (CC-S-09)

Resident reports basement, basement stairwell and yard flooding during heavy rains. LiDAR indicates about 1.2-acres DA towards the house which sits four to six feet lower than the adjacent houses.

PA-128 – 215 Chasselle Lane (Channel) (Private)

Bad tasting drinking water after storms reported on Social Pinpoint affecting 125 Chasselle Lane. This issue was referred to the utility owner.

PA-129 – 228 Falling Leaves Court (Overland) (CC-S-08)

Resident reported yard ponding in the back yard and along south side of the house plus erosion on south side of house. The back yard slopes about 2.4 %, and the side yard slopes about 1.4% with a DA of about 0.76 acre.

PA-130 – 203 Townsend Street (Overland) (Private)

Resident reported property flooding and streambank erosion in Malcolm Terrace Park. Reported issues include constant flooding in the park and a ravine that has been formed by erosion.

PA-131 – North Spoede Road & Mission Hills Court (Overland) (DC-S-22)

Resident reported street flooding due to inadequate capacity of the existing stormwater system.

PA-132 – Pine Manor Drive (Overland) (DC-S-09)

Residents reported street flooding and property flooding along Pine Manor Drive. Reported issues include inadequate capacity of the existing stormwater system causing cul-de-sac and property flooding.

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Criteria for Public Projects

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Determination of Public or Private Stormwater Projects
May 2023

Other municipalities have used the criteria below to determine if a potential project should be eligible for public funding or if the project should be a private effort. If one or more of the following conditions applies to the site or issue, then the municipality determines that the solution may possibly become a publicly-funded solution.

The City's goal is to develop and approve criteria that can be applied consistently to stormwater issues identified under the Watershed Management Plan. The list below can be used as a base for the City and the Stormwater Committee in choosing the criteria that Creve Coeur will use in evaluating possible projects.

	Possible public project	**Private owner's responsibility**
Can the solution be reasonably completed by the homeowner?	Does the solution require the homeowner to work with other agencies or parties outside of the individual homeowner's control such as MSD, Missouri DNR, Army Corps of Engineers, or other homeowners? If so, the project may be a candidate for a publicly-funded solution.	Projects that can be reasonably constructed by the homeowner would unlikely be eligible for public funds.
Does the stormwater issue threaten public or private structures? ● Qualifying structures require a building permit to construct. ● Structures would likely not include sheds (unless the shed had a permit) and other non-habitable structures that lack a foundation. ● What about pools?	If the stormwater issue threatens a qualifying structure, then a publicly-funded solution may be considered.	If the issue threatens a non-qualifying structure and if none of the other considerations for public funding apply, then a publicly-funded solution is unlikely.
Does the stormwater issue threaten public or private roadways?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Does the stormwater issue threaten public infrastructure or publicly-funded improvements?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	

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Is the issue caused by an undersized stormwater conveyance infrastructure?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Would the proposed project address regional or systematic channel instability?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Would a solution protect water quality or natural resources? Protected elements would need to be in good existing condition to be eligible for public funding.	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Was the issue caused by altered upstream conditions?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Was the issue caused by inadequate maintenance of a public system?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Will the project improve public safety?	If yes, then it is possible a solution will be publicly funded depending on the prioritization ranking.	
Is the focus of the project utility work?	If yes, then a publicly-funded solution is unlikely unless the utility work is part of an eligible project.	The project is likely to be the utility owner's responsibility if the infrastructure is owned and operated by other Public Agencies with the possible exception of some MSD assets or assets that will be dedicated to MSD after construction.
Does the work focus on privately-owned infrastructure?		If yes, then the solution is likely the owner's responsibility.
Has the stormwater issue been identified as a monitor project?	Some projects are identified as not urgent and are recommended to be monitored over time for consideration to be included in future CIPs.	

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Public or Private Checklist

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Is a stormwater issue public or private?

If one or more boxes are checked, then a publicly-funded solution might be considered	
Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue?	☐ Check for yes
Does the stormwater issue threaten public or private structures?	☐ Check for yes
Does the stormwater issue threaten public or private roadways?	☑ Check for yes
Does the stormwater issue threaten public infrastructure or publicly-funded improvements?	☐ Check for yes
Is the issue caused by an undersized stormwater conveyance infrastructure?	☐ Check for yes
Does the proposed project address regional or systematic channel instability?	☐ Check for yes
Would a solution protect water quality or natural resources?	☐ Check for yes
Was the issue caused by altered upstream conditions?	☐ Check for yes
Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations?	☐ Check for yes
Was the issue caused by inadequate maintenance of a public system?	☐ Check for yes
Will the project improve public safety?	☐ Check for yes
Has the stormwater issue been identified as a monitor project?	☐ Check for yes
Is the focus of the project utility work?	☐ Check for no
Does the work focus on privately-owned infrastructure?	☐ Check for no

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List of Private Projects

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Project Number	Address	Reported Issue	Notes	Public/Private	Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue? (Y/N)	Does the stormwater issue threaten public or private structures? (Y/N)	Does the stormwater issue threaten public or private roadways? (Y/N)	Does the stormwater issue threaten public infrastructure or publicly-funded improvements? (Y/N)	Is the issue caused by an undersized stormwater conveyance infrastructure? (Y/N)	Does the proposed project address regional or systematic channel instability? (Y/N)	Would a solution protect water quality or natural resources? (Y/N)	Was the issue caused by altered upstream conditions? (Y/N)	Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations? (Y/N)	Was the issue caused by inadequate maintenance of a public system? (Y/N)	Will the project improve public safety? (Y/N)	Has the stormwater issue been identified as a monitor project? (Y/N)	Is the focus of the project utility work? (Y/N)	Does the work focus on privately-owned infrastructure? (Y/N)
2	116 WEXLER MANOR CT	Property Flooding	We are concerned about the run-off from ladue lake. In a hard rain it floods chasselle and at least four yards - including ours.	Private	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y
3	20 WILLIAMSBURG RD	Property Flooding	Area between this home and the home to the east floods during heavy rains. Stormwater sewer between the homes is not able to move it away. Water comes down the hill from the area above the home to the east.	Private	N	N	N	N	?	N	N	N	?	N	N	N	N	N
	21 WILLIAMSBURG RD	Property Flooding	The run off from the rain water in the backyard has become a deeper chasm (1ft depth). The neighbor that backs up to the property has tried to create a leaf barrier to provide ground cover.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	38 Williamsburg Rd	Standing water between the homeowner's and the neighbor's home.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	40 WILLIAMSBURG RD	Property Flooding	Ponding in yard from neighbor yard	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	43 WILLIAMSBURG RD	Property Flooding	When rains, water floods the property and floods basement as a result	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	43 WILLIAMSBURG RD	Home Flooding	House floods when bad rains / storms															
4	16+ Mosley Acres Dr	Asphalt overlay of concrete street has reduced gutter capacity and resulted in erosion behind the curb		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
5	1020 & 1028 Fernview Dr	Yard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
6	12921 Fernway Ln	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7	104 Ladue Meadows Ln	Erosion in yard and near street inlet	Needs Site Visit (KLE)	Private & MSD	N - for yard erosion	N	N	N	N	N	N	N	N	N	N	N	N	N

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11	10835 Rondelay Dr	Channel erosion upstream of inlet in backyard, asphalt overlay has reduced the gutter capacity causing creek erosion		Private & MSD	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12	10921 CHALET CT	Property Flooding	Backyard flooding in heavy rain.	Private - Cost Share	N - If problem can be solved with grading the yard. Y - If solution is to add an MSD inlet in the yard or redirect flow uphill to existing inlets.	N	N	N	N?	N	N	N	N	N	N	N	N	N
	531 Chalet Ct	The homeowner reports spending approximately $60,000 trying to solve stormwater issues.	Any remaining issues result of deficent design or improperly installed system. Proper grading and installation of system could solve issue.	Private	n	?house?	n	n	N?	N	N	N	N	N	N	N	N	y
	10921 Chalet Ct		Sinkhole near area inlet	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
13	248 Brooktrail Ct		Sinkholes around inlet structure	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
14	11076 Graeser Ln	Yard flooding from runoff from Graser Ln		Monitor	N - If viable solution is grading yard and adding a speed bump to driveway. Y - If solution needed is street inlet upstream of driveway.	N	N	N	N	N	N	N	N	N	N	N	N	N
15	111 Worthington Oaks	Failing MSD structure on a neighboring site		MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
16	11205 Tureen Dr	Yard erosion		Private	N	N	N	N	N	N	N	N	N	Y - For issue at inlet.	N	N	N	N
17	12 Wedgewood	Erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N

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19	12121 & 12135 Royal Valley Dr	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	12234 Royal Valley Dr	Dry detention maintenance. The HOA also asked what, if anything, could be done to reduce flows coming from other subdivisions and 270.		Private	N - May need professional advice	N	N	N	N	N	Y?	N	N	N	N	N	N	Y
	12234 ROYAL VALLEY DR	Streambank Erosion	Erosion near the MSD stand pipe and the drain channel has been an issue for many years. HOA maintenance has only fixed erosion for a few short years.	Private	N	N	N	N	N	N	N	N		N	N	N	N	N
	12233 Royal Valley Dr		Sinkholes around curb inlet across the street	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
23	12318 Halsgame Ln	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
24	12365 MONTSOURIS DR	Home Flooding	Ponding occurs in the yard every time it rains. In addition, every time it rains the basement leaks/flood depending on the amount of rain that occurs. MSD was contacted and they said the sewer system near the residence cannot handle more than 3 in of rain, however, the house leaks/floods and the yard ponds every time it rains. There is also a creek in the behind the house.	Private	N	N	N	N	N?	N	N	N	N	N	N	N	N	N
	12372 MONTSOURIS DR	Property Flooding	Drainage area between the two ponds/lakes overflows during heavy rains into the surrounding yards. Also causes excessive rise in receiving pond/lake.	Private - Cost Share	Y - However HOA maybe responsible for lake outfall	N	N	N	N	N	N	N	N	N	N	N	N	N
26	12503 Questover Lane	Concerns about standing water and minor erosion within the condo complex.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
28	12502 TRAMMELL CT	Property Flooding	Water typically pools heavily during storms through this area. Ground remains moist for long periods after storms have ceased.	Private														
31	12643 CONWAY DOWNS DR	Property Flooding	Whenever it rains, a pool of water forms in the far corner of my property. There is a creek on the other side of our fence. I am concerned about the mosquitoes breeding in this standing water.	Private	n	N	N	N	N	N	N	N	N	N	N	N	N	N

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32	12721 CREEKSIDE VIEW DR	Property Flooding	The area behind our home floods during heavy rains. The water comes up from a drain pipe or overflow from Fernridge Creek. In addition, a new subdivision (Duever Estates) is being built to the north and we are concerned that this will make the flooding worse. https://crevecoeurmo.portal.civicclerk.com/event/7234/overview	Natural Floodplain Area														
	12739 CREEKSIDE VIEW DR	Property Flooding	The common ground north of our home floods during heavy rains. Some of this comes from Fernridge Creek via a 12" rain pipe or from the creek overflowing its banks. A sub division (Duever Estates) is planned on the North side of Fernridge Creek and we are concerned that this will make the flooding worse.https://civicclerk.blob.core.windows.net/stream/CREVECOEURMO/604f5ec7-9be7-45de-9a05-a30753403b2c.pdf?sv=2021-10-04&st=2023-03-23T00%3A36%3A07Z&se=2024-03-23T00%3A41%3A07Z&sr=b&sp=r&sig=WKJlBRjA															
	801 N MASON RD	Property Flooding	During heavy rains the four 4-way drains are unable to handle the storm water running off our neighbors ponds and property. It has dislodged the rip-rap several times in the last 3 years. The board believes it would be helpful if our neighbor (Steven Leiber) would take measures to slow down the water before it leaves his property.	Private - Cost Share	N - Alternatives to the rock are available that the HOA could install from the property line to the inlets.	N	N	N	N	N	N	N	N	N	N	N	N	N
33	16 Chaminade	Street runoff causing erosion on his property.		Private	N	N	N		N	N	N	N	N	N	N	N	N	N
37	13210 Autumn Trails	Erosion in backyard		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
39	174 Belle Maison Ct	Stormwater flows from 178 Belle Maison Ct		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
43	2 Spoede Acres St	Runoff from surrounding area causes ponding and erosion	Install berm along west property line so inlet intercepts water, regrade yard for ponding issues and potentially have MSD swap out solid manhole cover for slotted cover and lower the frame if needed.	Private	n	N	N	N	N	N	N	N	N	N	N	N	N	N

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44	201 & 434 Runnymede Dr	Resident is concerned about runoff created by 237 Runnymede addition project		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	434 Runnymede Dr	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	450 RUNNYMEDE DR	Streambank Erosion	Lac du bois subdivision and others which have retaining basins: In several of these subdivisions the shoreline of these water retention "ponds" is eroding badly. These subdivisions need both management and perhaps financial assistance in order to avoid retention dike failure and damage to roadways	Private	N	N	N	N	N	N	Y	N		N	N	N	N	Y
45	219 Hibler Oaks	Backyard erosion		Private - Cost Share	N - If solution is permanent erosion control Y - If solution is extension of storm sewer	N	N	N	N	N	N	N	N	N	N	N	N	N
46	220 CLION LN	Property Flooding	heavy streams in the back yard with rains;	Monitor	Y - Regional solution needed if warranted.	N	N	N	N	N	N	N	N	N	N	N	N	N
	230 Clion Ln	Concerns about roadside drainage		Monitor	Y	N	Y	N	?	N	N	N	?	N	N	N	N	N
	Clion Lane & Ladue Lake Dr	Gully erosion and ponding in multiple back yards.		Private - Cost Share	Y - Regional solution needed if warranted.	N	N	N	N	N	N	N	N	N	N	N	N	N
	225 LADUE LAKE DR	Property Flooding	Extensive flooding on west side of lot coming from the north with moderate to heavy rain.	Private - Cost Share	Y - Regional solution needed if warranted.	N	N	N	N	N	N	N	N	N	N	N	N	N
48	240 Laduemount Dr	Creek erosion		Private	N	N	N	N	N	N	N	N		N	N	N	N	N
49	25 MORWOOD LN	Property Flooding	Yard floods during almost every rain event. Excessive water flowing on south side of yard. North side water ponds, City wanted to install an inlet in the 1990s or 1980s between 23 and 25 in the back, but the previous owner of 23 would not allow the work to proceed.	Monitor	Y - If pipe is a solution would likely cross property lines	N	N	N	N	N	N	N	N	N	N	N	N	N
50	258 NEW SALEM DR	Streambank Erosion	Resident report to the City: Streambank erosion	Private	n-Currently working with contractor to fix	N	N	N	N	Y	Y	N	N	N	N	N	N	Y
51	49 Beaver Dr	The homeowner is concerned about water ponding in the front yard.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
53	7 Middlebrook Ln		Erosion threatening shed (relocate shed)	Private	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y

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54	307 Cabin Grove	Sheet flows from an uphill neighbor causing erosion		Private	N - Erosion control with shade tolerant ground cover and proper grading of yard.	N	N	N	N	N	N	N	N	N	N	N	N	N
	307 CABIN GROVE LN	Property Flooding	storm water runs from the property located on Windsor Oaks Drive and accumulates in the backyard of the property.	Monitor	Y - Issue not on complaintants property	N	N	N	N	N	N	N	N	N	N	N	N	N
56	359 Country Glen	Concerns about creekside backyard erosion.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
57	36 AUBURNDALE DR	Property Flooding	Property flooding due to rain not flowing to storm drain east to west but down through yards southern direction	Private	N - grading can solve issue on the property	N	N	N	N	N	N	N	N	N	N	N	N	N
58	373 Hibler Ct	Existing concrete cannel is undersized		Private	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N
63	477 MARFORD DR	Property Flooding	During and after rain, water pools up in this back corner of the yard	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	482 STAINES CT	Property Flooding	Our backyard turns into a river during heavy rain. We live where the creek was supposedly buried many years ago, but now all the water just runs above ground where the creek should have been.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
65	5 Ladue Estates	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	55 E LADUE ESTATES DR	Property Flooding	Water pools & runs over wall onto sidewalk.	Private	Y - If wall is public or issue is water on the sidewalk N - If wall is private	N	N	N	N	N	N	N	N	N	Y	N	N	N
68	561 Sarah Ln	Ponding on Sarah Ln and in front of garage doors. Garages are downgrade from road.		Public/Private	N - for onsite issues Y - for street ponding	Y	N	N	N	N	N	N	N	N	N	N	N	Y - For on-site issues
70	12228 WINROCK DR	Streambank Erosion	Resident reports that the conveyance channel to the detention basin has been receiving more flows than it did in the past. As a result, the channel has widened, trees have fallen, and the sides of the channel have eroded.	Private	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N
	12228 WINROCK DR	Streambank Erosion	A culvert conveying street stormwater daylights here with open surface draining towards as MSD stand pipe, however there is standing water.	Private	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N

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71	625 Lampadaire Dr	Yard erosion		Private - Cost Share	N- If permanent erosion control is a viable option	N	N	N	N	N	N	N	N	N	N	N	N	N
72	667 Rue De Fleur Dr	Ponding in common area near the creek		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
75	7 SHERWYN LN	Property Flooding	The resident reports flows from neighbor's driveway entering a swale near the property line. Flows from the swale enter the creek on this property, and erosion is seen on the path from the swale to the creek.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
77	741 GASCOGNE DR	Property Flooding	Gullies have developed near the sewer that was installed (approx 15 years ago) that water collects in and doesn't fully drain. Ground needs to be regraded for better drainage.	Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
78	753 TIMBER RUN DR	Streambank Erosion	CMP is collapsed and causing bank/yard erosion and erosion of the pond banks. Pipe may be collapsed causing surcharge of manhole, runs into pond and causes erosion Erosion is contaminating waters with mud too. Ground is eroding through the trees to the sewer. That's water runoff from the backyards up the street.	MSD	Y	N	N	N	Y	N	Y	N	N	Y	N	N	Y	N
79	761 Turrentine Trail	Stormwater creating an approximate four-foot wide stream as it passes through the homeowner's yard. Homeowner wants to know if this is how the yards were designed to convey water.		Monitor	N	N	N	N	N	N	N	N	N	N	N	N	N	N
80	77 Colonial Hills Dr	Backyard erosion		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
82	859 Larkin Ave	Yard ponding		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N
83	920 Bellerive Manor Dr	Failing French drain and improperly directed downspouts.		Private	N	N	N	N	N	N	N	N	N	N	N	N	N	N

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93	455 Ridgecorde Pl		Inlet in rear yard completely covered and property owner mentioned that it gets bypassed during storms	MSD	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N
	9 Mosley Acres Dr		Sinkholes near/around area inlet															
103	946 FERNGATE LN	Property Flooding	Standing water in backyard in heavy rain	Private	N	N	N	N	N	N	N	N		N	N	N	N	Y
106	1070 Toreador Dr		Potential cso, has active flow	Private	Y	N	N	Y	N	N	Y	N		N	Y	N	Y	N
128	215 CHASSELLE LN	Streambank Erosion	Im not sure if this is considered stream bank erosion but after storms our drinking water tastes very bad. Undrinkable. We go weeks experiencing a bad smell/taste from the water. We have to resort to drinking bottled water during these times. We have contacted the water company a few times regarding this issue. They even sent someone out to test the water at one point. They never found undesirable levels, but the issue still persists after the storms.	Private	N	N	N	N	N	N	N	N	N	N	N	N	Y	N

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Appendix D
Channel Condition Assessment Field Data

Content:

- An Introduction to Fluvial Geomorphic Principles
- Channel Condition Scoring Matrix
- Channel Condition Scores Map
- Channel Condition Data Tables
- Study Reach Names Map
- Reach Data

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An Introduction to Fluvial Geomorphic Principles

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D.1 The Science of Fluvial Geomorphology

Fluvial geomorphology is the science studying the processes by which moving water shapes the land. It focuses on changes in the independent variables of discharge, sediment load supplied to reach, and valley slope, which give rise to adjustments in the dependent variables of sediment load, particle size, hydraulic characteristics, and morphologies, all of which interact with each other. It is a fundamental discipline of river science allowing for both the quantitative description of stream behavior in the present, as well as for the ability to make reasonable predictions of future behavior under specified conditions.

Fluvial geomorphology and the related disciplines of hydrology and hydraulic engineering, geology, landscape and aquatic ecology and soil science together provide the technical underpinnings for sound watershed management. A brief overview of basic principles of fluvial geomorphology, with an emphasis on their application to stream and watershed management is presented below.

D.1.1 Major Models

Streams exist in a state of dynamic equilibrium in which, the erosive forces of channel formation are counter-balanced by the resisting forces of the geological, ecological and soil strata the channel forms within. The driving force; gravity, acts on a stream as the rate at which water and sediment move through the channel. While the resisting force; the channels shape and roughness, is determined by the strength or cohesiveness of the channel boundary materials and the friction they exert on the water moving through the channel.

When the driving forces exceed the resisting forces, the stress applied by water or sediment (applied shear) exceeds channel strength. The stream channel subsequently responds by altering its geometry in plan, profile and cross-section form to accommodate the changes in flow volume and applied shear. Once disturbed, the processes by which streams respond are: 1) incision or degradation, 2) widening, 3) aggradation or deposition and 4) plan form adjustments. Through these processes, streams eventually re-establish equilibrium. Determining which process is dominant and the likely progression of the stream processes is one of the principle challenges of stream management.

While gravity and friction are the primary drivers of channel form, at the most fundamental level, stream manager's grapple with their many manifestations including sediment source, size and abundance, changing hydrologic conditions, shifting ecological influences of vegetative community disturbance and succession and a broad range of geological influences. In disturbed systems, the chosen approach evaluates each channel process separately then develops an integrated assessment using energy relationships derived from the following mathematical model. Given the large number of independent variables and the complex relationships between the many dependent variables that drive the patterns we see in natural systems such as streams, it is necessary to seek mathematical and process based models that organize the variables into easily observed and measured patterns.

Although there are three commonly recognized approaches to stream design, each with advantages and limitations (Skidmore et al. 2001), the two simplest approaches, often called analog and empirical methods, explicitly assume equilibrium conditions regarding hydrology and sediment transport. Because the watershed is not in an equilibrium condition, as discussed in more detail in the Geomorphic Section, the analytical approach is used.

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D.1.1.1 Lane's Relationship

In 1955, E.W. Lane expressed the relationships between the driving and resisting forces for channel change in the following simple proportionality. The expression is also illustrated in Figure D-1.

$Q_S D_{50} \propto S Q_W$

Where Q_S ≡ Rate of sediment flow
D_{50} ≡ Median size of mobile particles
S ≡ Slope of the channel bed
Q_W ≡ Rate of water flow

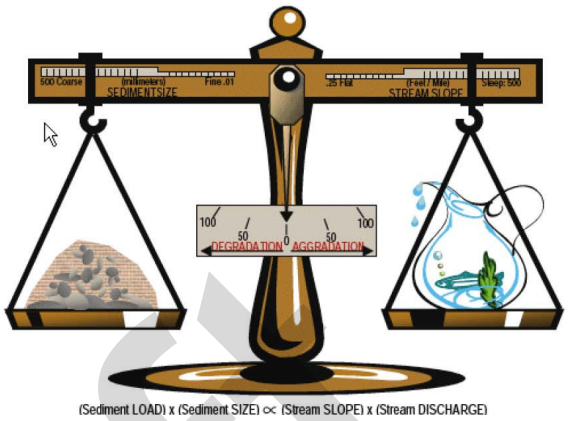


Figure D-1 Lane's Stable Channel Balance

Here the D_{50} stands as proxy for boundary strength and S for channel shape. From this relationship, it is clear that a change in any of these parameters will, once a threshold is exceeded, induce a change in one or more of the others. The familiar increase in Q_w associated with urban development illustrates this point well. The response to this increase is some combination of the following: a decrease in channel bed slope (incision), an increase in sediment load (increased erosion) and an increase in the median size of mobile particles.

When considering all four parameters, these responses often occur in sequence. The following examples illustrate:

- Initial change: $Q_W \uparrow$; response: $Q_S \uparrow$. Often the bed slope remains relatively unchanged at first, so to maintain the proportionality, Q_s increases. The increase in sediment load is generated by down cutting of the channel bed (incision), scour of the stream banks or both. The incision locally steepens the channel slope, compounding the driving force for more erosion. This local steepening of bed slope is called a knickpoint. Knickpoints migrate upstream liberating sediment as they progress. When the stream banks exceed their critical height, mass failure ensues. This reconfiguring of the channel geometry continues until the equilibrium described by Lane is re-established.

- Initial change: $Q_W \uparrow$; response: $D_{50} \uparrow$. This condition occurs when there is little sediment initially available in the bed or banks. So, to maintain Lane's proportionality, the size of the median mobile particles increases. Under this condition, rock armor that previously protected a structure becomes mobile as the D_{50} increases. Subsequently, the service life of the infrastructure declines. Moreover, the natural bed armoring aggregate, previously mobile only during less frequent floods, becomes mobile during more frequent events and the underlying, more erosion-prone bed and bank materials are exposed to greater and more frequent erosive force.

- Initial change: $Q_W \uparrow$; response: $S \downarrow$. If the channel bed is relatively resistant to incision, the stream may respond to increased flows by decreasing its slope. The stream accomplishes this decrease in slope by meandering or increasing the channel length over the same change in elevation. The downstream progression of point bars (crescent-shaped sediment deposited on the inside bank of stream bends) opposite the downstream progression of eroding and failing cut banks (steeper outside banks of stream bends) are classic signs of meandering.

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- Initial change: S ↑; response: Q_S ↑. Increasing channel slope is often accomplished through channel straightening to achieve greater flood conveyance or to optimize land development. This increase in slope causes an increase in sediment load, in mobile D_{50} size or both. Bed and banks erode to generate the sediment that deposits downstream where channel slopes are flatter. The effective change in water surface slope may extend upstream well beyond the actual channel straightening, extending the accelerated erosion. The sediment eroded from upstream of the channelization and deposited downstream counteracts the effect of the channelization and improvements in flood conveyance are often less than anticipated.

Lane's Relationship is useful for broad conceptual understanding of stream behavior. It is also valuable for testing hypotheses concerning stream behavior in various scenarios. The following models more specifically address stream processes.

D.1.1.2 Channel Evolution Model – Evaluating Channel Changes in Cross-Section

When considering streams from a management perspective, it is especially helpful to note that streams trend toward the equilibrium condition. Schumm (1984) and most recently Simon (2001) have described process by which streams reacquire equilibrium after a disturbance in the watershed. Simon separates changes in channel morphology into six stages: I) Pre-disturbance, II) Disturbance, III) Incision, IV) Widening, V) Deposition, and VI) Recovery and Reconstruction. Determining the phase of channel evolution in the various project reaches was an important part of the analysis.

At Stage I, the channel is stable and transports the water and sediment delivered to it without significant adjustment. Although not a universal feature, internal floodplains are common in stable streams including those in the Central Midwest. Bankfull floodplains occur at the elevation corresponding to the dominant discharge. The dominant discharge is the flow that, over time, accomplishes the most work on the stream channel. In undisturbed streams, the dominant discharge typically occurs every 1.5 to 2 years. The bankfull floodplain performs a valuable function by lowering the bank shear during higher flows and effectively managing the stream energy.

Stage I Pre-disturbance

- Bed and bank materials balanced with erosive forces
- Permanent woody vegetation near the water line
- Two-stage channel shape evident at about 1.8 year return interval

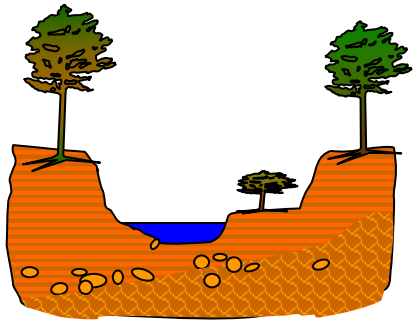


Figure D-2 Stage I Pre-disturbance

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During Stage II, natural or manmade events disturb the channel. In disturbed systems, the dominant discharge often occurs far more frequently and may not support the development of internal floodplains. Common forms of manipulation include increases in the rate, volume or timing of flow or direct alteration of channel dimensions or alignment.

Stage II Disturbance

- Channel altered, hydrology or sediment inputs modified
- Removal of permanent woody vegetation near the water line
- Two-stage channel shape eliminated or no longer supported by flow conditions

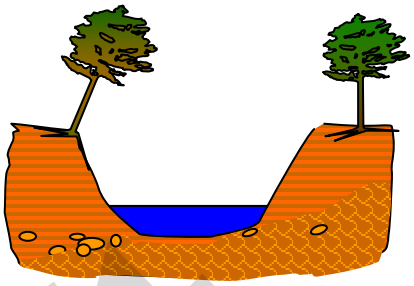


Figure D-3 Stage II Disturbance

In Stage III, the stream cuts downward, lowering its channel slope to redistribute energy. This incision process migrates upstream. The migrating face of an incision front is referred to as a knickpoint or knickzone. The typical shape of these channels is V- shaped or narrow U-shaped. In soils such as loess, incision may proceed rapidly; migration rates exceeding 1000 feet/year occur in the Central Midwest. Incision proceeds until the channel has reached a stable slope, the incision reaches a more resistant layer or the stream banks begin failing because of mass wasting.

Stage III Incision

- Downcutting liberates sediment
- Lost or perched bankfull floodplains
- "U" shaped channel
- Woody vegetation high on bank with many "surfer" trees

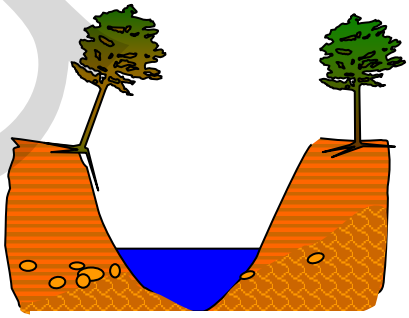


Figure D-4 Stage III Incision

Channel widening through mass wasting of the stream banks, Stage IV, follows incision. There are two common mechanisms of bank failure. Fluvial action erodes soil away from the toe of the slope resulting in a cantilevered bank, which eventually fails through toppling. Alternatively, the incision cuts deeply enough into the bed that the stream banks exceed their critical height and fail. Both mechanisms are operational in a stream.

Stage IV Channel Widening

- Widespread bank failures as banks exceed critical height or were undercut by toe scour
- Channel adjusts to new flow regime
- Significant sediment loads generated; most significant erosion hazard in this phase
- Bank armoring generally ineffective

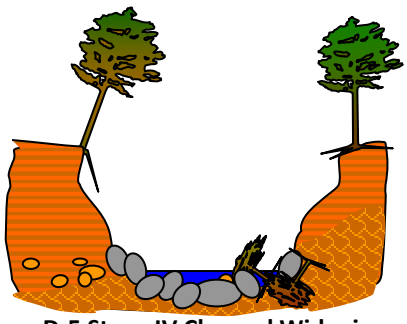


Figure D-5 Stage IV Channel Widening

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The next phase of channel evolution is Stage V when the channel has sufficiently widened and begun depositing sediment eroded from upstream reaches in the bed. The deposits occur as channel bars and occasionally as internal floodplains.

Stage V Deposition

- Deposition begins from liberated sediment
- Vegetation establishes near water line

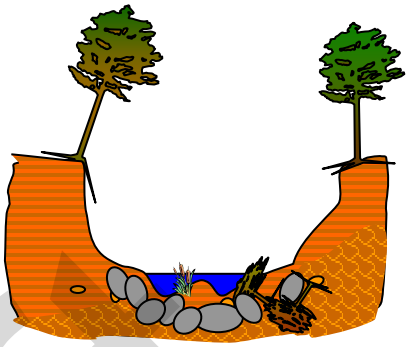


Figure D-6 Stage V Deposition

In Stage VI, the channel regains the equilibrium condition and efficiently transports both water and sediment. If a substantial increase in Q_w precipitated the adjustment, final dimensions of the channel (in cross section) will probably be larger than the pre-disturbance condition.

Stage VI Recovery and Reconstruction

- Bankfull floodplains may be reconstructed from liberated sediments
- Woody vegetation establishes near water line
- Stability re-established

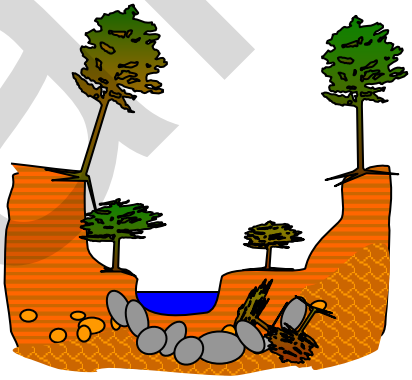


Figure D-7 Stage VI Recovery and Reconstruction

D.1.1.3 Meander Formation and Migration – Evaluating Channel Changes in Plan Form

Adjustments in plan form are common and have an important influence on the sustainability of a storm water system as well as on the safety and service life of near-stream infrastructure. Some plan form adjustments can liberate significant sediment and present major erosion hazards. The management requirements of plan form adjustment differ from those of an incising or widening stream. Consequently, distinguishing between these processes is an important part of any investigation and analysis into the stability of a watershed. Straight stream channels are rare, requiring a narrow set of circumstances to maintain dynamic equilibrium in a natural setting. Like all other open systems, streams adjust their form to minimize the expenditure of energy. The formation of pool-riffle patterns and meanders are consistent with this trend towards maintaining an equilibrium condition. Meanders are complex in both formation and behavior. Meander formation graphically demonstrates the principle of cause and effect in stream mechanics. The cause in this instance is the force applied by moving water and sediment while the effect is the shape of the stream channel.

To describe the basic process of meander formation, the distinction between the meander flow or discharge centerline and the channel centerline is important. As illustrated in Figure D-8, the channel

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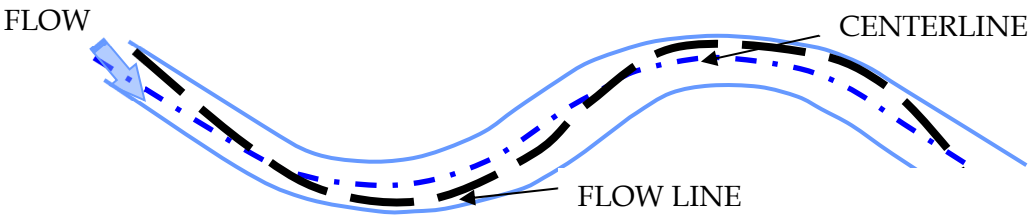


Figure D-8 Meander Formation and Migration

centerline (effect) lags the discharge flowline or the channel thalweg (cause). This is a result of the resistive forces of friction being unevenly applied to the water moving through the channel, recall that these resistive forces are expressed as the shape of the channel (in cross-section and plan form) and the channel paving materials. Consequently the flow in a stream channel is slower at the margins or boundaries of the channel. This is due to the higher levels of friction in these zones, which causes the flow in a stream to not progress in straight lines parallel to the stream channel. Therefore faster moving water from the interior of the channel is always spilling out into the space not occupied by the slower moving water at the margins of the channel.

Therefore, flow in a stream is comprised of a primary flow oriented downstream with secondary transverse flows oriented perpendicular to the primary flow. As illustrated in Figure D-9, along the channel thalweg, these inward and outward transverse flows are balanced in terms of the quantity of water which is being discharged. However, along the channel centerline, there is considerable asymmetry. Because of the variable turbulence and secondary flow patterns, the flow velocity, sediment transport and boundary shear stress are resultantly non-uniform across the channel. These areas of turbulence produce alternating pulses of sediment scour and deposition.

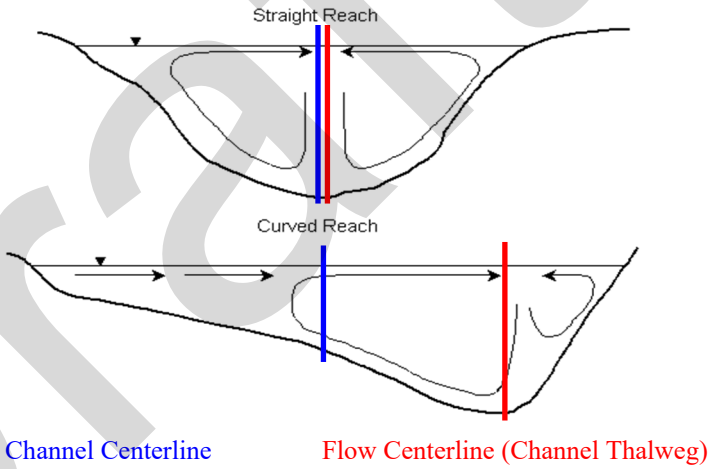


Figure D-9 Secondary Stream Flow

The resulting areas of scour and deposition alternate along the axis of discharge flow producing a pool along the outer bend and a corresponding point bar on the inner bend. As the pattern of scour and deposition alternates from one side of the channel to the other, the thalweg (deepest portion of the channel cross section) and maximum flow velocity cross over the center of the channel. Theses cross over points become the riffles. This alternating pattern of bar building and bank scour causes straight streams to evolve into meandering ones with a sinuous pattern. Specifically, this is how channelized reaches eventually reacquire a sinuous shape.

Although the process of creating riffles and pools encompasses highly variable processes, the riffles and pools occur at generally predictable intervals. The spacing of these riffles or pools along the thalweg relates closely to the width of the stream at the elevation of dominant discharge. The figure below illustrates riffle geometry in plan form. Further, the spacing of the pools, which are near the outside bend

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and slightly downstream of the maximum curvature of the meander, have essentially the same relationship to channel width as the riffles.

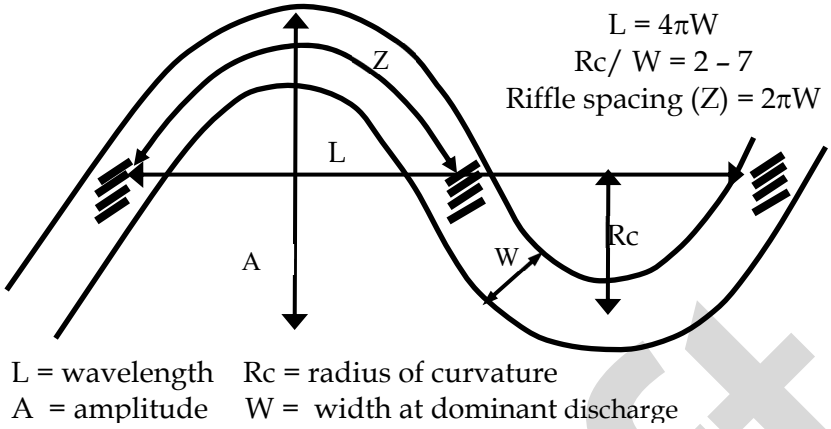


Figure D-10 Meander Geometry

In alluvial streams of homogeneous material, meanders take the form of sine-generated curves. Leopold and Langbein (1969) demonstrated that this shape is the most hydraulically efficient form for turning water. Further, Chang (1998) presents a more analytical assessment of this meander plan geometry. These relationships between stream width, riffle spacing, meander wavelength and radius of curvature are remarkably consistent for streams and rivers throughout the world.

Most stable relationships in channel geometry include the channel width at the elevation corresponding to the dominant discharge. Riffle spacing (Z) generally occurs every 6.3 bank widths (W) where W is the width at the dominant discharge., this spacing is essentially 2πW. Meander wavelength is approximately 12 bank widths, which approaches 4πW.

The radius of curvature is also related to the channel width at dominant discharge elevation. The ratio of meander radius of curvature (R_c) to channel width (W) generally ranges between 2 and 7. Bagnold's (from Thorne et al, 1997) investigation of energy losses at bends confirmed the empirical observations by determining that flow energy losses are minimized through this shape. A tighter radius causes a flow separation and severe energy losses, a hydraulic inefficiency that is not persistent. In natural rivers, channel bends erode to a R_c/W ratio of 2-5 and then maintain that form, which indicates that the hydraulic efficiency is optimized by this form.

In streams containing heterogeneous media and in confined channels, the meander pattern is interrupted by variations in bank structure, infrastructure, confluences, geologic features and channel manipulation. Streams out of equilibrium also display distortions in meander pattern and growth. Nevertheless, the fundamental relationships describing these patterns remain broadly applicable.

Consistent with the location of peak stress downstream of each bend apex, meander waveforms migrate downstream. In stable streams, the meander migration generally occurs at a rate that does not affect infrastructure. However, accelerated migration may pose a substantial risk. A rapid increase in sediment load delivered from an incising or widening reach upstream is the most likely trigger for accelerated migration in urbanizing watersheds.

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D.1.1.4 Profile Analysis

The measurement of the effect of gravity on a channel is often understood through an analysis of the channels longitudinal profile or gradient. In this manner, the dominant bed-slope of the channel is quantified. Channels with steeper bed-slopes, as determined by the difference in elevation between the crest of one riffle and the crest of an upstream or downstream riffle, have a higher level of hydraulic energy which must be dissipated by the channels shape and roughness. Abrupt changes in the overall pattern of channel profile indicate areas where incision is occurring now or where the degradation is arrested by manmade or natural structures. The advancing front of incision is known as a knickpoint or where slope changes are slightly less abrupt, knickzone. It is especially important to identify and manage incision because it usually precedes processes that are more destructive.

D.1.1.5 Energy Relationships

Other fundamental relationships used to understand stream mechanics are energy, continuity and loss relationships. Remembering that energy can neither be created nor destroyed, that mass is conserved and that all dynamic systems have losses, we can calculate flood elevations and erosive stresses.

First, the total energy in a system can be expressed as:

$E = w + v^2/(2g) + z - L$

Where: E ≡ energy (ft-lb/lb)
w ≡ work per unit mass
$v^2/(2g)$ ≡ kinetic energy
z ≡ potential energy
L ≡ losses

The total energy at any point is equal to the total energy at any other point and is expressed as:

$w_1 + v_1^2/(2g) + z_1 = w_2 + v_2^2/(2g) + z_2 - L$

Additional equations such as continuity[1] and Manning's loss equation[2] allow the designer to calculate the depth and velocity at any point in the system. Energy, continuity and Manning's equations are the bases for programs such as HEC-RAS.

Bringing these concepts together in the context of stream mechanics, work is the movement of sediment by water, kinetic energy is the movement of water, potential energy is the depth of the water and losses are friction and sound. HEC-RAS does not include a separate calculation of work. The energy exchange of work moving sediment is included by default in losses and kinetic energy.

Some designers consider sediment transport competency for major projects by establishing a sediment budget to analyze sediment movement through the designed intervention. More sophisticated techniques include computer based analyses. For small projects, it is usually difficult to justify a

[1]For modeling purposes, the continuity relationship expresses the concept that the quantity of water in any one point in a system is the same as the quantity of water at another point or changes only gradually. At each confluence, hydraulic models are partitioned into discrete reaches.

[2] Manning's loss equation is commonly expressed as $Q = 1.49(R^{2/3}S^{1/2})A/n$

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sophisticated model. The designer, however, can achieve a basic understanding of sediment transport competency and erosion hazard from data and analyses used to determine water surface elevations. The designer estimates area of erosion and deposition from the continuity of the stream power or boundary shear stress. Routines in the HEC-RAS model calculate stream power and boundary shear stress. The values of either stream power or boundary shear stress are plotted against the longitudinal profile. The designer compares the zones of highest and lowest values to his field observations of size and distribution of bed material and the location of scour and erosion. The designer then establishes threshold values from these observations. Improved sediment transport competency results from using these threshold values in design. Boundary shear stress is the product of density, depth and slope. The designer predicts areas of scour and erosion by comparing the boundary shear stress to the shear resistance of the bed or bank toe materials. The shear resistance for granular materials is calculated using empirical relationships. The shear resistance for cohesive materials is usually compared to measured or tabulated values.

Lane's proportionality allows the designer to understand and predict the effect of forces on a stream. Energy and continuity equations allow the designer to predict the depth and average velocity at any point. The energy and continuity equations are the bases for understanding the exchange of energy modes. Perhaps the simplest useful way to apply these principles is to think of energy as either kinetic or potential. For the purposes of stormwater, flooding occurs when potential energy is higher than we can accept and accelerated erosion occurs when kinetic energy is higher than we accept.

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D.1.2 Temporal and Spatial Implications

The dominant process in a stream reach is influenced by its location in the watershed. As shown on the following figures, the profile of the channel slope becomes flatter progressing downstream. In the most general sense, incision dominates the steep, upper watershed and plan form adjustments dominate the relatively flat lower watershed.

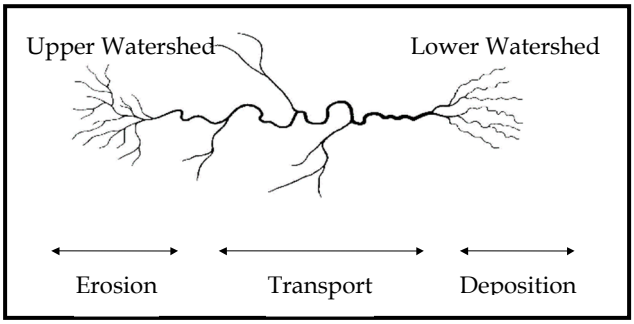


Figure D-11 Stages of a River System (adapted from Rienick and Singh, 1980)

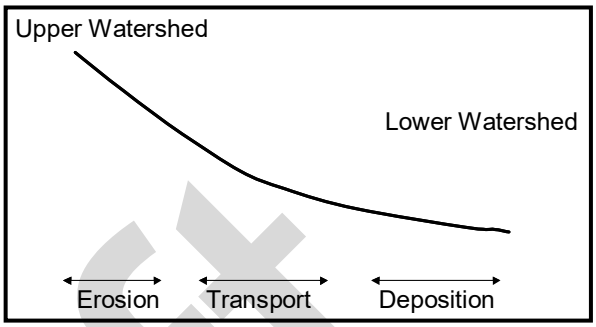


Figure D-12 General Channel Profile of a Watershed

In disturbed watersheds, this pattern may be reset by infrastructure. For example, a dammed stream can act as the end of a watershed, where sediment and water is deposited in the receiving lake.

Here the outfall behaves like a spring beginning the next watershed. Stream crossings such as bridges and culverts can also reset river formation, as shown on Figure D-14. In developing areas, the characteristic profile shape of natural watersheds may be repeated after each hard crossing that materially effects transport of water and sediment. These obstructions may geomorphically isolate the reach.

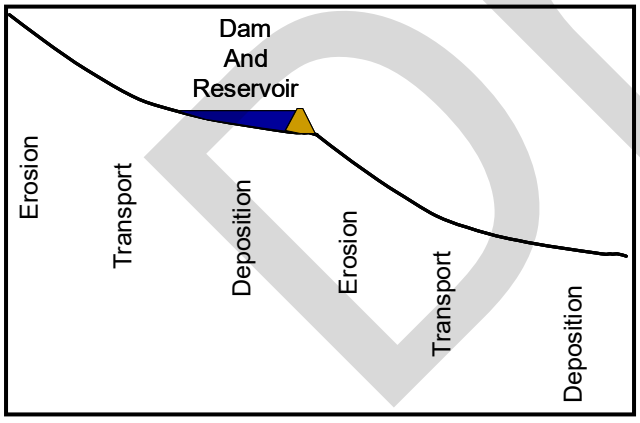


Figure D-13 Effect of a dam resetting the stream formation sequence

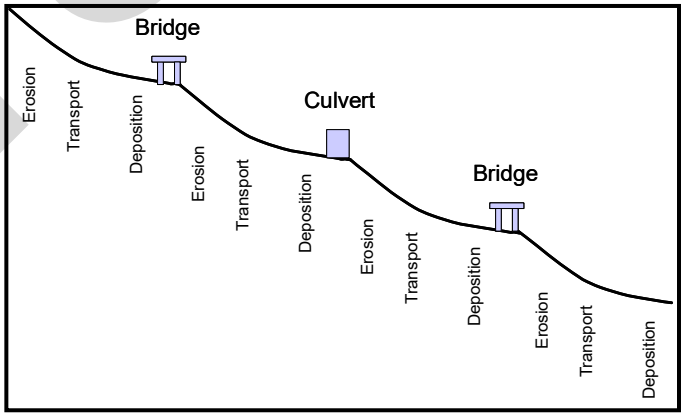


Figure D-14 Effect of stream crossings resetting the stream formation sequence

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D.1.3 Sediment Transport

Natural channels transport both water and sediment through the watershed. Sediment and water movement play parallel roles in flood and erosion control and in the performance of bridges and culverts. For this discussion, sediment includes large woody debris, man-introduced materials and other debris that comes to rest on the streambed. A stream in dynamic equilibrium maintains the movement of water and sediment without sudden and wholesale areas of erosion and deposition. Flow rate governs both the initiation of sediment movement and its deposition, moving material when the system has sufficient kinetic energy and depositing it when the kinetic energy is depleted. As described earlier, gravity, expressed here as hydraulic slope, is the driving force acting on the system. The movement of water transfers that force to dislodge and keep particles moving. Figure D-15 is a generic hydrograph and sedigraph relating the rate of flow to time. Note that there is a lag between the flow of water and the movement of sediment ($t_{s\,i}$). The lag represents the flow necessary to exceed the critical shear stress. At the peak water flow there is often a decrease in the transport of sediment as the hydraulic slope decreases. The falling leg of the hygrograph may coincide with the peak of the sedigraph with the particles already mobile and an increase in hydraulic slope.

As the flow recedes and kinetic energy declines, the stream deposits particles of decreasing particle size. This process forms the riffles between pools. Generally, this is most apparent where the woody debris jams morphologically behave as riffles.

Issues of sediment transport are particularly relevant to stream managers at infrastructure crossings. Bridge, culvert and pipeline crossings may interrupt the hydraulic slope with predictable, adverse consequences. A crossing backwatered under high flow conditions decreases the hydraulic slope and may induce deposition that reduces flow capacity. Over-widened or excessively smooth crossings increase hydraulic slope and induce scour. The scour may occur immediately downstream and undermine the structure or may, as the result of an upstream drawdown curve, induced incision. This incision migrates upstream until the stream reaches a stable bed slope.

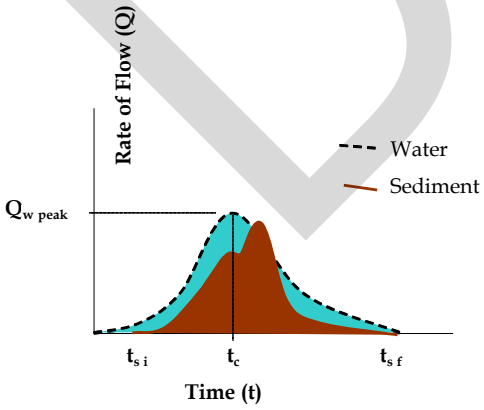


Figure D-15 Hydrograph and Sedigraph

Management activities that remove or add material to the stream also interrupt equilibrium sediment transport and may have similarly adverse consequences. Snagging, straightening and widening a channel all disrupt the sediment balance. These and similar activities induce upstream erosion and eventual deposition at the site of disturbance. Un-designed bank armor such as dumped riprap or waste concrete disrupts sediment transport when it migrates into the bed. These large, rough particles induce deposition where they enter the bed but induce scour downstream. Dumping materials on the bed can also reset the pool and riffle sequence if the dumped material becomes the hardest point in the reach.

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Channel Condition Scoring Matrix

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Channel Condition Scoring Matrix
(Adapted from Johnson et al 1999)

	Stability Indicator	Good (1)	Fair (2)	Poor (3)
1	Bank soil texture and coherence per Uniform Soil Classification using the visual-manual procedures (ASTM D 2488-00)	Cohesive materials, clay (CL), silty clay (CL-ML), massive limestone, continuous concrete, clay loam (ML-CL), silty clay loam (ML-CL), thinly bed limestone	Sandy clay (SC), sandy loam (SM), fractured thinly bedded limestone	Non-cohesive materials, shale in bank, (SM), (SP), (SW), (GC), (GM), (GP), (GW)
2	Average bank slope angle as measured where obvious breaks in slope create a top of bank and toe of slope	Slopes ≤ 2H:1V on one or occasionally both banks	Slopes from 2H:1V to1.7H:1V common on one or both banks	Slopes steeper than to1.7H:1V on one or both banks
3	Average bank height as measured from the lowest point in the channel cross section to the top of bank	Less than 6 feet	Greater than 6 and less than 12 feet	Greater than 12 feet
4	Vegetative bank protection	Wide to medium band (≥ the width of the riparian buffer) of woody vegetation with 70-90% plant density and cover. Majority are hardwood, deciduous trees with well-developed understory layer, minimal root exposure	Narrow band (>20 feet up to the buffer width) of woody vegetation, poor species diversity, 50-70% plant density, most vegetation on top of bank and not extending onto bank slope, some trees leaning over bank, root exposure common	Thin or no band (20 feet or less) of woody vegetation, poor health, monoculture, many trees leaning over bank, extensive root exposure, turf grass to edge of bank
5	Bank cutting	Little to some evident along channel bends and at prominent constrictions, some raw banks up to 4 foot	Significant and frequent. Cut banks 4 feet high. Root mat overhangs common.	Almost continuous cut banks, some over 4 feet high. Undercut trees with sod-rootmat overhangs common. Bank failures frequent
6	Mass wasting (wedge or slide slope failure)	Little to some evidence of slight or infrequent mass wasting, past events healed over with vegetation. Channel width relatively uniform with only slight scalloping	Evidence of frequent and significant mass wasting events. Indications that higher flows aggravated undercutting and bank wasting. Channel width irregular with bank scalloping evident	Frequent and extensive mass wasting evident. Tension cracks, massive undercutting and bank slumping are considerable. Highly irregular channel width.
7	Bar development	Bar width is less than ¼ of the channel width at low flow, well-consolidated, vegetated and composed of coarse bed material to slight recent growth of bar as indicated by absence of vegetation on part of bar	Bar widths ¼ to ½ of channel width at low flow with freshly deposited sand to small cobbles with sparse vegetation	Bar widths greater than ½ the channel width at low flow. Bars are composed of extensive deposits of finer bed material with little vegetation
8	Debris jam potential	Slight – small amounts of debris in channel. Small jams could form	Moderate – noticeable debris of all sizes present	Significant – moderate to heavy accumulations of debris apparent
9	Obstructions, flow deflectors and sediment traps	Negligible to few or small obstructions present causing secondary currents and minor bank and bottom erosion but no major influence on meander bend	Moderately frequent and occasionally unstable obstructions, noticeable erosion of channel. Considerable sediment accumulation behind obstructions	Frequent and unstable causing continual shift of sediment and flow
10	Channel bed material consolidation and armoring	Massive competent to thinly bed limestone, continuous concrete, hard clay, moderately consolidated with some overlapping. Assorted sizes of particles, tightly packed and overlapped, possibly imbricated. Small % of particles < 4mm	Shale in bed, soft silty clay, little consolidation of particles, no apparent overlap, moderate % of particles < 4mm	Silt, weathered, thinly bedded, fractured shale, high slaking potential, very poorly consolidated, high % of material < 4mm
11	Percentage of channel cross section constriction	< 25% of average cross section area	26-50% of average cross section area	> 50% of average cross section area
12	Sediment movement	Little to no loose sediment	Scour and/or deposition, some loose sediment	Near continuous scour and/or deposition and/or loose sediment
13	Sinuosity (ratio of the channel length to valley length) channel length = longitudinal profile survey length	1.2 ≤ Sinuosity ≤ 1.4	1.1<Sinuosity <1.2	Sinuosity <1.1 or >1.4

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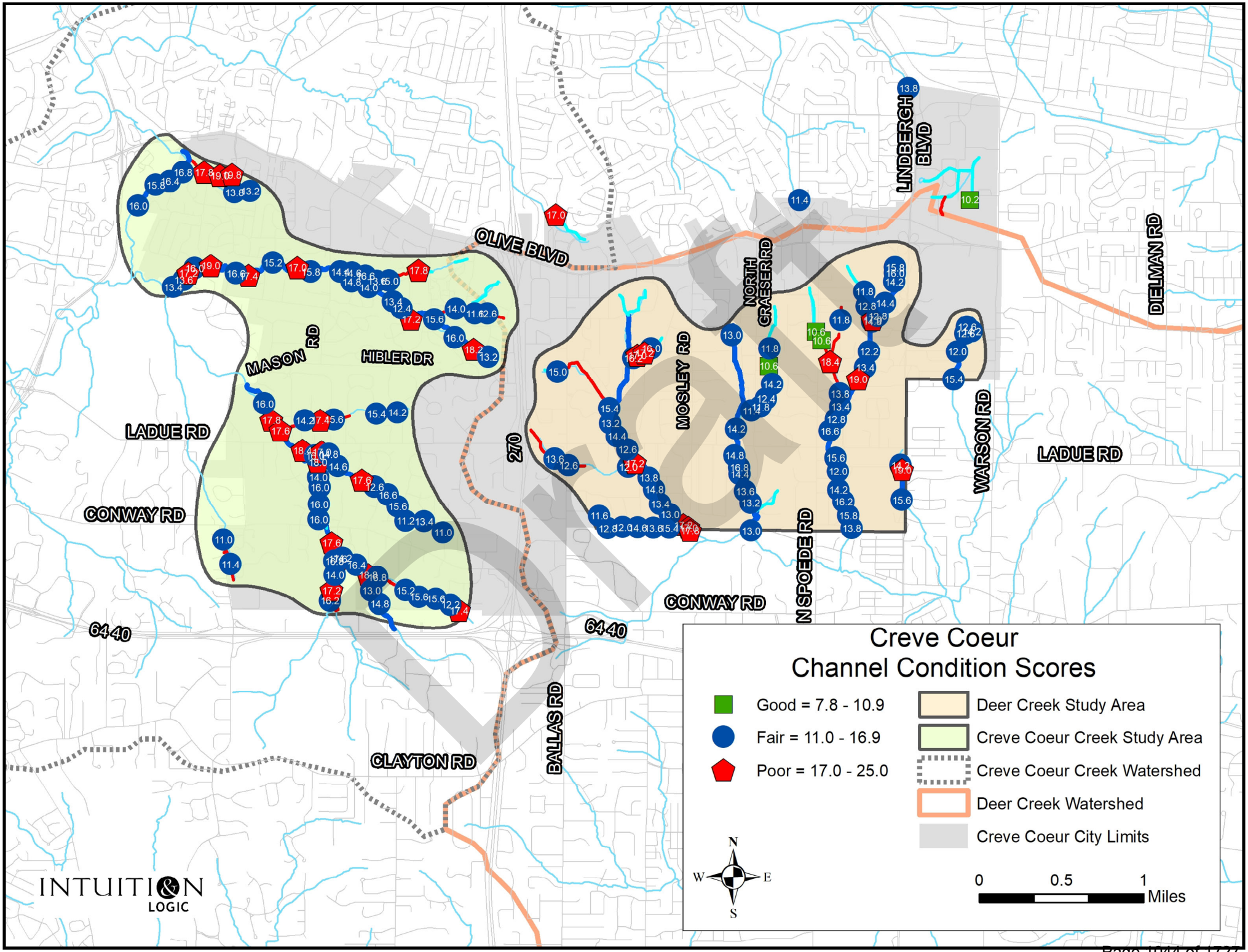
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Channel Condition Scores Map

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OLIVE BLVD
LINDBERGH BLVD
DIELMAN RD
NORTH GRAESER RD
MOSLEY RD
WARSON RD
LADUE RD
MASON RD
HIBLER DR
CONWAY RD
270
N SPOEDE RD
BALLAS RD
CLAYTON RD
64 40
Creve Coeur
Channel Condition Scores
Good = 7.8 - 10.9
Fair = 11.0 - 16.9
Poor = 17.0 - 25.0
Deer Creek Study Area
Creve Coeur Creek Study Area
Creve Coeur Creek Watershed
Deer Creek Watershed
Creve Coeur City Limits
N
W
E
S
0
0.5
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Miles
INTUITION & LOGIC

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Channel Condition Data Tables

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	Channel Condition Point	1	2	3	4	5	6	7	8	9	10
Field Observation and Field Data Input	Bank Soil Texture	1	2	1	1	1	1	1	1	1	1
	Average Bank Slope	2	3	3	3	2	2	2	2	2	2
	Average Bank Height	2	2	3	2	2	2	2	3	2	2
	Vegetative Bank Protection	2	2	2	3	3	1	2	1	2	1
	Bank Cutting	3	3	3	1	2	2	2	3	2	3
	Mass Wasting	3	3	3	1	2	1	1	3	3	3
	Bar Development	3	3	1	1	1	1	1	1	1	2
	Debris Jam Potential	2	2	3	1	1	2	1	1	1	3
	Channel Obstructions	2	2	2	1	1	1	1	1	1	1
	Channel Bed Material	2	2	1	1	1	1	1	3	3	3
	Channel Constrictions	2	2	2	1	1	1	1	1	2	2
	Sediment Movement	3	2	3	3	2	3	1	3	3	3
	Channel Sinuosity	1	2	1	1	3	2	2	1	1	2
	Dominant Process	Planform Adjustment, Widening	Planform Adjustment	Early Stage Incision	Managed Swale	Incision, Widening, Planform Adjustment	Incising	Incising	Widening	Widening	Widening, Planform Adjustment
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	1.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.2	1.8	1.8	1.8	1.2	1.2	1.2	1.2	1.2	1.2
	Average Bank Height (Weighted)	1.6	1.6	2.4	1.6	1.6	1.6	1.6	2.4	1.6	1.6
	Vegetative Bank Protection (Weighted)	1.6	1.6	1.6	2.4	2.4	0.8	1.6	0.8	1.6	0.8
	Bank Cutting (Weighted)	1.2	1.2	1.2	0.4	0.8	0.8	0.8	1.2	0.8	1.2
	Mass Wasting (Weighted)	2.4	2.4	2.4	0.8	1.6	0.8	0.8	2.4	2.4	2.4
	Bar Development (Weighted)	1.8	1.8	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.2
	Debris Jam Potential (Weighted)	0.4	0.4	0.6	0.2	0.2	0.4	0.2	0.2	0.2	0.6
	Channel Obstructions (Weighted)	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Channel Bed Material (Weighted)	1.6	1.6	0.8	0.8	0.8	0.8	0.8	2.4	2.4	2.4
	Channel Constrictions (Weighted)	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	1.6	1.6
	Sediment Movement (Weighted)	2.4	1.6	2.4	2.4	1.6	2.4	0.8	2.4	2.4	2.4
	Channel Sinuosity (Weighted)	0.8	1.6	0.8	0.8	2.4	1.6	1.6	0.8	0.8	1.6
	Weighted Channel Score	17.6	18.8	17.2	13.4	14.8	12.6	11.6	16.0	16.4	17.8
	Channel Condition	Poor	Poor	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Fair

Draft

	Channel Condition Point	11	12	13	14	15	16	17	18	19	20
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	2	3	3	2	3	3	2	2	3
	Average Bank Height	2	2	2	2	2	2	2	2	2	2
	Vegetative Bank Protection	1	2	3	3	2	2	2	2	2	2
	Bank Cutting	3	3	3	3	3	3	3	3	3	3
	Mass Wasting	3	2	2	3	3	3	3	3	3	3
	Bar Development	2	1	1	1	1	3	3	1	1	1
	Debris Jam Potential	1	1	1	3	1	3	3	1	3	3
	Channel Obstructions	1	1	1	1	1	1	1	1	3	2
	Channel Bed Material	1	1	1	1	1	1	1	1	1	3
	Channel Constrictions	2	1	1	1	2	2	1	2	2	1
	Sediment Movement	1	3	3	3	3	3	3	1	3	3
	Channel Sinuosity	2	2	2	2	1	1	1	1	1	1
	Dominant Process	Widening, Planform Adjustment	Widening	Widening, Planform Adjustment, Incising	Widening, Incising	Widening	Widening, Planform Adjustment	Widening, Planform Adjustment	Widening, Incising	Widening, Incising	Widening
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.2	1.8	1.8	1.2	1.8	1.8	1.2	1.2	1.8
	Average Bank Height (Weighted)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	Vegetative Bank Protection (Weighted)	0.8	1.6	2.4	2.4	1.6	1.6	1.6	1.6	1.6	1.6
	Bank Cutting (Weighted)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Mass Wasting (Weighted)	2.4	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	Bar Development (Weighted)	1.2	0.6	0.6	0.6	0.6	1.8	1.8	0.6	0.6	0.6
	Debris Jam Potential (Weighted)	0.2	0.2	0.2	0.6	0.2	0.6	0.6	0.2	0.6	0.6
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.4
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.4
	Channel Constrictions (Weighted)	1.6	0.8	0.8	0.8	1.6	1.6	0.8	1.6	1.6	0.8
	Sediment Movement (Weighted)	0.8	2.4	2.4	2.4	2.4	2.4	2.4	0.8	2.4	2.4
	Channel Sinuosity (Weighted)	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8
	Weighted Channel Score	14.8	14.4	15.8	17.0	15.2	17.4	16.6	13.6	16.0	17.2
	Channel Condition	Poor	Fair	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair

Draft

	Channel Condition Point	21	22	23	24	25	26	27	28	29	30
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	2	2	2	3	2	3	3	3	3
	Average Bank Height	2	2	2	1	3	2	2	2	2	1
	Vegetative Bank Protection	2	3	1	3	2	2	3	3	2	1
	Bank Cutting	3	2	3	1	3	1	1	1	3	3
	Mass Wasting	3	2	2	1	2	1	1	1	1	2
	Bar Development	1	1	2	1	3	1	1	2	3	3
	Debris Jam Potential	1	2	2	2	1	3	1	1	3	2
	Channel Obstructions	1	1	1	2	2	1	1	1	2	1
	Channel Bed Material	1	1	1	1	1	1	1	1	1	1
	Channel Constrictions	1	2	1	2	2	2	1	1	2	2
	Sediment Movement	1	3	3	1	3	2	1	1	1	3
	Channel Sinuosity	1	1	1	3	1	1	3	3	3	2
	Dominant Process	Incising	Widening, Planform Adjustment	Widening, Planform Adjustment	Incising	Planform Adjustment	Incising, Managed Swale	Managed Swale	Managed Swale	Planform Adjustment, Incising	Incising
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.2	1.2	1.2	1.8	1.2	1.8	1.8	1.8	1.8
	Average Bank Height (Weighted)	1.6	1.6	1.6	0.8	2.4	1.6	1.6	1.6	1.6	0.8
	Vegetative Bank Protection (Weighted)	1.6	2.4	0.8	2.4	1.6	1.6	2.4	2.4	1.6	0.8
	Bank Cutting (Weighted)	1.2	0.8	1.2	0.4	1.2	0.4	0.4	0.4	1.2	1.2
	Mass Wasting (Weighted)	2.4	1.6	1.6	0.8	1.6	0.8	0.8	0.8	0.8	1.6
	Bar Development (Weighted)	0.6	0.6	1.2	0.6	1.8	0.6	0.6	1.2	1.8	1.8
	Debris Jam Potential (Weighted)	0.2	0.4	0.4	0.4	0.2	0.6	0.2	0.2	0.6	0.4
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.4	0.4	0.2	0.2	0.2	0.4	0.2
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Channel Constrictions (Weighted)	0.8	1.6	0.8	1.6	1.6	1.6	0.8	0.8	1.6	1.6
	Sediment Movement (Weighted)	0.8	2.4	2.4	0.8	2.4	1.6	0.8	0.8	0.8	2.4
	Channel Sinuosity (Weighted)	0.8	0.8	0.8	2.4	0.8	0.8	2.4	2.4	2.4	1.6
	Weighted Channel Score	13.4	15.0	13.6	13.2	17.2	12.4	13.4	14.0	16.0	15.6
	Channel Condition	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair

Draft

	Channel Condition Point	31	32	33	34	35	36	37	38	39	40
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	2	2	3	2	3	3	2	3	3
	Average Bank Height	2	2	2	2	1	1	1	1	1	1
	Vegetative Bank Protection	3	3	2	3	1	1	2	2	3	1
	Bank Cutting	3	3	3	3	2	2	2	2	1	2
	Mass Wasting	2	3	3	3	2	1	3	2	1	1
	Bar Development	1	2	3	2	3	1	3	3	1	1
	Debris Jam Potential	3	2	2	2	3	3	3	3	1	3
	Channel Obstructions	2	2	2	2	2	2	2	2	1	1
	Channel Bed Material	1	2	2	2	1	1	1	2	1	1
	Channel Constrictions	2	2	1	1	2	2	2	3	1	1
	Sediment Movement	2	3	3	3	2	1	2	3	1	1
	Channel Sinuosity	1	1	3	1	1	1	1	1	3	2
	Dominant Process	Widening, Planform Adjustment	Widening	Planform Adjustment	Widening, Planform Adjustment	Planform Adjustment	Widening	Widening, Incising	Planform Adjustment	Managed Swale	Widening
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.2	1.2	1.8	1.2	1.8	1.8	1.2	1.8	1.8
	Average Bank Height (Weighted)	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8
	Vegetative Bank Protection (Weighted)	2.4	2.4	1.6	2.4	0.8	0.8	1.6	1.6	2.4	0.8
	Bank Cutting (Weighted)	1.2	1.2	1.2	1.2	0.8	0.8	0.8	0.8	0.4	0.8
	Mass Wasting (Weighted)	1.6	2.4	2.4	2.4	1.6	0.8	2.4	1.6	0.8	0.8
	Bar Development (Weighted)	0.6	1.2	1.8	1.2	1.8	0.6	1.8	1.8	0.6	0.6
	Debris Jam Potential (Weighted)	0.6	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.2	0.6
	Channel Obstructions (Weighted)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2
	Channel Bed Material (Weighted)	0.8	1.6	1.6	1.6	0.8	0.8	0.8	1.6	0.8	0.8
	Channel Constrictions (Weighted)	1.6	1.6	0.8	0.8	1.6	1.6	1.6	2.4	0.8	0.8
	Sediment Movement (Weighted)	1.6	2.4	2.4	2.4	1.6	0.8	1.6	2.4	0.8	0.8
	Channel Sinuosity (Weighted)	0.8	0.8	2.4	0.8	0.8	0.8	0.8	0.8	2.4	1.6
	Weighted Channel Score	15.6	17.8	18.4	17.6	13.4	11.2	15.6	16.6	12.6	11.0
	Channel Condition	Fair	Fair	Poor	Poor	Poor	Fair	Fair	Fair	Fair	Fair

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	Channel Condition Point	41	42	43	44	45	46	47	48	49	50
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	2	2	1	1
	Average Bank Slope	2	2	2	2	2	3	2	3	2	2
	Average Bank Height	2	2	2	2	2	2	2	2	2	2
	Vegetative Bank Protection	3	2	2	2	2	2	2	2	2	2
	Bank Cutting	3	3	3	3	3	3	2	3	2	3
	Mass Wasting	2	2	2	2	2	3	2	2	2	3
	Bar Development	3	3	3	3	3	3	3	3	3	3
	Debris Jam Potential	2	2	2	2	1	2	2	2	2	2
	Channel Obstructions	2	2	2	2	1	1	2	2	2	2
	Channel Bed Material	2	2	2	2	1	2	2	2	1	2
	Channel Constrictions	2	2	2	2	1	2	2	2	1	2
	Sediment Movement	3	2	2	2	2	3	2	2	2	2
	Channel Sinuosity	1	1	1	1	1	1	1	1	1	1
	Dominant Process	Planform Adjustment	Incising	Widening, Incising	Incising	NO	Planform Adjustment	Planform Adjustment	Planform Adjustment	Incising	Planform Adjustment
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	1.2	1.2	0.6	0.6
	Average Bank Slope (Weighted)	1.2	1.2	1.2	1.2	1.2	1.8	1.2	1.8	1.2	1.2
	Average Bank Height (Weighted)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	Vegetative Bank Protection (Weighted)	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	Bank Cutting (Weighted)	1.2	1.2	1.2	1.2	1.2	1.2	0.8	1.2	0.8	1.2
	Mass Wasting (Weighted)	1.6	1.6	1.6	1.6	1.6	2.4	1.6	1.6	1.6	2.4
	Bar Development (Weighted)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	Debris Jam Potential (Weighted)	0.4	0.4	0.4	0.4	0.2	0.4	0.4	0.4	0.4	0.4
	Channel Obstructions (Weighted)	0.4	0.4	0.4	0.4	0.2	0.2	0.4	0.4	0.4	0.4
	Channel Bed Material (Weighted)	1.6	1.6	1.6	1.6	0.8	1.6	1.6	1.6	0.8	1.6
	Channel Constrictions (Weighted)	1.6	1.6	1.6	1.6	0.8	1.6	1.6	1.6	0.8	1.6
	Sediment Movement (Weighted)	2.4	1.6	1.6	1.6	1.6	2.4	1.6	1.6	1.6	1.6
	Channel Sinuosity (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Weighted Channel Score	17.6	16.0	16.0	16.0	14.0	18.0	16.2	17.2	14.0	16.8
	Channel Condition	Fair	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Poor	Fair

Draft

	Channel Condition Point	51	52	53	54	55	56	57	58	59	60
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	2	1	1
	Average Bank Slope	2	1	3	1	2	2	2	3	2	1
	Average Bank Height	2	1	2	1	1	1	1	2	1	1
	Vegetative Bank Protection	2	2	3	3	3	2	2	2	2	2
	Bank Cutting	2	2	3	1	2	2	2	2	2	1
	Mass Wasting	2	2	2	1	2	2	2	2	1	1
	Bar Development	3	3	3	1	3	3	3	3	3	3
	Debris Jam Potential	2	2	2	1	2	2	3	2	2	2
	Channel Obstructions	2	2	2	1	2	2	3	2	2	2
	Channel Bed Material	2	1	1	1	1	2	1	1	2	1
	Channel Constrictions	2	2	2	2	2	2	2	2	2	2
	Sediment Movement	2	2	2	2	2	2	2	2	2	2
	Channel Sinuosity	2	2	2	2	2	2	2	2	2	2
	Dominant Process	Planform Adjustment	Widening	Incising	Incising, Managed Swale	Incising, Planform Adjustment	Incising	Incising, Planform Adjustment	Planform Adjustment	Incising	Planform Adjustment
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.2	0.6	0.6
	Average Bank Slope (Weighted)	1.2	0.6	1.8	0.6	1.2	1.2	1.2	1.8	1.2	0.6
	Average Bank Height (Weighted)	1.6	0.8	1.6	0.8	0.8	0.8	0.8	1.6	0.8	0.8
	Vegetative Bank Protection (Weighted)	1.6	1.6	2.4	2.4	2.4	1.6	1.6	1.6	1.6	1.6
	Bank Cutting (Weighted)	0.8	0.8	1.2	0.4	0.8	0.8	0.8	0.8	0.8	0.4
	Mass Wasting (Weighted)	1.6	1.6	1.6	0.8	1.6	1.6	1.6	1.6	0.8	0.8
	Bar Development (Weighted)	1.8	1.8	1.8	0.6	1.8	1.8	1.8	1.8	1.8	1.8
	Debris Jam Potential (Weighted)	0.4	0.4	0.4	0.2	0.4	0.4	0.6	0.4	0.4	0.4
	Channel Obstructions (Weighted)	0.4	0.4	0.4	0.2	0.4	0.4	0.6	0.4	0.4	0.4
	Channel Bed Material (Weighted)	1.6	0.8	0.8	0.8	0.8	1.6	0.8	0.8	1.6	0.8
	Channel Constrictions (Weighted)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	Sediment Movement (Weighted)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	Channel Sinuosity (Weighted)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	Weighted Channel Score	16.4	14.2	17.4	12.2	15.6	15.6	15.2	16.8	14.8	13.0
	Channel Condition	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair

Draft

	Channel Condition Point	61	62	63	64	65	66	67	68	69	70
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	2	1	3	2	3	2	2	3	3	2
	Average Bank Height	2	3	1	2	2	2	2	2	2	2
	Vegetative Bank Protection	2	1	2	2	2	1	1	1	1	2
	Bank Cutting	2	2	3	3	3	2	3	2	1	2
	Mass Wasting	2	1	3	3	3	3	1	2	1	2
	Bar Development	1	1	1	1	3	2	3	3	3	2
	Debris Jam Potential	3	2	3	1	1	1	1	1	1	1
	Channel Obstructions	1	1	1	1	1	1	1	1	1	1
	Channel Bed Material	1	1	1	1	2	1	3	1	1	1
	Channel Constrictions	1	2	2	1	1	1	1	1	1	2
	Sediment Movement	1	1	1	1	3	3	3	2	3	1
	Channel Sinuosity	2	2	2	2	1	1	1	1	1	1
	Dominant Process	Incising	Widening	Widening	Widening	Widening	Planform Adjustment, Widening	Planform Adjustment	Planform Adjustment	Planform Adjustment	Planform Adjustment, Widening
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.2	0.6	1.8	1.2	1.8	1.2	1.2	1.8	1.8	1.2
	Average Bank Height (Weighted)	1.6	2.4	0.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	Vegetative Bank Protection (Weighted)	1.6	0.8	1.6	1.6	1.6	0.8	0.8	0.8	0.8	1.6
	Bank Cutting (Weighted)	0.8	0.8	1.2	1.2	1.2	0.8	1.2	0.8	0.4	0.8
	Mass Wasting (Weighted)	1.6	0.8	2.4	2.4	2.4	2.4	0.8	1.6	0.8	1.6
	Bar Development (Weighted)	0.6	0.6	0.6	0.6	1.8	1.2	1.8	1.8	1.8	1.2
	Debris Jam Potential (Weighted)	0.6	0.4	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	1.6	0.8	2.4	0.8	0.8	0.8
	Channel Constrictions (Weighted)	0.8	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	1.6
	Sediment Movement (Weighted)	0.8	0.8	0.8	0.8	2.4	2.4	2.4	1.6	2.4	0.8
	Channel Sinuosity (Weighted)	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8
	Weighted Channel Score	12.8	12.0	14.6	13.6	17.0	13.8	14.8	13.4	13.0	13.0
	Channel Condition	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair

Draft

	Channel Condition Point	71	72	73	74	75	76	77	78	79	80
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	2	3	2	3	1	1	3	3	2	3
	Average Bank Height	2	2	2	3	1	1	1	1	2	2
	Vegetative Bank Protection	1	2	2	3	2	2	3	2	2	1
	Bank Cutting	3	1	2	3	1	3	3	3	1	2
	Mass Wasting	2	1	2	3	1	1	1	1	1	2
	Bar Development	1	2	3	2	1	2	1	1	3	1
	Debris Jam Potential	1	1	1	1	3	3	3	1	3	3
	Channel Obstructions	1	1	1	1	1	3	1	1	1	2
	Channel Bed Material	1	1	1	1	3	1	1	1	3	1
	Channel Constrictions	1	1	1	2	2	3	3	2	3	3
	Sediment Movement	1	1	1	1	3	3	2	2	3	2
	Channel Sinuosity	2	3	3	2	3	3	3	3	1	1
	Dominant Process	Incising	Early Stage Incision, Managed Swale	Planform Adjustment	Planform Adjustment	Early Stage Incision	Widening	Incising	Widening	Widening, Planform Adjustment	Widening
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.2	1.8	1.2	1.8	0.6	0.6	1.8	1.8	1.2	1.8
	Average Bank Height (Weighted)	1.6	1.6	1.6	2.4	0.8	0.8	0.8	0.8	1.6	1.6
	Vegetative Bank Protection (Weighted)	0.8	1.6	1.6	2.4	1.6	1.6	2.4	1.6	1.6	0.8
	Bank Cutting (Weighted)	1.2	0.4	0.8	1.2	0.4	1.2	1.2	1.2	0.4	0.8
	Mass Wasting (Weighted)	1.6	0.8	1.6	2.4	0.8	0.8	0.8	0.8	0.8	1.6
	Bar Development (Weighted)	0.6	1.2	1.8	1.2	0.6	1.2	0.6	0.6	1.8	0.6
	Debris Jam Potential (Weighted)	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.2	0.6	0.6
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.2	0.6	0.2	0.2	0.2	0.4
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	2.4	0.8	0.8	0.8	2.4	0.8
	Channel Constrictions (Weighted)	0.8	0.8	0.8	1.6	1.6	2.4	2.4	1.6	2.4	2.4
	Sediment Movement (Weighted)	0.8	0.8	0.8	0.8	2.4	2.4	1.6	1.6	2.4	1.6
	Channel Sinuosity (Weighted)	1.6	2.4	2.4	1.6	2.4	2.4	2.4	2.4	0.8	0.8
	Weighted Channel Score	12.0	13.2	14.4	17.2	15.0	16.0	16.2	14.2	16.8	14.4
	Channel Condition	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair

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	Channel Condition Point	81	82	83	84	85	86	87	88	89	90
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	2	1	3	2	3	2	3	2	1
	Average Bank Height	2	1	1	2	1	2	2	2	1	2
	Vegetative Bank Protection	1	1	2	2	2	2	3	2	2	2
	Bank Cutting	3	3	1	2	1	3	2	2	2	1
	Mass Wasting	3	2	1	2	2	2	3	2	1	1
	Bar Development	1	2	2	2	1	1	3	3	3	1
	Debris Jam Potential	2	3	1	1	1	1	1	1	1	1
	Channel Obstructions	1	2	1	3	1	1	2	1	2	1
	Channel Bed Material	1	1	1	1	1	1	1	1	1	1
	Channel Constrictions	1	2	2	2	1	1	1	1	1	1
	Sediment Movement	2	2	2	2	2	2	2	3	3	2
	Channel Sinuosity	1	1	3	2	2	2	2	2	2	3
	Dominant Process	Planform Adjustment, Widening	Planform Adjustment	Dynamic Equilibrium	Widening	Widening, Incising	Widening, Planform Adjustment	Widening	Widening, Incising	Planform Adjustment	Managed Swale, Widening
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.2	0.6	1.8	1.2	1.8	1.2	1.8	1.2	0.6
	Average Bank Height (Weighted)	1.6	0.8	0.8	1.6	0.8	1.6	1.6	1.6	0.8	1.6
	Vegetative Bank Protection (Weighted)	0.8	0.8	1.6	1.6	1.6	1.6	2.4	1.6	1.6	1.6
	Bank Cutting (Weighted)	1.2	1.2	0.4	0.8	0.4	1.2	0.8	0.8	0.8	0.4
	Mass Wasting (Weighted)	2.4	1.6	0.8	1.6	1.6	1.6	2.4	1.6	0.8	0.8
	Bar Development (Weighted)	0.6	1.2	1.2	1.2	0.6	0.6	1.8	1.8	1.8	0.6
	Debris Jam Potential (Weighted)	0.4	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Channel Obstructions (Weighted)	0.2	0.4	0.2	0.6	0.2	0.2	0.4	0.2	0.4	0.2
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Channel Constrictions (Weighted)	0.8	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8
	Sediment Movement (Weighted)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.4	2.4	1.6
	Channel Sinuosity (Weighted)	0.8	0.8	2.4	1.6	1.6	1.6	1.6	1.6	1.6	2.4
	Weighted Channel Score	13.6	13.2	12.8	15.6	12.0	14.2	16.2	15.8	13.8	12.2
	Channel Condition	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair

Draft

	Channel Condition Point	91	92	93	94	95	96	97	98	99	100
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	1	2	2	3	2	3	3	1	1
	Average Bank Height	2	1	2	2	1	1	2	1	1	1
	Vegetative Bank Protection	2	1	3	2	2	3	2	2	1	3
	Bank Cutting	3	3	1	2	3	1	2	1	1	1
	Mass Wasting	2	1	1	2	1	1	2	2	1	1
	Bar Development	1	1	1	3	1	1	1	1	1	1
	Debris Jam Potential	1	3	1	2	2	1	1	1	3	1
	Channel Obstructions	1	1	1	1	1	1	1	1	1	1
	Channel Bed Material	1	1	1	1	1	1	1	1	1	1
	Channel Constrictions	1	1	1	3	2	1	2	1	1	1
	Sediment Movement	1	2	2	3	2	2	2	1	1	1
	Channel Sinuosity	2	3	2	2	3	3	3	3	3	3
	Dominant Process	Widening	Early Stage Incision	Managed Swale	Planform Adjustment	Incising	Managed Swale	Widening	Widening	Dynamic Equilibrium	Managed Swale
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	0.6	1.2	1.2	1.8	1.2	1.8	1.8	0.6	0.6
	Average Bank Height (Weighted)	1.6	0.8	1.6	1.6	0.8	0.8	1.6	0.8	0.8	0.8
	Vegetative Bank Protection (Weighted)	1.6	0.8	2.4	1.6	1.6	2.4	1.6	1.6	0.8	2.4
	Bank Cutting (Weighted)	1.2	1.2	0.4	0.8	1.2	0.4	0.8	0.4	0.4	0.4
	Mass Wasting (Weighted)	1.6	0.8	0.8	1.6	0.8	0.8	1.6	1.6	0.8	0.8
	Bar Development (Weighted)	0.6	0.6	0.6	1.8	0.6	0.6	0.6	0.6	0.6	0.6
	Debris Jam Potential (Weighted)	0.2	0.6	0.2	0.4	0.4	0.2	0.2	0.2	0.6	0.2
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Channel Constrictions (Weighted)	0.8	0.8	0.8	2.4	1.6	0.8	1.6	0.8	0.8	0.8
	Sediment Movement (Weighted)	0.8	1.6	1.6	2.4	1.6	1.6	1.6	0.8	0.8	0.8
	Channel Sinuosity (Weighted)	1.6	2.4	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4
	Weighted Channel Score	13.4	11.8	12.8	17.0	14.4	12.8	15.4	12.6	10.2	11.4
	Channel Condition	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Good

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	Channel Condition Point	101	102	103	104	105	106	107	108	109	110
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	1	2	3	3	2	3	2	3	3	3
	Average Bank Height	1	2	2	2	1	1	1	2	2	2
	Vegetative Bank Protection	3	3	2	2	1	3	3	2	2	2
	Bank Cutting	1	2	3	3	3	1	3	1	3	3
	Mass Wasting	1	2	3	3	1	1	1	1	3	3
	Bar Development	1	1	3	1	1	1	1	1	1	1
	Debris Jam Potential	1	3	1	3	3	1	1	1	2	3
	Channel Obstructions	1	1	1	1	1	1	1	1	2	3
	Channel Bed Material	1	3	3	1	2	1	1	1	1	3
	Channel Constrictions	1	2	1	2	1	1	2	1	1	3
	Sediment Movement	1	3	3	1	1	1	1	1	1	3
	Channel Sinuosity	2	3	1	2	2	3	3	3	3	1
	Dominant Process	Managed Swale	Widening	Incising	Incising	Early Stage Incision	Managed Swale	Widening, Incising	Managed Swale	Widening	Widening, Planform Adjustment
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	0.6	1.2	1.8	1.8	1.2	1.8	1.2	1.8	1.8	1.8
	Average Bank Height (Weighted)	0.8	1.6	1.6	1.6	0.8	0.8	0.8	1.6	1.6	1.6
	Vegetative Bank Protection (Weighted)	2.4	2.4	1.6	1.6	0.8	2.4	2.4	1.6	1.6	1.6
	Bank Cutting (Weighted)	0.4	0.8	1.2	1.2	1.2	0.4	1.2	0.4	1.2	1.2
	Mass Wasting (Weighted)	0.8	1.6	2.4	2.4	0.8	0.8	0.8	0.8	2.4	2.4
	Bar Development (Weighted)	0.6	0.6	1.8	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Debris Jam Potential (Weighted)	0.2	0.6	0.2	0.6	0.6	0.2	0.2	0.2	0.4	0.6
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6
	Channel Bed Material (Weighted)	0.8	2.4	2.4	0.8	1.6	0.8	0.8	0.8	0.8	2.4
	Channel Constrictions (Weighted)	0.8	1.6	0.8	1.6	0.8	0.8	1.6	0.8	0.8	2.4
	Sediment Movement (Weighted)	0.8	2.4	2.4	0.8	0.8	0.8	0.8	0.8	0.8	2.4
	Channel Sinuosity (Weighted)	1.6	2.4	0.8	1.6	1.6	2.4	2.4	2.4	2.4	0.8
	Weighted Channel Score	10.6	18.4	17.8	15.4	11.6	12.6	13.6	12.6	15.4	19.0
	Channel Condition	Fair	Good	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Fair

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	Channel Condition Point	111	112	113	114	115	116	117	118	119	120
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	2	2	3	3	3	2	1	2	2
	Average Bank Height	1	2	2	2	2	2	2	1	2	2
	Vegetative Bank Protection	3	1	2	1	1	1	2	3	3	2
	Bank Cutting	3	2	2	2	3	2	2	2	3	3
	Mass Wasting	1	2	1	2	3	2	2	2	3	3
	Bar Development	1	3	2	3	2	2	3	2	1	3
	Debris Jam Potential	1	3	2	3	2	2	2	1	1	2
	Channel Obstructions	1	1	1	1	1	1	1	1	1	2
	Channel Bed Material	3	1	1	3	3	1	1	2	2	2
	Channel Constrictions	3	1	2	3	1	2	2	3	1	1
	Sediment Movement	3	2	2	2	3	3	3	3	3	2
	Channel Sinuosity	3	1	2	2	1	1	3	3	1	1
	Dominant Process	Managed Swale, Incising	Planform Adjustment	Planform Adjustment, Widening	Incising	Widening	Widening, Planform Adjustment	Planform Adjustment, Widening	Incising	Widening	Planform Adjustment
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.2	1.2	1.8	1.8	1.8	1.2	0.6	1.2	1.2
	Average Bank Height (Weighted)	0.8	1.6	1.6	1.6	1.6	1.6	1.6	0.8	1.6	1.6
	Vegetative Bank Protection (Weighted)	2.4	0.8	1.6	0.8	0.8	0.8	1.6	2.4	2.4	1.6
	Bank Cutting (Weighted)	1.2	0.8	0.8	0.8	1.2	0.8	0.8	0.8	1.2	1.2
	Mass Wasting (Weighted)	0.8	1.6	0.8	1.6	2.4	1.6	1.6	1.6	2.4	2.4
	Bar Development (Weighted)	0.6	1.8	1.2	1.8	1.2	1.2	1.8	1.2	0.6	1.8
	Debris Jam Potential (Weighted)	0.2	0.6	0.4	0.6	0.4	0.4	0.4	0.2	0.2	0.4
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4
	Channel Bed Material (Weighted)	2.4	0.8	0.8	2.4	2.4	0.8	0.8	1.6	1.6	1.6
	Channel Constrictions (Weighted)	2.4	0.8	1.6	2.4	0.8	1.6	1.6	2.4	0.8	0.8
	Sediment Movement (Weighted)	2.4	1.6	1.6	1.6	2.4	2.4	2.4	2.4	2.4	1.6
	Channel Sinuosity (Weighted)	2.4	0.8	1.6	1.6	0.8	0.8	2.4	2.4	0.8	0.8
	Weighted Channel Score	18.2	13.2	14.0	17.8	16.6	14.6	17.0	17.2	16.0	16.0
	Channel Condition	Poor	Poor	Fair	Fair	Poor	Fair	Fair	Poor	Poor	Fair

Draft

	Channel Condition Point	121	122	123	124	125	126	127	128	129	130
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	3	1	3	3	3	1	1	3	2
	Average Bank Height	2	2	2	2	2	1	1	1	2	1
	Vegetative Bank Protection	3	3	3	2	2	1	1	3	2	3
	Bank Cutting	3	3	1	3	3	2	1	1	2	1
	Mass Wasting	3	3	1	3	3	2	1	1	2	1
	Bar Development	1	3	3	1	1	1	1	1	1	1
	Debris Jam Potential	1	2	1	2	1	3	3	1	2	2
	Channel Obstructions	1	2	1	1	1	1	1	1	1	1
	Channel Bed Material	1	1	1	1	1	1	1	1	2	1
	Channel Constrictions	2	2	1	1	1	2	1	1	2	1
	Sediment Movement	2	3	2	2	2	2	2	1	2	1
	Channel Sinuosity	2	2	3	3	3	3	3	3	1	2
	Dominant Process	Widening, Planform Adjustment	Planform Adjustment	Managed Swale	Incising	Widening, Planform Adjustment	Widening	NO	Early Stage Incision	Widening	Managed Swale
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.8	0.6	1.8	1.8	1.8	0.6	0.6	1.8	1.2
	Average Bank Height (Weighted)	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	1.6	0.8
	Vegetative Bank Protection (Weighted)	2.4	2.4	2.4	1.6	1.6	0.8	0.8	2.4	1.6	2.4
	Bank Cutting (Weighted)	1.2	1.2	0.4	1.2	1.2	0.8	0.4	0.4	0.8	0.4
	Mass Wasting (Weighted)	2.4	2.4	0.8	2.4	2.4	1.6	0.8	0.8	1.6	0.8
	Bar Development (Weighted)	0.6	1.8	1.8	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Debris Jam Potential (Weighted)	0.2	0.4	0.2	0.4	0.2	0.6	0.6	0.2	0.4	0.4
	Channel Obstructions (Weighted)	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	0.8
	Channel Constrictions (Weighted)	1.6	1.6	0.8	0.8	0.8	1.6	0.8	0.8	1.6	0.8
	Sediment Movement (Weighted)	1.6	2.4	1.6	1.6	1.6	1.6	1.6	0.8	1.6	0.8
	Channel Sinuosity (Weighted)	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	0.8	1.6
	Weighted Channel Score	16.6	19.0	14.2	16.0	15.8	14.2	11.0	11.4	14.8	11.4
	Channel Condition	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair

Draft

	Channel Condition Point	131	132	133	134	135	136	137	138	139	140
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	2	3	3	2	2	3	3	3	3
	Average Bank Height	1	1	1	1	1	1	1	2	2	2
	Vegetative Bank Protection	3	3	3	3	1	2	2	2	3	1
	Bank Cutting	1	2	2	1	2	1	2	3	2	3
	Mass Wasting	1	1	1	1	1	2	2	3	2	3
	Bar Development	1	1	1	1	1	2	1	2	1	3
	Debris Jam Potential	1	1	3	1	3	1	1	2	3	1
	Channel Obstructions	1	1	1	1	2	1	1	1	1	1
	Channel Bed Material	1	1	1	1	1	1	3	2	1	2
	Channel Constrictions	1	1	2	1	2	2	1	2	1	1
	Sediment Movement	1	1	2	1	2	2	3	3	2	3
	Channel Sinuosity	2	3	2	2	3	3	2	1	1	2
	Dominant Process	Managed Swale	Early Stage Incision	Incising	Managed Swale	Early Stage Incision	Early Stage Incision, Widening	Widening	Widening, Planform Adjustment	Widening	Widening, Planform Adjustment
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.2	1.8	1.8	1.2	1.2	1.8	1.8	1.8	1.8
	Average Bank Height (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6
	Vegetative Bank Protection (Weighted)	2.4	2.4	2.4	2.4	0.8	1.6	1.6	1.6	2.4	0.8
	Bank Cutting (Weighted)	0.4	0.8	0.8	0.4	0.8	0.4	0.8	1.2	0.8	1.2
	Mass Wasting (Weighted)	0.8	0.8	0.8	0.8	0.8	1.6	1.6	2.4	1.6	2.4
	Bar Development (Weighted)	0.6	0.6	0.6	0.6	0.6	1.2	0.6	1.2	0.6	1.8
	Debris Jam Potential (Weighted)	0.2	0.2	0.6	0.2	0.6	0.2	0.2	0.4	0.6	0.2
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.2
	Channel Bed Material (Weighted)	0.8	0.8	0.8	0.8	0.8	0.8	2.4	1.6	0.8	1.6
	Channel Constrictions (Weighted)	0.8	0.8	1.6	0.8	1.6	1.6	0.8	1.6	0.8	0.8
	Sediment Movement (Weighted)	0.8	0.8	1.6	0.8	1.6	1.6	2.4	2.4	1.6	2.4
	Channel Sinuosity (Weighted)	1.6	2.4	1.6	1.6	2.4	2.4	1.6	0.8	0.8	1.6
	Weighted Channel Score	11.8	12.4	14.2	11.8	13.0	14.2	15.4	17.4	14.2	17.0
	Channel Condition	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair

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	Channel Condition Point	141	142	143	144	145	146	147	148	149	150
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	3	3	3	3	3	2	3	3	3
	Average Bank Height	2	1	2	1	2	2	2	2	2	3
	Vegetative Bank Protection	1	2	2	3	2	3	2	1	3	2
	Bank Cutting	2	2	2	2	3	3	3	3	2	3
	Mass Wasting	2	1	2	1	2	3	3	3	2	3
	Bar Development	1	1	2	1	1	1	1	1	1	1
	Debris Jam Potential	2	3	3	1	3	3	1	1	1	3
	Channel Obstructions	1	3	3	1	3	3	1	1	2	3
	Channel Bed Material	2	1	2	1	3	3	3	3	1	1
	Channel Constrictions	1	2	2	2	2	2	2	1	1	3
	Sediment Movement	3	3	3	1	3	2	3	3	2	2
	Channel Sinuosity	2	2	2	3	3	3	1	1	3	3
	Dominant Process	Widening	Widening, Planform Adjustment	Widening	Incising	Widening, Planform Adjustment	Incising	Widening	Widening	Widening	Widening
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.8	1.8	1.8	1.8	1.8	1.2	1.8	1.8	1.8
	Average Bank Height (Weighted)	1.6	0.8	1.6	0.8	1.6	1.6	1.6	1.6	1.6	2.4
	Vegetative Bank Protection (Weighted)	0.8	1.6	1.6	2.4	1.6	2.4	1.6	0.8	2.4	1.6
	Bank Cutting (Weighted)	0.8	0.8	0.8	0.8	1.2	1.2	1.2	1.2	0.8	1.2
	Mass Wasting (Weighted)	1.6	0.8	1.6	0.8	1.6	2.4	2.4	2.4	1.6	2.4
	Bar Development (Weighted)	0.6	0.6	1.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Debris Jam Potential (Weighted)	0.4	0.6	0.6	0.2	0.6	0.6	0.2	0.2	0.2	0.6
	Channel Obstructions (Weighted)	0.2	0.6	0.6	0.2	0.6	0.6	0.2	0.2	0.4	0.6
	Channel Bed Material (Weighted)	1.6	0.8	1.6	0.8	2.4	2.4	2.4	2.4	0.8	0.8
	Channel Constrictions (Weighted)	0.8	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	2.4
	Sediment Movement (Weighted)	2.4	2.4	2.4	0.8	2.4	1.6	2.4	2.4	1.6	1.6
	Channel Sinuosity (Weighted)	1.6	1.6	1.6	2.4	2.4	2.4	0.8	0.8	2.4	2.4
	Weighted Channel Score	14.8	14.6	17.6	13.8	19.0	19.8	16.8	15.8	15.6	19.0
	Channel Condition	Poor	Fair	Fair	Poor	Fair	Poor	Poor	Fair	Fair	Fair

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	Channel Condition Point	151	152	153	154	155	156	157	158	159
Field Observation and Field Data Input	Bank Soil Texture	1	1	1	1	1	1	1	1	1
	Average Bank Slope	3	2	1	1	3	1	2	2	1
	Average Bank Height	2	1	2	2	2	1	1	2	1
	Vegetative Bank Protection	2	3	3	2	2	3	3	2	1
	Bank Cutting	1	1	1	2	2	1	1	2	1
	Mass Wasting	2	1	1	2	2	1	1	1	1
	Bar Development	1	2	2	1	1	1	1	1	1
	Debris Jam Potential	1	1	1	3	3	1	1	3	3
	Channel Obstructions	1	1	1	1	3	1	2	2	1
	Channel Bed Material	2	1	1	1	2	1	1	1	2
	Channel Constrictions	1	1	1	2	3	1	1	2	1
	Sediment Movement	1	1	1	1	2	1	1	1	2
	Channel Sinuosity	3	3	2	3	2	2	1	3	3
	Dominant Process	Widening	Dynamic Equilibrium	Dynamic Equilibrium	Early Stage Incision	Incising	Managed Swale	Incising, Widening, Dynamic Equilibrium	Widening	Dynamic Equilibrium, Early Stage Incision
Weighted Scores and Results	Bank Soil Texture (Weighted)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Average Bank Slope (Weighted)	1.8	1.2	0.6	0.6	1.8	0.6	1.2	1.2	0.6
	Average Bank Height (Weighted)	1.6	0.8	1.6	1.6	1.6	0.8	0.8	1.6	0.8
	Vegetative Bank Protection (Weighted)	1.6	2.4	2.4	1.6	1.6	2.4	2.4	1.6	0.8
	Bank Cutting (Weighted)	0.4	0.4	0.4	0.8	0.8	0.4	0.4	0.8	0.4
	Mass Wasting (Weighted)	1.6	0.8	0.8	1.6	1.6	0.8	0.8	0.8	0.8
	Bar Development (Weighted)	0.6	1.2	1.2	0.6	0.6	0.6	0.6	0.6	0.6
	Debris Jam Potential (Weighted)	0.2	0.2	0.2	0.6	0.6	0.2	0.2	0.6	0.6
	Channel Obstructions (Weighted)	0.2	0.2	0.2	0.2	0.6	0.2	0.4	0.4	0.2
	Channel Bed Material (Weighted)	1.6	0.8	0.8	0.8	1.6	0.8	0.8	0.8	1.6
	Channel Constrictions (Weighted)	0.8	0.8	0.8	1.6	2.4	0.8	0.8	1.6	0.8
	Sediment Movement (Weighted)	0.8	0.8	0.8	0.8	1.6	0.8	0.8	0.8	1.6
	Channel Sinuosity (Weighted)	2.4	2.4	1.6	2.4	1.6	1.6	0.8	2.4	2.4
	Weighted Channel Score	14.2	12.6	12.0	13.8	17.0	10.6	10.6	13.8	11.8
	Channel Condition	Poor	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair

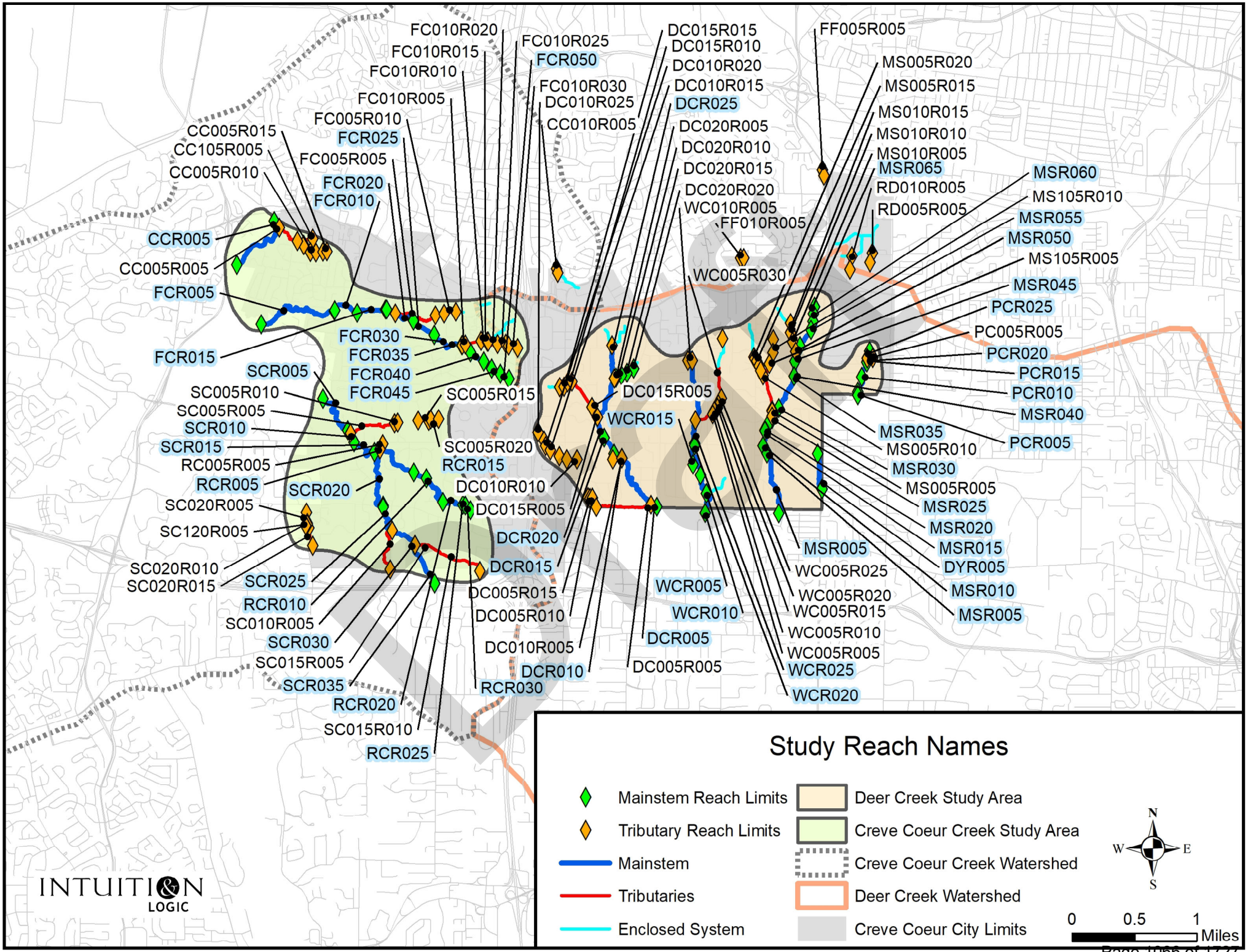
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Study Reach Names Map

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Study Reach Names

- Mainstem Reach Limits
- Tributary Reach Limits
- Mainstem
- Tributaries
- Enclosed System
- Deer Creek Study Area
- Creve Coeur Creek Study Area
- Creve Coeur Creek Watershed
- Deer Creek Watershed
- Creve Coeur City Limits

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Reach Data

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Appendix D: Creve Coeur Mainstem Reach Data

Field Observations and Data Input	Reach Name	CCR005	FCR005	FCR010	FCR015	FCR020
	Channel Length	3,167	4,362	1,216	1,286	1,518
	Valley Length	2436	3147	963	1200	1234
	Reach Sinuosity	1.30001	1.38622	1.26257	1.07201	1.22978
	Dominant Process	Widening	Widening	Widening	Widening	Planform Adjustment
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	-	-	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	TRUE	TRUE	-	-	-
	Persistent scouring on both banks toe to mid slope	-	TRUE	-	-	-
	Wedge failures along both banks	TRUE	TRUE	-	-	-
	Steep near vertical banks	TRUE	TRUE	-	-	-
	Perched bankfull floodplain or abandoned terraces	-	TRUE	-	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	-	-	-
	Steep bed slope	-	TRUE	-	-	-
	Scoured bed material	-	TRUE	-	-	-
	Consolidated bed material Incision	-	TRUE	-	-	-
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	-	-
	Undercut or perched infrastructure	-	-	-	-	-
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	TRUE	TRUE	TRUE	TRUE	TRUE
	Increase in cross sectional area	-	-	TRUE	TRUE	-
	Increase in channel width and decrease in bank height from upstream	-	-	TRUE	TRUE	-
	Scouring or bank failures along both banks	TRUE	TRUE	TRUE	TRUE	TRUE
	Persistent scouring on both banks mid to upper slope	TRUE	TRUE	TRUE	TRUE	TRUE
	Residual failure material at bank toes	-	TRUE	TRUE	TRUE	TRUE
	Unconsolidated depositional bed material widening	-	-	TRUE	TRUE	-
	Depositional center bars	-	-	TRUE	TRUE	-
	Unconsolidated depositional sediment bars	-	-	TRUE	TRUE	TRUE
	Reinforced knickpoints and knickzones	TRUE	TRUE	TRUE	TRUE	TRUE
	Large woody debris jams	-	TRUE	TRUE	TRUE	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	TRUE	TRUE	TRUE
	Numerous surfing or overhanging trees	TRUE	TRUE	TRUE	TRUE	TRUE
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	TRUE	TRUE	TRUE
	Circular failures along alternating banks or at the outside of banks	-	-	TRUE	TRUE	TRUE
	Alternating pattern of scour and deposition	-	-	TRUE	TRUE	TRUE
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
	Bar material unsorted with fines downstream	-	-	TRUE	TRUE	TRUE
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	TRUE	TRUE	TRUE
	Poorly sorted bed material	-	-	TRUE	TRUE	TRUE
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

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Appendix D: Creve Coeur Mainstem Reach Data

Field Observations and Data Input	Reach Name	FCR025	FCR030	FCR035	FCR040	FCR045
	Channel Length	1,118	1,575	542	718	441
	Valley Length	1070	1239	474	689	437
	Reach Sinuosity	1.04471	1.27084	1.14388	1.04181	1.01013
	Dominant Process	Managed	Widening	Incising	Widening	Managed
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	TRUE	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	-	TRUE
	Gradually sloping banks	-	-	-	-	TRUE
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	TRUE
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	TRUE	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	TRUE	-	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	-	-	TRUE	TRUE	TRUE
	Persistent scouring on both banks toe to mid slope	-	-	TRUE	TRUE	-
	Wedge failures along both banks	-	-	TRUE	TRUE	-
	Steep near vertical banks	-	-	TRUE	TRUE	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	TRUE	-
	Knickpoints and knickzones occurring in channel profile	-	-	TRUE	TRUE	-
	Steep bed slope	-	-	TRUE	TRUE	-
	Scoured bed material	-	-	TRUE	TRUE	-
	Consolidated bed material Incision	-	-	TRUE	TRUE	-
	Frequent large woody debris jams	-	-	TRUE	TRUE	-
	Lower limit of woody vegetation high with exposed roots	-	-	TRUE	TRUE	-
	Undercut or perched infrastructure	-	-	TRUE	TRUE	-
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	-	TRUE	-	TRUE	-
	Increase in cross sectional area	-	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	TRUE	-	TRUE	-
	Persistent scouring on both banks mid to upper slope	-	TRUE	-	-	-
	Residual failure material at bank toes	-	TRUE	-	-	-
	Unconsolidated depositional bed material widening	-	TRUE	-	TRUE	-
	Depositional center bars	-	TRUE	-	-	-
	Unconsolidated depositional sediment bars	-	TRUE	-	-	-
	Reinforced knickpoints and knickzones	-	TRUE	-	TRUE	-
	Large woody debris jams	-	-	-	TRUE	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	TRUE	-
	Numerous surfing or overhanging trees	-	TRUE	-	TRUE	-
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	TRUE	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	TRUE	-	-	-
	Alternating pattern of scour and deposition	-	TRUE	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	TRUE	-	-	-
	Bar material unsorted with fines downstream	-	TRUE	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	TRUE	-	-	-
	Poorly sorted bed material	-	TRUE	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	managed channel	strong planform indicators	-	-	-

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Appendix D: Creve Coeur Mainstem Reach Data

Field Observations and Data Input

Reach Name	FCR050	SCR005	SCR010	SCR015	SCR020
Channel Length	525	2,277	710	1,410	2,841
Valley Length	415	1,709	574	972	2276
Reach Sinuosity	1.26551	1.33229	1.23725	1.45026	1.24803
Dominant Process	Planform Adjustment	Widening	Incising	Widening	Incising
Indicators of Dynamic Equilibrium	-	-	-	-	-
No persistent scour or erosion features	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-
Gradually sloping banks	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-
Consolidated bed material	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-
Indicators of Incision	-	-	TRUE	-	TRUE
V" or "U" shaped channel cross section	TRUE	-	-	-	-
Persistent scouring on both banks toe to mid slope	TRUE	-	-	-	TRUE
Wedge failures along both banks	-	-	-	-	-
Steep near vertical banks	TRUE	-	-	-	TRUE
Perched bankfull floodplain or abandoned terraces	TRUE	-	-	-	-
Knickpoints and knickzones occurring in channel profile	TRUE	-	TRUE	-	TRUE
Steep bed slope	-	-	-	-	-
Scoured bed material	TRUE	-	TRUE	-	TRUE
Consolidated bed material Incision	TRUE	-	TRUE	-	-
Frequent large woody debris jams	TRUE	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	TRUE
Undercut or perched infrastructure	TRUE	-	-	-	-
Indicators of Widening	-	TRUE	-	TRUE	TRUE
Wide "U" shaped channel cross section	TRUE	TRUE	-	-	-
Increase in cross sectional area	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
Scouring or bank failures along both banks	-	TRUE	-	TRUE	TRUE
Persistent scouring on both banks mid to upper slope	TRUE	-	-	-	TRUE
Residual failure material at bank toes	-	TRUE	-	TRUE	TRUE
Unconsolidated depositional bed material widening	-	-	-	TRUE	-
Depositional center bars	-	TRUE	-	-	-
Unconsolidated depositional sediment bars	TRUE	-	-	-	-
Reinforced knickpoints and knickzones	TRUE	-	-	-	-
Large woody debris jams	TRUE	-	-	-	-
Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	TRUE	-
Numerous surfing or overhanging trees	-	TRUE	-	TRUE	TRUE
Indicators of Plan Form Adjustment	-	TRUE	-	TRUE	TRUE
Cutbanks with active scour lines opposite of advancing bar formations	TRUE	TRUE	-	TRUE	TRUE
Circular failures along alternating banks or at the outside of banks	TRUE	TRUE	-	TRUE	-
Alternating pattern of scour and deposition	TRUE	TRUE	-	TRUE	TRUE
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
Bar material unsorted with fines downstream	TRUE	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	TRUE	-	-	-	-
Poorly sorted bed material	TRUE	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	incised to Hardpan and started pushing around	-	-	-	inciting with bedrock control

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Appendix D: Creve Coeur Mainstem Reach Data

Field Observations and Data Input	Reach Name	SCR025	SCR030	SCR035	RCR005	RCR010
	Channel Length	1,393	1,270	1,958	2,282	593
	Valley Length	1062	1152	1822	1,860	585
	Reach Sinuosity	1.31208	1.10269	1.07468	1.22686	1.01286
	Dominant Process	Widening	Planform Adjustment	Incising	Widening	Managed
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	TRUE
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	-	-	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	TRUE	-	TRUE
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	TRUE	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	TRUE	-	-	-
	V" or "U" shaped channel cross section	-	-	-	TRUE	-
	Persistent scouring on both banks toe to mid slope	-	TRUE	TRUE	TRUE	-
	Wedge failures along both banks	-	-	-	TRUE	-
	Steep near vertical banks	-	-	TRUE	TRUE	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	TRUE	TRUE	TRUE	-
	Steep bed slope	-	-	-	-	-
	Scoured bed material	-	-	TRUE	-	-
	Consolidated bed material Incision	-	-	TRUE	-	-
	Frequent large woody debris jams	-	-	-	TRUE	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	TRUE	-
	Undercut or perched infrastructure	-	-	TRUE	TRUE	-
	Indicators of Widening	TRUE	TRUE	-	-	-
	Wide "U" shaped channel cross section	-	-	-	TRUE	-
	Increase in cross sectional area	-	-	-	TRUE	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	TRUE	TRUE	TRUE	TRUE	-
	Persistent scouring on both banks mid to upper slope	-	-	-	TRUE	-
	Residual failure material at bank toes	TRUE	-	-	TRUE	-
	Unconsolidated depositional bed material widening	-	-	-	TRUE	-
	Depositional center bars	TRUE	-	-	TRUE	-
	Unconsolidated depositional sediment bars	-	-	-	TRUE	-
	Reinforced knickpoints and knickzones	-	-	-	TRUE	-
	Large woody debris jams	-	-	-	TRUE	-
	Lower limit of woody vegetation high with exposed roots	TRUE	-	TRUE	TRUE	-
	Numerous surfing or overhanging trees	TRUE	-	-	TRUE	-
	Indicators of Plan Form Adjustment	TRUE	TRUE	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	TRUE	TRUE	TRUE	-	-
	Circular failures along alternating banks or at the outside of banks	TRUE	-	-	-	-
	Alternating pattern of scour and deposition	TRUE	TRUE	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	TRUE	TRUE	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	TRUE	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

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Appendix D: Creve Coeur Mainstem Reach Data

Field Observations and Data Input	Reach Name	RCR015	RCR020	RCR025	RCR030
	Channel Length	1,722	1,188	108	310
	Valley Length	1231	863	107	293
	Reach Sinuosity	1.39857	1.37690	1.01032	1.05896
	Dominant Process	Widening	Planform Adjustment	Managed	Dynamic Equilibrium
	Indicators of Dynamic Equilibrium	-	-	-	-
	No persistent scour or erosion features	-	-	TRUE	TRUE
	Bankfull shelf along one or both banks	-	-	TRUE	TRUE
	Gradually sloping banks	-	-	TRUE	TRUE
	Herbaceous vegetation growing at or near the water surface	-	-	TRUE	TRUE
	Well established woody vegetation on healed failure surfaces	-	-	-	TRUE
	Vegetated consolidated bars	-	-	-	TRUE
	Consolidated bed material	-	-	TRUE	TRUE
	Imbricated rock bed material	-	-	-	TRUE
	De facto grade controls reinforcing knickpoints	-	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-
	Indicators of Incision	-	-	-	-
	V" or "U" shaped channel cross section	-	-	-	-
	Persistent scouring on both banks toe to mid slope	-	-	-	-
	Wedge failures along both banks	TRUE	-	-	-
	Steep near vertical banks	TRUE	-	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	-	-	-
	Steep bed slope	-	-	-	-
	Scoured bed material	-	-	-	-
	Consolidated bed material Incision	-	-	-	-
	Frequent large woody debris jams	TRUE	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	-	-	-
	Undercut or perched infrastructure	TRUE	-	-	-
	Indicators of Widening	-	-	-	-
	Wide "U" shaped channel cross section	TRUE	TRUE	-	-
	Increase in cross sectional area	TRUE	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-
	Scouring or bank failures along both banks	TRUE	-	-	-
	Persistent scouring on both banks mid to upper slope	TRUE	-	-	-
	Residual failure material at bank toes	TRUE	-	-	-
	Unconsolidated depositional bed material widening	TRUE	-	-	-
	Depositional center bars	TRUE	-	-	-
	Unconsolidated depositional sediment bars	TRUE	-	-	-
	Reinforced knickpoints and knickzones	TRUE	TRUE	-	-
	Large woody debris jams	TRUE	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	-
	Numerous surfing or overhanging trees	TRUE	TRUE	-	-
	Indicators of Plan Form Adjustment	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	TRUE	-	-
	Circular failures along alternating banks or at the outside of banks	TRUE	TRUE	-	-
	Alternating pattern of scour and deposition	-	TRUE	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	TRUE	-	-
	Bar material unsorted with fines downstream	-	TRUE	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	TRUE	-	-
	Poorly sorted bed material	-	TRUE	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-

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Appendix D: Creve Coeur Tributary Reach Data

Field Observations and Data Input	Reach Name	CC005R005	CC005R010	CC005R015	CC010R005	CC105R005
	Channel Length	1,468	243	172	189	671
	Valley Length	1,281	234	171	177	660
	Reach Sinuosity	1.14611	1.03729	1.00827	1.06729	1.01622
	Dominant Process	Widening	Incising	Incising	Incising	Incising
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	-	-	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	TRUE	TRUE	TRUE	TRUE	TRUE
	Persistent scouring on both banks toe to mid slope	TRUE	TRUE	TRUE	TRUE	TRUE
	Wedge failures along both banks	TRUE	TRUE	-	TRUE	TRUE
	Steep near vertical banks	TRUE	TRUE	TRUE	TRUE	TRUE
	Perched bankfull floodplain or abandoned terraces	-	TRUE	-	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	TRUE	TRUE	TRUE
	Steep bed slope	-	-	TRUE	TRUE	TRUE
	Scoured bed material	-	TRUE	TRUE	TRUE	TRUE
	Consolidated bed material Incision	TRUE	TRUE	TRUE	-	TRUE
	Frequent large woody debris jams	-	-	-	TRUE	TRUE
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	TRUE	TRUE
	Undercut or perched infrastructure	TRUE	TRUE	TRUE	TRUE	TRUE
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	TRUE	TRUE	-	-	TRUE
	Increase in cross sectional area	TRUE	TRUE	TRUE	-	-
	Increase in channel width and decrease in bank height from upstream	-	TRUE	-	-	-
	Scouring or bank failures along both banks	TRUE	TRUE	-	-	TRUE
	Persistent scouring on both banks mid to upper slope	TRUE	-	-	-	TRUE
	Residual failure material at bank toes	TRUE	-	-	-	-
	Unconsolidated depositional bed material widening	TRUE	TRUE	-	-	-
	Depositional center bars	-	-	-	-	-
	Unconsolidated depositional sediment bars	-	-	TRUE	-	-
	Reinforced knickpoints and knickzones	TRUE	TRUE	-	-	TRUE
	Large woody debris jams	TRUE	-	-	-	TRUE
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	-	TRUE
	Numerous surfing or overhanging trees	TRUE	TRUE	TRUE	-	TRUE
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	TRUE	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
	Alternating pattern of scour and deposition	-	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	TRUE	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	transitioning to widening

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Appendix D: Creve Coeur Tributary Reach Data

Field Observations and Data Input	Reach Name	FC005R005	FC005R010	FC010R005	FC010R010	FC010R015
	Channel Length	2,270	571	141	287	0
	Valley Length	1708	518	133	272	0
	Reach Sinuosity	1.32914	1.10328	1.06139	1.05389	0.00000
	Dominant Process	Widening	Incising	Incising	Planform Adjustment	Managed
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	TRUE	-	-
	Gradually sloping banks	-	-	TRUE	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	TRUE	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	TRUE	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	TRUE	-	-
	Healthy riparian corridor and canopy cover	-	-	TRUE	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	TRUE	TRUE	TRUE	TRUE	-
	Persistent scouring on both banks toe to mid slope	TRUE	TRUE	TRUE	-	-
	Wedge failures along both banks	TRUE	TRUE	-	-	-
	Steep near vertical banks	TRUE	TRUE	TRUE	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	TRUE	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	TRUE	-	-
	Steep bed slope	TRUE	TRUE	TRUE	-	-
	Scoured bed material	TRUE	TRUE	TRUE	-	-
	Consolidated bed material Incision	TRUE	TRUE	TRUE	-	-
	Frequent large woody debris jams	TRUE	TRUE	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	TRUE	-	-
	Undercut or perched infrastructure	TRUE	TRUE	-	-	-
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	TRUE	TRUE	-	-	-
	Increase in cross sectional area	TRUE	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	TRUE	-	-	-	-
	Scouring or bank failures along both banks	TRUE	TRUE	-	-	-
	Persistent scouring on both banks mid to upper slope	TRUE	-	-	-	-
	Residual failure material at bank toes	TRUE	-	-	-	-
	Unconsolidated depositional bed material widening	TRUE	-	-	-	-
	Depositional center bars	TRUE	-	-	-	-
	Unconsolidated depositional sediment bars	TRUE	-	-	-	-
	Reinforced knickpoints and knickzones	TRUE	TRUE	-	-	-
	Large woody debris jams	TRUE	TRUE	-	TRUE	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	TRUE	-
	Numerous surfing or overhanging trees	TRUE	TRUE	-	TRUE	-
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	TRUE	-	-	TRUE	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	TRUE	-
	Alternating pattern of scour and deposition	-	-	-	TRUE	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	TRUE	-
	Bar material unsorted with fines downstream	-	-	-	TRUE	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	TRUE	-
	Poorly sorted bed material	-	-	-	TRUE	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	historical incision, reach controlled by culverts	-

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Appendix D: Creve Coeur Tributary Reach Data

Field Observations and Data Input	Reach Name	FC010R020	FC010R025	FC010R030	RC005R005	SC005R005
	Channel Length	465	377	404	300	2,322
	Valley Length	408	340	393	258	1903
	Reach Sinuosity	1.13996	1.10993	1.02824	1.16101	1.22013
	Dominant Process	Incising	Incising	Managed	Widening	Widening
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	TRUE	-	-	-	-
	Bankfull shelf along one or both banks	TRUE	-	-	TRUE	-
	Gradually sloping banks	TRUE	-	-	-	-
	Herbaceous vegetation growing at or near the water surface	TRUE	-	-	TRUE	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	TRUE	-	-	-	-
	Consolidated bed material	TRUE	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	TRUE	-	-	TRUE	-
	Healthy riparian corridor and canopy cover	TRUE	-	-	TRUE	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	-	TRUE	-	TRUE	TRUE
	Persistent scouring on both banks toe to mid slope	-	TRUE	-	TRUE	TRUE
	Wedge failures along both banks	-	-	-	-	TRUE
	Steep near vertical banks	-	TRUE	-	-	TRUE
	Perched bankfull floodplain or abandoned terraces	-	TRUE	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	TRUE	-	TRUE	TRUE
	Steep bed slope	-	TRUE	-	TRUE	-
	Scoured bed material	-	TRUE	-	-	TRUE
	Consolidated bed material Incision	-	TRUE	-	-	TRUE
	Frequent large woody debris jams	-	TRUE	-	TRUE	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	-	TRUE
	Undercut or perched infrastructure	-	TRUE	-	-	TRUE
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	-	-	-	-	TRUE
	Increase in cross sectional area	-	-	-	-	TRUE
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	-	-	-	TRUE
	Persistent scouring on both banks mid to upper slope	-	-	-	-	TRUE
	Residual failure material at bank toes	-	-	-	-	TRUE
	Unconsolidated depositional bed material widening	-	-	-	-	TRUE
	Depositional center bars	-	-	-	-	-
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	-	-	-	-	TRUE
	Large woody debris jams	-	-	-	-	TRUE
	Lower limit of woody vegetation high with exposed roots	-	-	-	-	TRUE
	Numerous surfing or overhanging trees	-	-	-	-	TRUE
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
	Alternating pattern of scour and deposition	-	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	detention basin, managed	-	-

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Appendix D: Creve Coeur Tributary Reach Data

Field Observations and Data Input

Reach Name	SC005R010	SC005R015	SC005R020	SC010R005	SC015R005
Channel Length	138	472	346	2,221	1,043
Valley Length	137	446	337	1654	983
Reach Sinuosity	1.00804	1.05754	1.02612	1.34263	1.06120
Dominant Process	Managed	Widening	Early Stage Incision	Widening	Incising
Indicators of Dynamic Equilibrium	-	-	-	-	-
No persistent scour or erosion features	TRUE	-	-	-	-
Bankfull shelf along one or both banks	-	-	TRUE	-	-
Gradually sloping banks	TRUE	-	TRUE	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-
Consolidated bed material	TRUE	-	TRUE	-	-
Imbricated rock bed material	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-
Indicators of Incision	-	-	-	TRUE	TRUE
V" or "U" shaped channel cross section	-	TRUE	TRUE	-	-
Persistent scouring on both banks toe to mid slope	-	TRUE	TRUE	TRUE	TRUE
Wedge failures along both banks	-	TRUE	-	-	-
Steep near vertical banks	-	TRUE	-	TRUE	-
Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
Knickpoints and knickzones occurring in channel profile	-	TRUE	TRUE	TRUE	TRUE
Steep bed slope	-	TRUE	TRUE	-	-
Scoured bed material	-	-	-	-	-
Consolidated bed material Incision	-	TRUE	TRUE	-	-
Frequent large woody debris jams	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	TRUE	TRUE	TRUE	TRUE
Undercut or perched infrastructure	-	TRUE	TRUE	TRUE	TRUE
Indicators of Widening	-	-	-	TRUE	-
Wide "U" shaped channel cross section	-	TRUE	-	-	-
Increase in cross sectional area	-	TRUE	-	-	-
Increase in channel width and decrease in bank height from upstream	-	TRUE	-	-	-
Scouring or bank failures along both banks	-	TRUE	-	TRUE	-
Persistent scouring on both banks mid to upper slope	-	TRUE	-	-	-
Residual failure material at bank toes	-	-	-	TRUE	-
Unconsolidated depositional bed material widening	-	TRUE	-	-	-
Depositional center bars	-	-	TRUE	-	-
Unconsolidated depositional sediment bars	-	TRUE	-	-	-
Reinforced knickpoints and knickzones	-	-	-	-	-
Large woody debris jams	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	TRUE	-	-	-
Numerous surfing or overhanging trees	-	TRUE	-	TRUE	-
Indicators of Plan Form Adjustment	-	-	-	TRUE	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	TRUE	-
Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
Alternating pattern of scour and deposition	-	-	-	TRUE	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	TRUE	-
Bar material unsorted with fines downstream	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	bedrock control	-

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Appendix D: Creve Coeur Tributary Reach Data

Field Observations and Data Input	Reach Name	SC015R010	SC020R005	SC020R010	SC020R015
	Channel Length	2,243	448	220	800
	Valley Length	1993	443	218	784
	Reach Sinuosity	1.12566	1.01227	1.00788	1.02024
	Dominant Process	Incising	Dynamic Equilibrium	Incising	Early Stage Incision
	Indicators of Dynamic Equilibrium	-	-	-	-
	No persistent scour or erosion features	-	TRUE	-	-
	Bankfull shelf along one or both banks	-	TRUE	-	TRUE
	Gradually sloping banks	-	TRUE	-	TRUE
	Herbaceous vegetation growing at or near the water surface	-	TRUE	-	TRUE
	Well established woody vegetation on healed failure surfaces	-	TRUE	-	TRUE
	Vegetated consolidated bars	-	-	-	-
	Consolidated bed material	-	-	-	TRUE
	Imbricated rock bed material	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	TRUE	-	TRUE
	Healthy riparian corridor and canopy cover	-	TRUE	-	TRUE
	Indicators of Incision	TRUE	-	-	-
	V" or "U" shaped channel cross section	-	-	TRUE	-
	Persistent scouring on both banks toe to mid slope	TRUE	TRUE	TRUE	-
	Wedge failures along both banks	-	-	TRUE	-
	Steep near vertical banks	-	-	TRUE	-
	Perched bankfull floodplain or abandoned terraces	-	-	TRUE	TRUE
	Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	TRUE	TRUE
	Steep bed slope	-	-	TRUE	-
	Scoured bed material	TRUE	-	TRUE	-
	Consolidated bed material Incision	TRUE	-	TRUE	-
	Frequent large woody debris jams	-	-	TRUE	TRUE
	Lower limit of woody vegetation high with exposed roots	TRUE	-	TRUE	-
	Undercut or perched infrastructure	-	-	-	-
	Indicators of Widening	-	-	-	-
	Wide "U" shaped channel cross section	-	-	-	-
	Increase in cross sectional area	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-
	Scouring or bank failures along both banks	-	-	-	-
	Persistent scouring on both banks mid to upper slope	-	-	-	-
	Residual failure material at bank toes	-	-	-	-
	Unconsolidated depositional bed material widening	-	-	-	-
	Depositional center bars	-	-	-	-
	Unconsolidated depositional sediment bars	-	-	-	-
	Reinforced knickpoints and knickzones	-	-	-	-
	Large woody debris jams	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	-	-
	Numerous surfing or overhanging trees	-	-	-	-
	Indicators of Plan Form Adjustment	TRUE	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-
	Alternating pattern of scour and deposition	TRUE	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-
	Poorly sorted bed material	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-

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Appendix D: Deer Creek Mainstem Reach Data

Field Observations and Data Input	Reach Name	DCR005	DCR010	DCR015	DCR020	DCR025
	Channel Length	3,252	399	823	953	1,419
	Valley Length	2536	371	811	925	1398
	Reach Sinuosity	1.28227	1.07516	1.01451	1.03080	1.01514
	Dominant Process	Planform Adjustment	Planform Adjustment	Managed	Widening	Managed
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	TRUE	-
	Gradually sloping banks	-	TRUE	-	TRUE	-
	Herbaceous vegetation growing at or near the water surface	-	-	-	TRUE	-
	Well established woody vegetation on healed failure surfaces	-	TRUE	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	TRUE	-
	Imbricated rock bed material	-	-	-	TRUE	-
	De facto grade controls reinforcing knickpoints	-	-	-	TRUE	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	-	-	-	-	-
	Persistent scouring on both banks toe to mid slope	-	-	-	-	-
	Wedge failures along both banks	-	-	-	-	-
	Steep near vertical banks	-	-	TRUE	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	-	-	TRUE	-
	Steep bed slope	-	-	TRUE	TRUE	-
	Scoured bed material	-	-	-	TRUE	-
	Consolidated bed material Incision	-	-	-	-	-
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	-	-	-
	Undercut or perched infrastructure	-	-	-	-	-
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	TRUE	TRUE	TRUE	TRUE	-
	Increase in cross sectional area	TRUE	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	TRUE	-	-	-	-
	Scouring or bank failures along both banks	TRUE	-	-	TRUE	-
	Persistent scouring on both banks mid to upper slope	-	-	-	-	-
	Residual failure material at bank toes	TRUE	TRUE	-	TRUE	-
	Unconsolidated depositional bed material widening	TRUE	-	-	-	-
	Depositional center bars	-	-	-	-	-
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	TRUE	-	-	TRUE	-
	Large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	-	-
	Numerous surfing or overhanging trees	TRUE	TRUE	-	TRUE	-
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	TRUE	TRUE	-	TRUE	-
	Circular failures along alternating banks or at the outside of banks	TRUE	TRUE	-	TRUE	-
	Alternating pattern of scour and deposition	TRUE	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	TRUE	TRUE	-	-	-
	Bar material unsorted with fines downstream	TRUE	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	TRUE	TRUE	-	-	-
	Poorly sorted bed material	-	-	-	TRUE	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	controlled by gabion wall on LDB, indicators from RDB	-	-	-

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Appendix D: Deer Creek Mainstem Reach Data

Field Observations and Data Input	Reach Name	WCR005	WCR010	WCR015	WCR020	WCR025
	Channel Length	1,192	985	818	990	1,051
	Valley Length	838	794	564	803	1009
	Reach Sinuosity	1.42300	1.24053	1.44950	1.23262	1.04210
	Dominant Process	Planform Adjustment	Planform Adjustment	Widening	Widening	Widening
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	-	-	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	TRUE	TRUE	-	-	-
	V" or "U" shaped channel cross section	-	-	-	-	-
	Persistent scouring on both banks toe to mid slope	-	-	-	-	TRUE
	Wedge failures along both banks	-	-	-	-	-
	Steep near vertical banks	-	-	-	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	TRUE	TRUE	TRUE
	Steep bed slope	-	-	-	-	-
	Scoured bed material	TRUE	TRUE	-	-	TRUE
	Consolidated bed material Incision	TRUE	TRUE	TRUE	TRUE	TRUE
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	TRUE	TRUE	TRUE
	Undercut or perched infrastructure	TRUE	-	TRUE	TRUE	TRUE
	Indicators of Widening	TRUE	TRUE	-	-	-
	Wide "U" shaped channel cross section	TRUE	TRUE	-	TRUE	TRUE
	Increase in cross sectional area	-	-	TRUE	TRUE	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	-	-	-	TRUE
	Persistent scouring on both banks mid to upper slope	-	-	TRUE	TRUE	TRUE
	Residual failure material at bank toes	-	-	-	-	-
	Unconsolidated depositional bed material widening	-	-	TRUE	TRUE	TRUE
	Depositional center bars	-	-	TRUE	TRUE	TRUE
	Unconsolidated depositional sediment bars	-	-	TRUE	TRUE	TRUE
	Reinforced knickpoints and knickzones	TRUE	TRUE	TRUE	TRUE	TRUE
	Large woody debris jams	TRUE	TRUE	TRUE	TRUE	TRUE
	Lower limit of woody vegetation high with exposed roots	-	-	TRUE	TRUE	TRUE
	Numerous surfing or overhanging trees	TRUE	TRUE	TRUE	TRUE	TRUE
	Indicators of Plan Form Adjustment	TRUE	TRUE	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	TRUE	TRUE	TRUE	TRUE	-
	Circular failures along alternating banks or at the outside of banks	TRUE	TRUE	-	-	-
	Alternating pattern of scour and deposition	TRUE	TRUE	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	TRUE	TRUE	-	-	-
	Bar material unsorted with fines downstream	TRUE	TRUE	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	TRUE	TRUE	-	-	-
	Poorly sorted bed material	TRUE	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

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Appendix D: Deer Creek Mainstem Reach Data

	Reach Name	MSR005	MSR010	MSR015	MSR020	MSR025
	Channel Length	2,817	371	675	309	367
	Valley Length	2570	359	662	246	324
	Reach Sinuosity	1.09629	1.03258	1.02025	1.25619	1.13413
	Dominant Process	Planform Adjustment	Widening	Widening	Planform Adjustment	Dynamic Equilibrium
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	TRUE
	Bankfull shelf along one or both banks	-	-	-	-	TRUE
	Gradually sloping banks	-	-	-	-	TRUE
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	TRUE
	Well established woody vegetation on healed failure surfaces	-	-	-	-	TRUE
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	-	TRUE
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	-	-	TRUE
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	TRUE	-	-	-
	V" or "U" shaped channel cross section	-	-	-	-	-
	Persistent scouring on both banks toe to mid slope	-	-	TRUE	-	-
	Wedge failures along both banks	-	-	-	-	-
	Steep near vertical banks	-	-	TRUE	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	-	TRUE	-	-
	Steep bed slope	-	-	TRUE	-	-
	Scoured bed material	-	-	-	-	-
	Consolidated bed material Incision	-	-	TRUE	-	-
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	TRUE	-	-
	Undercut or perched infrastructure	-	TRUE	TRUE	-	-
	Indicators of Widening	TRUE	TRUE	TRUE	-	-
	Wide "U" shaped channel cross section	-	TRUE	TRUE	-	-
	Increase in cross sectional area	-	TRUE	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	TRUE	-	-	-
	Scouring or bank failures along both banks	-	TRUE	TRUE	-	-
	Persistent scouring on both banks mid to upper slope	-	TRUE	TRUE	-	-
	Residual failure material at bank toes	-	-	-	-	-
	Unconsolidated depositional bed material widening	-	TRUE	-	-	-
	Depositional center bars	-	TRUE	-	-	-
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	TRUE	TRUE	TRUE	-	-
	Large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	TRUE	-	-
	Numerous surfing or overhanging trees	TRUE	TRUE	TRUE	-	-
	Indicators of Plan Form Adjustment	TRUE	-	-	TRUE	-
	Cutbanks with active scour lines opposite of advancing bar formations	TRUE	-	-	TRUE	-
	Circular failures along alternating banks or at the outside of banks	TRUE	-	-	TRUE	-
	Alternating pattern of scour and deposition	TRUE	-	-	TRUE	-
	Bar formations are consolidated with an unconsolidated leading edge	TRUE	-	-	TRUE	-
	Bar material unsorted with fines downstream	TRUE	-	-	TRUE	-
	Bar is irregularly shaped and more than 1 3 across the channel	TRUE	-	-	TRUE	-
	Poorly sorted bed material	TRUE	-	-	TRUE	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

Field Observations and Data Input

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Appendix D: Deer Creek Mainstem Reach Data

Field Observations and Data Input	Reach Name	MSR030	MSR035	MSR040	MSR045	MSR050
	Channel Length	578	1,590	621	439	306
	Valley Length	500	1496	619	415	294
	Reach Sinuosity	1.15535	1.06298	1.00304	1.05827	1.04093
	Dominant Process	Managed	Widening	Managed	Planform Adjustment	Managed
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	TRUE	-	TRUE
	Bankfull shelf along one or both banks	-	-	TRUE	-	-
	Gradually sloping banks	-	-	-	-	TRUE
	Herbaceous vegetation growing at or near the water surface	-	-	TRUE	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	-	TRUE
	Imbricated rock bed material	-	-	-	-	TRUE
	De facto grade controls reinforcing knickpoints	-	-	TRUE	-	TRUE
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	-	TRUE	-	-	-
	Persistent scouring on both banks toe to mid slope	-	TRUE	-	-	-
	Wedge failures along both banks	-	-	-	-	-
	Steep near vertical banks	-	TRUE	-	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	TRUE	TRUE	TRUE	-
	Steep bed slope	-	TRUE	TRUE	-	-
	Scoured bed material	-	TRUE	TRUE	-	-
	Consolidated bed material Incision	-	TRUE	TRUE	-	-
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	TRUE	-
	Undercut or perched infrastructure	-	TRUE	-	TRUE	-
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	-	TRUE	TRUE	-	-
	Increase in cross sectional area	-	TRUE	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	TRUE	-	-	-
	Persistent scouring on both banks mid to upper slope	-	TRUE	-	-	-
	Residual failure material at bank toes	-	-	-	-	-
	Unconsolidated depositional bed material widening	-	TRUE	-	-	-
	Depositional center bars	-	TRUE	TRUE	-	-
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	-	TRUE	TRUE	TRUE	-
	Large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	TRUE	-
	Numerous surfing or overhanging trees	-	TRUE	-	TRUE	-
	Indicators of Plan Form Adjustment	-	TRUE	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	TRUE	-	TRUE	-
	Circular failures along alternating banks or at the outside of banks	-	TRUE	-	TRUE	-
	Alternating pattern of scour and deposition	-	-	-	TRUE	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	TRUE	-
	Bar material unsorted with fines downstream	-	-	-	TRUE	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	TRUE	-	TRUE	-
	Poorly sorted bed material	-	-	-	TRUE	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

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Appendix D: Deer Creek Mainstem Reach Data

Field Observations and Data Input	Reach Name	MSR055	MSR060	MSR065	DYR005	PCR005
	Channel Length	893	339	310	1,556	129
	Valley Length	826	332	310	1494	129
	Reach Sinuosity	1.08107	1.02071	1.00050	1.04171	1.00289
	Dominant Process	Incising	Managed	Incising	Widening	Widening
	Indicators of Dynamic Equilibrium	-	TRUE	-	-	-
	No persistent scour or erosion features	-	TRUE	-	-	-
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	TRUE	-	-	-
	Herbaceous vegetation growing at or near the water surface	-	TRUE	-	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	TRUE	-	-	-
	Consolidated bed material	-	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	TRUE	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	TRUE	-	-	-	-
	V" or "U" shaped channel cross section	TRUE	-	TRUE	TRUE	-
	Persistent scouring on both banks toe to mid slope	TRUE	-	TRUE	TRUE	-
	Wedge failures along both banks	-	-	TRUE	TRUE	-
	Steep near vertical banks	TRUE	-	TRUE	TRUE	-
	Perched bankfull floodplain or abandoned terraces	TRUE	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	-	TRUE	TRUE	-
	Steep bed slope	TRUE	-	TRUE	-	-
	Scoured bed material	TRUE	-	-	TRUE	-
	Consolidated bed material Incision	TRUE	-	TRUE	TRUE	-
	Frequent large woody debris jams	TRUE	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	-	TRUE	TRUE	-
	Undercut or perched infrastructure	TRUE	-	TRUE	TRUE	-
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	-	-	TRUE	TRUE	-
	Increase in cross sectional area	-	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	-	TRUE	TRUE	-
	Persistent scouring on both banks mid to upper slope	-	-	TRUE	TRUE	-
	Residual failure material at bank toes	-	-	-	TRUE	-
	Unconsolidated depositional bed material widening	-	-	-	TRUE	-
	Depositional center bars	-	-	-	TRUE	-
	Unconsolidated depositional sediment bars	-	-	-	TRUE	-
	Reinforced knickpoints and knickzones	-	-	TRUE	TRUE	-
	Large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	TRUE	TRUE	-
	Numerous surfing or overhanging trees	-	-	TRUE	TRUE	-
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
	Alternating pattern of scour and deposition	-	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

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Appendix D: Deer Creek Mainstem Reach Data

Field Observations and Data Input	Reach Name	PCR010	PCR015	PCR020	PCR025
	Channel Length	755	55	116	332
	Valley Length	656	54	114	320
	Reach Sinuosity	1.15116	1.01691	1.01339	1.03693
	Dominant Process	Managed	Widening	Dynamic Equilibrium	Widening
	Indicators of Dynamic Equilibrium	-	-	-	-
	No persistent scour or erosion features	TRUE	-	-	-
	Bankfull shelf along one or both banks	TRUE	-	TRUE	-
	Gradually sloping banks	TRUE	-	TRUE	-
	Herbaceous vegetation growing at or near the water surface	TRUE	-	TRUE	TRUE
	Well established woody vegetation on healed failure surfaces	TRUE	-	TRUE	-
	Vegetated consolidated bars	-	-	-	-
	Consolidated bed material	TRUE	-	TRUE	TRUE
	Imbricated rock bed material	-	-	-	-
	De facto grade controls reinforcing knickpoints	TRUE	-	TRUE	-
	Healthy riparian corridor and canopy cover	-	-	-	-
	Indicators of Incision	-	-	-	-
	V" or "U" shaped channel cross section	-	-	-	-
	Persistent scouring on both banks toe to mid slope	-	-	TRUE	-
	Wedge failures along both banks	-	-	-	-
	Steep near vertical banks	-	TRUE	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	-	TRUE
	Steep bed slope	-	-	-	-
	Scoured bed material	-	TRUE	-	-
	Consolidated bed material Incision	-	TRUE	-	TRUE
	Frequent large woody debris jams	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	TRUE
	Undercut or perched infrastructure	TRUE	TRUE	-	TRUE
	Indicators of Widening	-	-	-	-
	Wide "U" shaped channel cross section	-	TRUE	-	TRUE
	Increase in cross sectional area	-	TRUE	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-
	Scouring or bank failures along both banks	-	TRUE	-	-
	Persistent scouring on both banks mid to upper slope	-	TRUE	-	-
	Residual failure material at bank toes	-	-	-	-
	Unconsolidated depositional bed material widening	-	-	-	-
	Depositional center bars	-	TRUE	-	-
	Unconsolidated depositional sediment bars	-	-	-	-
	Reinforced knickpoints and knickzones	-	TRUE	-	-
	Large woody debris jams	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	TRUE
	Numerous surfing or overhanging trees	-	-	-	TRUE
	Indicators of Plan Form Adjustment	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-
	Alternating pattern of scour and deposition	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-
	Poorly sorted bed material	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	previous stabilization attempts are slowly being undermined, slowly transitioning from dynamic equilibrium to widening with loss of material at toe

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input	Reach Name	DC005R005	DC005R010	DC005R015	DC010R005	DC010R010
	Channel Length	2,437	482	104	410	427
	Valley Length	2315	446	93	390	427
	Reach Sinuosity	1.05267	1.08010	1.11444	1.05141	1.00043
	Dominant Process	Incising	Incising	Early Stage Incision	Incising	Managed
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	-	TRUE	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	TRUE	-	-
	Healthy riparian corridor and canopy cover	-	-	TRUE	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	TRUE	TRUE	TRUE	TRUE	-
	Persistent scouring on both banks toe to mid slope	TRUE	TRUE	TRUE	TRUE	-
	Wedge failures along both banks	TRUE	TRUE	-	TRUE	-
	Steep near vertical banks	TRUE	TRUE	-	TRUE	-
	Perched bankfull floodplain or abandoned terraces	TRUE	TRUE	TRUE	-	-
	Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	TRUE	TRUE	-
	Steep bed slope	TRUE	TRUE	TRUE	TRUE	-
	Scoured bed material	TRUE	TRUE	TRUE	TRUE	-
	Consolidated bed material Incision	TRUE	-	TRUE	TRUE	-
	Frequent large woody debris jams	TRUE	TRUE	TRUE	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	TRUE	TRUE	-
	Undercut or perched infrastructure	TRUE	TRUE	-	-	-
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	TRUE	-	-	-	-
	Increase in cross sectional area	TRUE	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	TRUE	TRUE	-	-	-
	Persistent scouring on both banks mid to upper slope	-	-	-	-	-
	Residual failure material at bank toes	TRUE	-	-	-	-
	Unconsolidated depositional bed material widening	-	-	-	-	-
	Depositional center bars	-	-	-	-	-
	Unconsolidated depositional sediment bars	TRUE	-	-	-	-
	Reinforced knickpoints and knickzones	TRUE	TRUE	-	-	-
	Large woody debris jams	TRUE	TRUE	-	-	-
	Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	-	-
	Numerous surfing or overhanging trees	TRUE	TRUE	-	-	-
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
	Alternating pattern of scour and deposition	-	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	managed channel

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input

Reach Name	DC010R015	DC010R020	DC010R025	DC015R005	DC015R010
Channel Length	480	288	421	519	175
Valley Length	458	277	420	499	175
Reach Sinuosity	1.04878	1.04095	1.00303	1.03959	1.00088
Dominant Process	Incising	Managed	Managed	Managed	Managed
Indicators of Dynamic Equilibrium	-	-	-	-	-
No persistent scour or erosion features	-	-	-	-	-
Bankfull shelf along one or both banks	TRUE	-	-	-	-
Gradually sloping banks	TRUE	-	-	-	-
Herbaceous vegetation growing at or near the water surface	TRUE	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-
Consolidated bed material	TRUE	-	-	-	-
Imbricated rock bed material	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-
Indicators of Incision	-	-	-	-	-
V" or "U" shaped channel cross section	TRUE	-	-	-	-
Persistent scouring on both banks toe to mid slope	TRUE	-	-	-	-
Wedge failures along both banks	TRUE	-	-	-	-
Steep near vertical banks	TRUE	-	-	-	-
Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
Knickpoints and knickzones occurring in channel profile	TRUE	-	-	-	-
Steep bed slope	TRUE	-	-	-	-
Scoured bed material	TRUE	-	-	-	-
Consolidated bed material Incision	TRUE	-	-	-	-
Frequent large woody debris jams	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	TRUE	-	-	-	-
Undercut or perched infrastructure	-	-	-	-	-
Indicators of Widening	-	-	-	-	-
Wide "U" shaped channel cross section	TRUE	-	-	-	-
Increase in cross sectional area	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
Scouring or bank failures along both banks	-	-	-	-	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-
Residual failure material at bank toes	-	-	-	-	-
Unconsolidated depositional bed material widening	-	-	-	-	-
Depositional center bars	-	-	-	-	-
Unconsolidated depositional sediment bars	-	-	-	-	-
Reinforced knickpoints and knickzones	-	-	-	-	-
Large woody debris jams	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-
Numerous surfing or overhanging trees	-	-	-	-	-
Indicators of Plan Form Adjustment	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-
Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
Alternating pattern of scour and deposition	-	-	-	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	enclosed system with swale overtop	detention basin

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input	Reach Name	DC015R015	DC020R005	DC020R010	DC020R015	DC020R020
	Channel Length	197	72	247	265	354
	Valley Length	192	71	247	258	344
	Reach Sinuosity	1.02720	1.01331	1.00144	1.02588	1.02879
	Dominant Process	Early Stage Incision	Incising	Planform Adjustment	Early Stage Incision	Widening
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	-	-	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
	Well established woody vegetation on healed failure surfaces	-	-	-	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	-	-
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	-	TRUE	-	-	TRUE
	Persistent scouring on both banks toe to mid slope	-	TRUE	-	-	TRUE
	Wedge failures along both banks	-	-	-	TRUE	TRUE
	Steep near vertical banks	-	TRUE	-	-	TRUE
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	TRUE
	Knickpoints and knickzones occurring in channel profile	-	-	-	TRUE	TRUE
	Steep bed slope	-	TRUE	-	TRUE	TRUE
	Scoured bed material	-	TRUE	-	-	-
	Consolidated bed material Incision	-	TRUE	-	-	TRUE
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	-	-	-
	Undercut or perched infrastructure	-	TRUE	-	-	TRUE
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	-	-	TRUE	-	TRUE
	Increase in cross sectional area	-	-	-	-	TRUE
	Increase in channel width and decrease in bank height from upstream	-	-	TRUE	-	-
	Scouring or bank failures along both banks	-	-	-	-	TRUE
	Persistent scouring on both banks mid to upper slope	-	-	-	-	TRUE
	Residual failure material at bank toes	-	-	TRUE	TRUE	TRUE
	Unconsolidated depositional bed material widening	-	-	-	-	TRUE
	Depositional center bars	-	-	-	-	TRUE
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	-	-	TRUE	-	TRUE
	Large woody debris jams	-	-	TRUE	-	TRUE
	Lower limit of woody vegetation high with exposed roots	-	-	TRUE	-	-
	Numerous surfing or overhanging trees	-	-	-	-	TRUE
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	TRUE	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	TRUE	-	-
	Alternating pattern of scour and deposition	-	-	TRUE	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	TRUE	-	-
	Bar material unsorted with fines downstream	-	-	TRUE	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	TRUE	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input	Reach Name	WC005R005	WC005R010	WC005R015	WC005R020	WC005R025
	Channel Length	814	193	163	157	280
	Valley Length	774	170	160	155	273
	Reach Sinuosity	1.05198	1.13734	1.01802	1.01579	1.02706
	Dominant Process	Managed	Incising	Early Stage Incision	Managed	Incising
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	TRUE	-	-	TRUE	-
	Bankfull shelf along one or both banks	-	-	-	-	-
	Gradually sloping banks	-	-	-	-	-
	Herbaceous vegetation growing at or near the water surface	-	-	TRUE	-	-
	Well established woody vegetation on healed failure surfaces	-	-	TRUE	-	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	TRUE	-	TRUE	TRUE	-
	Imbricated rock bed material	-	-	TRUE	TRUE	-
	De facto grade controls reinforcing knickpoints	-	-	-	-	-
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	-	TRUE	TRUE	-	TRUE
	Persistent scouring on both banks toe to mid slope	-	TRUE	TRUE	-	TRUE
	Wedge failures along both banks	-	-	-	-	-
	Steep near vertical banks	-	TRUE	-	-	TRUE
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	TRUE	-	-	-
	Steep bed slope	-	TRUE	TRUE	-	-
	Scoured bed material	-	TRUE	-	-	TRUE
	Consolidated bed material Incision	-	TRUE	-	-	TRUE
	Frequent large woody debris jams	-	-	-	-	TRUE
	Lower limit of woody vegetation high with exposed roots	-	TRUE	TRUE	-	TRUE
	Undercut or perched infrastructure	-	TRUE	-	-	TRUE
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	-	-	-	-	-
	Increase in cross sectional area	-	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	-	-	-	-
	Persistent scouring on both banks mid to upper slope	-	-	-	-	-
	Residual failure material at bank toes	-	-	-	-	-
	Unconsolidated depositional bed material widening	-	-	-	-	-
	Depositional center bars	-	-	-	-	-
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	-	-	-	-	-
	Large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	-	-	-
	Numerous surfing or overhanging trees	-	-	-	-	-
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
	Alternating pattern of scour and deposition	-	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	-

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input	Reach Name	WC005R030	WC010R005	MS005R005	MS005R010	MS005R015
	Channel Length	2,656	195	223	1,758	256
	Valley Length	2522	195	222	1729	219
	Reach Sinuosity	1.05332	1.00007	1.00347	1.01661	1.16909
	Dominant Process	Managed	Early Stage Incision	Managed	Widening	Incising
	Indicators of Dynamic Equilibrium	-	-	-	-	-
	No persistent scour or erosion features	TRUE	-	TRUE	-	-
	Bankfull shelf along one or both banks	-	-	-	-	TRUE
	Gradually sloping banks	-	-	-	-	TRUE
	Herbaceous vegetation growing at or near the water surface	-	-	-	-	TRUE
	Well established woody vegetation on healed failure surfaces	-	-	-	-	TRUE
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	TRUE	-	TRUE
	Imbricated rock bed material	-	-	-	-	-
	De facto grade controls reinforcing knickpoints	-	-	TRUE	-	TRUE
	Healthy riparian corridor and canopy cover	-	-	-	-	-
	Indicators of Incision	-	-	-	-	-
	V" or "U" shaped channel cross section	-	TRUE	-	TRUE	TRUE
	Persistent scouring on both banks toe to mid slope	-	-	-	TRUE	TRUE
	Wedge failures along both banks	-	-	-	TRUE	-
	Steep near vertical banks	-	-	-	TRUE	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	TRUE	-	TRUE	TRUE
	Steep bed slope	-	TRUE	-	-	-
	Scoured bed material	-	-	-	-	-
	Consolidated bed material Incision	-	-	-	-	TRUE
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	-	-	TRUE	-
	Undercut or perched infrastructure	-	-	-	TRUE	TRUE
	Indicators of Widening	-	-	-	-	-
	Wide "U" shaped channel cross section	-	-	-	TRUE	-
	Increase in cross sectional area	-	-	-	TRUE	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	-	-	TRUE	-
	Persistent scouring on both banks mid to upper slope	-	-	-	TRUE	-
	Residual failure material at bank toes	-	-	-	TRUE	-
	Unconsolidated depositional bed material widening	-	-	-	TRUE	-
	Depositional center bars	-	-	-	TRUE	-
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	-	-	-	TRUE	-
	Large woody debris jams	-	-	-	TRUE	-
	Lower limit of woody vegetation high with exposed roots	-	-	-	TRUE	-
	Numerous surfing or overhanging trees	-	-	-	TRUE	-
	Indicators of Plan Form Adjustment	-	-	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
	Alternating pattern of scour and deposition	-	-	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	borderline dynamic equilibrium, channel is reestablishing

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input	Reach Name	MS005R020	MS010R005	MS010R010	MS010R015	MS105R005
	Channel Length	71	457	398	402	575
	Valley Length	67	432	389	401	547
	Reach Sinuosity	1.06273	1.05776	1.02231	1.00203	1.05160
	Dominant Process	Managed	Planform Adjustment	Managed	Early Stage Incision	Early Stage Incision
	Indicators of Dynamic Equilibrium	-	-	-	TRUE	-
	No persistent scour or erosion features	-	-	-	-	-
	Bankfull shelf along one or both banks	-	-	-	TRUE	-
	Gradually sloping banks	-	-	-	TRUE	TRUE
	Herbaceous vegetation growing at or near the water surface	-	-	-	TRUE	-
	Well established woody vegetation on healed failure surfaces	-	-	-	TRUE	-
	Vegetated consolidated bars	-	-	-	-	-
	Consolidated bed material	-	-	-	TRUE	TRUE
	Imbricated rock bed material	-	-	-	-	TRUE
	De facto grade controls reinforcing knickpoints	-	-	-	TRUE	-
	Healthy riparian corridor and canopy cover	-	-	-	TRUE	-
	Indicators of Incision	-	TRUE	-	TRUE	-
	V" or "U" shaped channel cross section	-	-	-	-	-
	Persistent scouring on both banks toe to mid slope	-	-	-	TRUE	-
	Wedge failures along both banks	-	-	-	-	-
	Steep near vertical banks	-	-	-	-	-
	Perched bankfull floodplain or abandoned terraces	-	-	-	-	-
	Knickpoints and knickzones occurring in channel profile	-	TRUE	-	-	-
	Steep bed slope	-	-	-	TRUE	-
	Scoured bed material	-	-	-	-	-
	Consolidated bed material Incision	-	-	-	-	-
	Frequent large woody debris jams	-	-	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	-	-
	Undercut or perched infrastructure	-	-	-	-	-
	Indicators of Widening	-	TRUE	-	-	-
	Wide "U" shaped channel cross section	-	-	-	-	-
	Increase in cross sectional area	-	-	-	-	-
	Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
	Scouring or bank failures along both banks	-	-	-	-	-
	Persistent scouring on both banks mid to upper slope	-	-	-	-	-
	Residual failure material at bank toes	-	-	-	-	-
	Unconsolidated depositional bed material widening	-	-	-	-	-
	Depositional center bars	-	-	-	-	-
	Unconsolidated depositional sediment bars	-	-	-	-	-
	Reinforced knickpoints and knickzones	-	TRUE	-	-	-
	Large woody debris jams	-	TRUE	-	-	-
	Lower limit of woody vegetation high with exposed roots	-	TRUE	-	-	-
	Numerous surfing or overhanging trees	-	-	-	-	-
	Indicators of Plan Form Adjustment	-	TRUE	-	-	-
	Cutbanks with active scour lines opposite of advancing bar formations	-	TRUE	-	-	-
	Circular failures along alternating banks or at the outside of banks	-	TRUE	-	-	-
	Alternating pattern of scour and deposition	-	TRUE	-	-	-
	Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
	Bar material unsorted with fines downstream	-	-	-	-	-
	Bar is irregularly shaped and more than 1 3 across the channel	-	TRUE	-	-	-
	Poorly sorted bed material	-	-	-	-	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	-	-	-	erosion present where rock armor was absent

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input

Reach Name	MS105R010	PC005R005	RD005R005	RD010R005	FF005R005
Channel Length	579	239	432	645	257
Valley Length	578	237	417	569	251
Reach Sinuosity	1.00219	1.00789	1.03636	1.13392	1.02456
Dominant Process	Dynamic Equilibrium	Widening	Dynamic Equilibrium	Early Stage Incision	Early Stage Incision
Indicators of Dynamic Equilibrium	-	-	-	-	-
No persistent scour or erosion features	-	-	-	-	-
Bankfull shelf along one or both banks	TRUE	-	TRUE	-	TRUE
Gradually sloping banks	TRUE	-	TRUE	-	TRUE
Herbaceous vegetation growing at or near the water surface	TRUE	TRUE	TRUE	-	TRUE
Well established woody vegetation on healed failure surfaces	TRUE	-	TRUE	-	TRUE
Vegetated consolidated bars	-	-	-	-	-
Consolidated bed material	-	TRUE	TRUE	-	TRUE
Imbricated rock bed material	-	-	-	-	TRUE
De facto grade controls reinforcing knickpoints	TRUE	-	TRUE	-	TRUE
Healthy riparian corridor and canopy cover	TRUE	-	TRUE	-	TRUE
Indicators of Incision	-	-	-	-	-
V" or "U" shaped channel cross section	-	-	-	-	-
Persistent scouring on both banks toe to mid slope	TRUE	-	-	-	TRUE
Wedge failures along both banks	-	TRUE	-	-	-
Steep near vertical banks	-	-	-	-	-
Perched bankfull floodplain or abandoned terraces	-	-	-	-	TRUE
Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	-	-	TRUE
Steep bed slope	-	-	TRUE	-	-
Scoured bed material	-	TRUE	-	-	TRUE
Consolidated bed material Incision	-	TRUE	-	-	TRUE
Frequent large woody debris jams	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-
Undercut or perched infrastructure	-	-	-	-	-
Indicators of Widening	-	-	-	-	-
Wide "U" shaped channel cross section	-	TRUE	-	-	-
Increase in cross sectional area	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
Scouring or bank failures along both banks	-	TRUE	-	-	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-
Residual failure material at bank toes	-	TRUE	-	-	-
Unconsolidated depositional bed material widening	-	-	-	-	-
Depositional center bars	-	-	-	-	-
Unconsolidated depositional sediment bars	-	-	-	-	-
Reinforced knickpoints and knickzones	-	TRUE	-	-	-
Large woody debris jams	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-
Numerous surfing or overhanging trees	-	TRUE	-	-	-
Indicators of Plan Form Adjustment	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-
Circular failures along alternating banks or at the outside of banks	-	-	-	-	-
Alternating pattern of scour and deposition	-	-	-	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	section of early stage incision	reach was previously stabilized with Rock and Mats, lost toe protection and banks are beginning to slump, process is moving slower than expected	-	-	-

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Appendix D: Deer Creek Tributary Reach Data

Field Observations and Data Input	Reach Name	FF010R005
	Channel Length	129
	Valley Length	128
	Reach Sinuosity	1.00615
	Dominant Process	Managed
	Indicators of Dynamic Equilibrium	-
	No persistent scour or erosion features	-
	Bankfull shelf along one or both banks	-
	Gradually sloping banks	TRUE
	Herbaceous vegetation growing at or near the water surface	TRUE
	Well established woody vegetation on healed failure surfaces	-
	Vegetated consolidated bars	-
	Consolidated bed material	-
	Imbricated rock bed material	-
	De facto grade controls reinforcing knickpoints	-
	Healthy riparian corridor and canopy cover	-
	Indicators of Incision	-
	V" or "U" shaped channel cross section	-
	Persistent scouring on both banks toe to mid slope	-
	Wedge failures along both banks	-
	Steep near vertical banks	-
	Perched bankfull floodplain or abandoned terraces	-
	Knickpoints and knickzones occurring in channel profile	-
	Steep bed slope	-
	Scoured bed material	-
	Consolidated bed material Incision	-
	Frequent large woody debris jams	-
	Lower limit of woody vegetation high with exposed roots	-
	Undercut or perched infrastructure	-
	Indicators of Widening	-
	Wide "U" shaped channel cross section	-
	Increase in cross sectional area	-
	Increase in channel width and decrease in bank height from upstream	-
	Scouring or bank failures along both banks	-
	Persistent scouring on both banks mid to upper slope	-
	Residual failure material at bank toes	-
	Unconsolidated depositional bed material widening	-
	Depositional center bars	-
	Unconsolidated depositional sediment bars	-
	Reinforced knickpoints and knickzones	-
	Large woody debris jams	-
	Lower limit of woody vegetation high with exposed roots	-
	Numerous surfing or overhanging trees	-
	Indicators of Plan Form Adjustment	-
	Cutbanks with active scour lines opposite of advancing bar formations	-
	Circular failures along alternating banks or at the outside of banks	-
	Alternating pattern of scour and deposition	-
	Bar formations are consolidated with an unconsolidated leading edge	-
	Bar material unsorted with fines downstream	-
	Bar is irregularly shaped and more than 1 3 across the channel	-
	Poorly sorted bed material	-
	Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-

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Appendix E
Potential Projects

Content:

- North Creve Coeur Creek Watershed
- South Creve Coeur Creek Watershed
- West Deer Creek Watershed
- East Deer Creek Watershed

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North Creve Coeur Creek Watershed

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North Creve Coeur Creek Watershed

CIP Number	Project Name
CC-C-01	Ferntop Lane Bank Stabilization
CC-C-02	Ferntop Lane Outfall Repair
CC-C-03	13105 D'Artagnan Court
CC-C-04	Autumn Trails Court
CC-C-05	Olive Boulevard
CC-C-06	1009 Fernview Drive
CC-C-07	Ferngate Lane
CC-C-08	Bellerive Country Club
CC-C-09	Ambois Drive
CC-C-10	Lampadaire Drive
CC-C-11	Fernridge Creek at Bellerive Estates Drive
CC-C-12	680 Bellerive Estates Drive
CC-C-13	North Mason Road
CC-C-14	840 Angleterre Drive
CC-C-15	Millenium Park
CC-C-16	Villa Hill Lane
CC-C-17	12344 Mulberry Tree Court
CC-C-18	12426 Stratford Ridge Court
CC-C-19	Questover Lane
CC-C-20	Falaise Drive
CC-C-21	Blackheath Court and Country Manor Lane
CC-C-22	Royal Valley Drive
CC-C-23	Oak Hollow Drive
CC-S-03	Ferntrails Lane
CC-S-04	Fernpark Drive
CC-S-05	740 North Mason Road
CC-S-06	Aurburndale Drive
CC-S-07	Mason Forest Drive

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CC-C-01: Ferntop Lane Bank Stabilization

Problem description: An existing pipe outfall is perched and actively undermining. Creek erosion on the right descending bank (RDB) is causing bank failures in the rear yard of 12970 Ferntop Lane. Heavy flows also result in yard flooding. The affected parcels are private.



Knickpoint at outfall

Recommendation: Construct a step grade control at the upstream outfall and stabilize the existing concrete pad with a toewall. Stabilize the bank by laying back the slope, adding rock toe protection, and rock armored slope protection.

Water Quality Alternative Recommendations: Use a vegetated biostabilization technique for the bank stabilization approach. Extend the project from the outfall stabilization limits downstream to the inlet of the culvert under Fernview Drive on the RDB slope. Include outfall repair project for MSD owned infrastructure located within the bank stabilization limits.



Conceptual Layout of CC-C-01

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Conceptual Layout of CC-C-01 Alternative

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-01 Ferntop Lane Bank Stabilization

Project Description: Rock armoring to address erosion and grade control at outfall knickpoint.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 7,700
		Contingency =	25%	$ 1,900
		TOTAL OPINION OF SURVEYING COST =		**$ 9,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	50	$ 35	$ 1,800
Rock Grade Control	CY	25	$ 200	$ 5,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	50	$ 150	$ 7,500
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	10.00	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 3,400	$ 3,400
			Subtotal =	$ 37,300
		Contingency =	30%	$ 11,200
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 48,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 114,700**

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-01 Ferntop Lane Bank Stabilization Alternative

Project Description: Rock armoring to address erosion and grade control at outfall knickpoint as well as bank stabilization along rear yards.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.20	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.20	$ 5,000	$ 1,000
			Subtotal =	$ 10,900
			Contingency = 25%	$ 2,700
			TOTAL OPINION OF SURVEYING COST =	**$ 13,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	195	$ 35	$ 6,800
Rock Grade Control	CY	25	$ 200	$ 5,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	95	$ 150	$ 14,300
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	15.00	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 5,400	$ 5,400
			Subtotal =	$ 59,300
			Contingency = 30%	$ 17,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 77,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 181,300**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	CC-C-01: Ferntop Lane Bank Stabilization	DATE:	7/31/2023
PROJECT LOCATION:	12970 Ferntop Lane, Creve Coeur, MO 63141	PROJECT TYPE:	2
PROJECT DESCRIPTION:	Rock armoring to address erosion and grade control at outfall knickpoint.		
ENVIRONMENTAL CONSIDERATIONS:			
COMMON GROUND:	This project is partially located on common ground.		

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 12970 Ferntop Ln*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-01: Ferntop Lane Bank Stabilization DATE: 7/31/2023

PROJECT LOCATION: 12970 Ferntop Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Rock armoring to address erosion and grade control at outfall knickpoint.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address: 12970 and 12985 Ferntop Ln, 943 Ferngate Ln*	No. Lots:		3	Points/lot:		10	30
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**80**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-01: Ferntop Lane Bank Stabilization DATE: 7/31/2023

PROJECT LOCATION: 12970 Ferntop Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Rock armoring to address erosion and grade control at outfall knickpoint.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)	1	PER 100 LF			10		10
	Riffle Pool Complex	1	PER 100 LF			10		10
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**					20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**40**
							TOTAL BENEFIT POINTS	**120**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$115**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.05**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	CC-C-01: Ferntop Lane Bank Stabilization Alternative	DATE:	7/31/2023
PROJECT LOCATION:	12970 Ferntop Lane, Creve Coeur, MO 63141	PROJECT TYPE:	2
PROJECT DESCRIPTION:	Rock armoring to address erosion and grade control at outfall knickpoint as well as bank stabilization along rear yards.		
ENVIRONMENTAL CONSIDERATIONS:			
COMMON GROUND:	This project is partially located on common ground.		

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 12970 Ferntop Ln*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-01: Ferntop Lane Bank Stabilization Alternative DATE: 7/31/2023

PROJECT LOCATION: 12970 Ferntop Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Rock armoring to address erosion and grade control at outfall knickpoint as well as bank stabilization along rear yards.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address: 12970 and 12985 Ferntop Ln, 943 Ferngate Ln*	No. Lots:		3	Points/lot:		10	30
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**80**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-01: Ferntop Lane Bank Stabilization Alternative DATE: 7/31/2023

PROJECT LOCATION: 12970 Ferntop Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Rock armoring to address erosion and grade control at outfall knickpoint as well as bank stabilization along rear yards.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)	2	PER 100 LF		10				20
	Riffle Pool Complex	2	PER 100 LF		10				20
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)		PER 100 LF		10				
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**						20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
								TOTAL SOLUTION POINTS	**60**
								TOTAL BENEFIT POINTS	**140**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$181**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.77**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-02: Ferntop Lane Outfall Repair

Problem description: The existing storm sewer outfall in the rear yard of 12970 Ferntop Lane is being undermined and eroded on either side. The line was replaced/extended in 2022 by MSD, however, a headwall was not built with the construction. The affected outfall is owned by MSD and the parcels are private.



Outfall

Recommendation: Construct pipe headwall/toewall, rock armor the bank around the pipe, and add scour protection at the outfall.

Water Quality Alternative Recommendations: Combine with adjacent bank stabilization work. No other water quality alternatives are recommended for this project.



Conceptual Layout of CC-C-02

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-02 Ferntop Lane Outfall Repair

Project Description: Headwall, rock armor, and grade control at existing outfall.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 6,200
			Contingency = 25%	$ 1,600
			TOTAL OPINION OF SURVEYING COST =	**$ 7,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	20	$ 35	$ 700
Rock Grade Control	CY	5	$ 200	$ 1,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	10	$ 150	$ 1,500
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	5.00	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	104	$ 50	$ 5,200
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 2,200	$ 2,200
			Subtotal =	$ 24,400
			Contingency = 30%	$ 7,300
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 31,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 96,100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	CC-C-02: Ferntop Lane Outfall Repair	DATE:	7/31/2023
PROJECT LOCATION:	12970 Ferntop Lane, Creve Coeur, MO 63141	PROJECT TYPE:	2
PROJECT DESCRIPTION:	Headwall, rock armor, and grade control at existing outfall.		
ENVIRONMENTAL CONSIDERATIONS:			
COMMON GROUND:	This project is partially located on common ground.		

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
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			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 12970 Ferntop Ln*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	CC-C-02: Ferntop Lane Outfall Repair	DATE:	7/31/2023
PROJECT LOCATION:	12970 Ferntop Lane, Creve Coeur, MO 63141	PROJECT TYPE:	2
PROJECT DESCRIPTION:	Headwall, rock armor, and grade control at existing outfall.		
ENVIRONMENTAL CONSIDERATIONS:			
COMMON GROUND:	This project is partially located on common ground.		

				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*		350		250		65		
		Basement (1 lot per structure)* *Address:*		250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*		300		200		50		
		If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	*	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*		100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*		50		35		12		
		Yard Flooding (1 per lot) *Address:*		10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*		200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*		50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*		25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*		10		6		1		
		Ponding (per ponding area) *Address:*		No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*		No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address: 12970 Ferntop Ln*		No. Lots:		1	Points/lot:		10	10
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)		Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition								
				TOTAL PROBLEM POINTS						**60**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-02: Ferntop Lane Outfall Repair DATE: 7/31/2023

PROJECT LOCATION: 12970 Ferntop Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Headwall, rock armor, and grade control at existing outfall.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex	1	PER 100 LF			10		10
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**					20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**30**
							TOTAL BENEFIT POINTS	**90**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$96**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.94**

Place "X" in one box below:

	Creve Coeur Project
X	**Project by Others**

Draft

CC-C-03: 13105 D'Artagnan Court

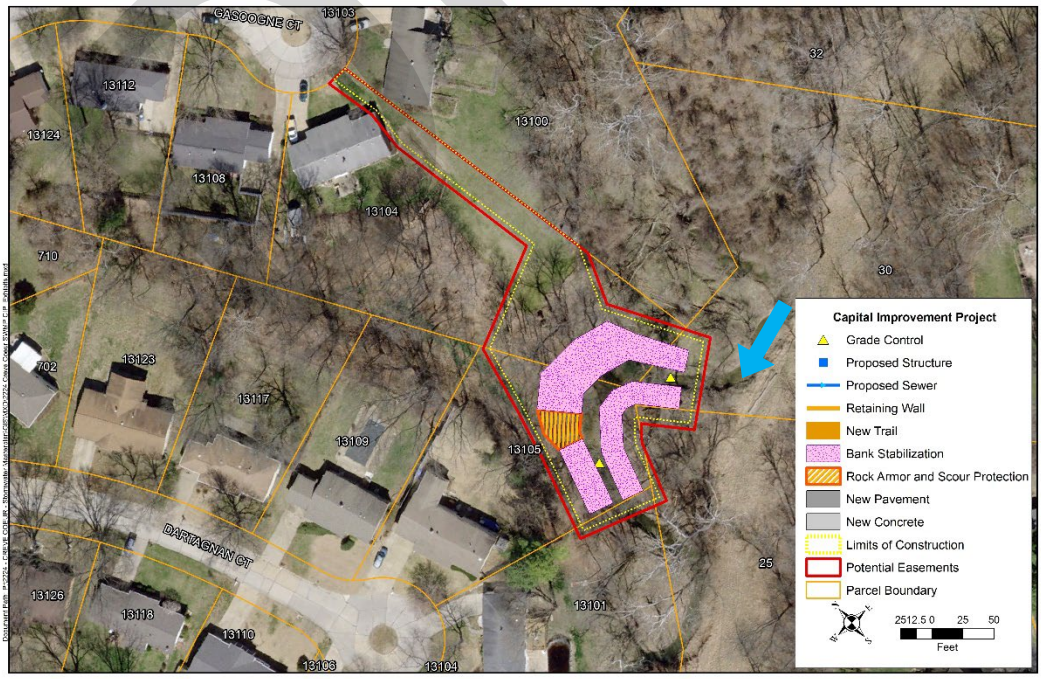


Outside bend erosion

Problem description: Bank erosion along Fernridge Creek in the rear lot of 13105 D'Artagnan Court. The bank heights range from 6 to 12 feet and the erosion is on the outside of an advancing bend. A tree house is near the top of bank. A large drainage swale enters the channel on the outside of the bend and is incising at the confluence. The affected parcels are private.

Recommendation: Construct bank stabilization on both sides of the channel using a two stage channel to reinforce the bar formation. Construct a rock swale to convey drainage from the tributary swale to the creek in a non-erosive manner. Install grade controls at the outfall on the upstream limit of the project and where the rock swale drains into the creek.

Water Quality Alternative Recommendations: Combine with adjacent project to grade control the downstream limits of Fernridge Creek from the confluence with Smith Creek.



Conceptual Layout of CC-C-03

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-03 13105 D'Artagnan Court

Project Description: Bank stabilization to address erosion with rock swale to convey subdivision drainage with associated grade controls.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.60	$ 12,000	$ 7,200
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.60	$ 5,000	$ 3,000
			Subtotal =	$ 17,700
			Contingency = 25%	$ 4,400
			TOTAL OPINION OF SURVEYING COST =	**$ 22,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,500
			Contingency = 25%	$ 2,600
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 13,100**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
			Contingency = 25%	$ 24,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.6	$ 30,000	$ 18,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,800	$ 35	$ 63,000
Rock Grade Control	CY	50	$ 200	$ 10,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	220	$ 150	$ 33,000
Bank Stabilization	SY	850	$ 120.00	$ 102,000
Granular Backfill	CY	25.00	$ 55	$ 1,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	0.6	$ 50,000	$ 30,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 26,800	$ 26,800
			Subtotal =	$ 295,200
			Contingency = 30%	$ 88,600
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 383,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 541,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-03: 13105 D'Artagnan Court DATE: 7/31/2023

PROJECT LOCATION: 13105 D`Artagnan Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion with rock swale to convey subdivision drainage with associated grade controls.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-03: 13105 D'Artagnan Court DATE: 7/31/2023

PROJECT LOCATION: 13105 D`Artagnan Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion with rock swale to convey subdivision drainage with associated grade controls.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**40**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-03: 13105 D'Artagnan Court DATE: 7/31/2023

PROJECT LOCATION: 13105 D`Artagnan Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion with rock swale to convey subdivision drainage with associated grade controls.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)	4	PER 100 LF			10		40
	Riffle Pool Complex	4.41	PER 100 LF			10		44
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)	4.41	PER 100 LF			10		44
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**					20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**148**
							TOTAL BENEFIT POINTS	**188**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$541**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.35**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

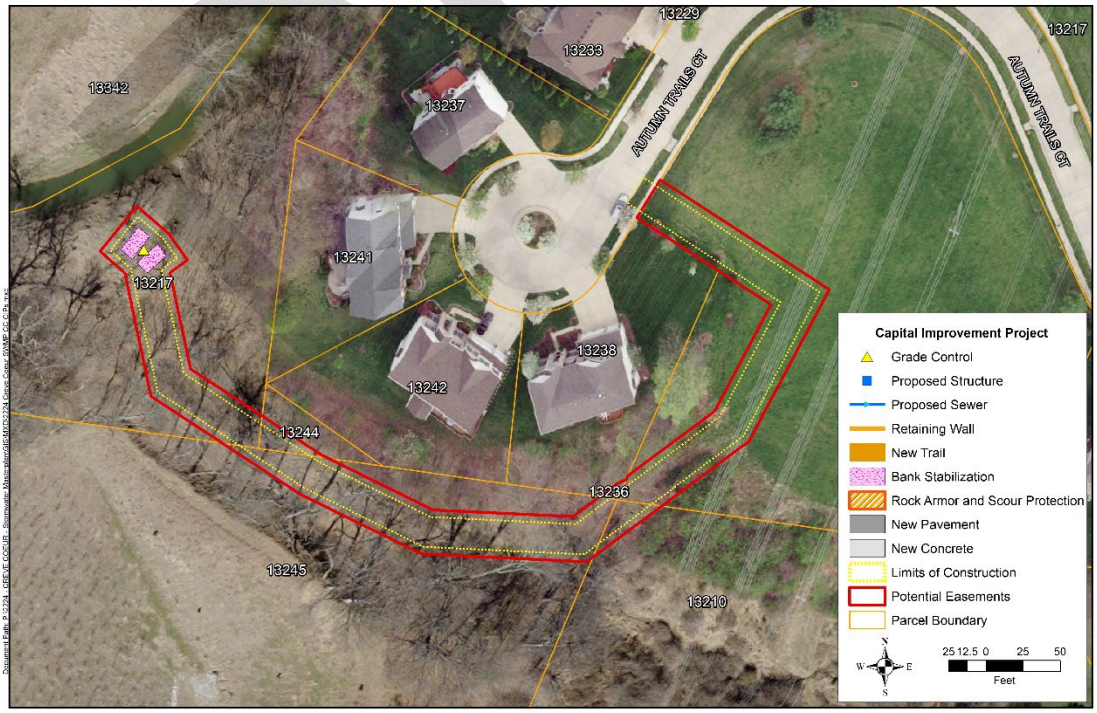
CC-C-04: Autumn Trails Court

Problem Description: A knickpoint and failing grade control were observed along a tributary to Creve Coeur Creek behind 13241 Autumn Trails Court. The affected parcels are private.

Recommendation: Install a step grade control.



Tributary



Conceptual Layout of CC-C-04

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-04 Autumn Trails Court

Project Description: Grade control to address a knickpoint in a tributary to Creve Coeur Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.4	$ 12,000	$ 4,800
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.4	$ 5,000	$ 2,000
			Subtotal =	$ 14,300
			Contingency = 25%	$ 3,600
			TOTAL OPINION OF SURVEYING COST =	**$ 17,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.4	$ 30,000	$ 12,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	60	$ 35	$ 2,100
Rock Grade Control	CY	15	$ 200	$ 3,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	20	$ 150	$ 3,000
Bank Stabilization	SY	40	$ 120.00	$ 4,800
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.4	$ 50,000	$ 20,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 5,200	$ 5,200
			Subtotal =	$ 56,900
			Contingency = 30%	$ 17,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 74,000**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 148,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-04 Autumn Trails Court DATE: 12/5/2023

PROJECT LOCATION: 13241 Autumn Trails Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control to address a knickpoint in a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10	1	5		10

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-04 Autumn Trails Court DATE: 12/5/2023

PROJECT LOCATION: 13241 Autumn Trails Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control to address a knickpoint in a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**10**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-04 Autumn Trails Court DATE: 12/5/2023

PROJECT LOCATION: 13241 Autumn Trails Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control to address a knickpoint in a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	**0.96**	PER 100 LF			10				10
	Riffle Pool Complex	**2.64**	PER 100 LF			10				26
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)	2.64	PER 100 LF			10				26
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)		>15 (0 pts)		
	Points for Easements		**20**							**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		**82**
								TOTAL BENEFIT POINTS		**92**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$149**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.62**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-05: Olive Boulevard

Problem Description: In Creve Coeur Creek and on of its tributaries south of Olive Boulevard several issues were identified as follows. Erosion threatening a transmission tower and a failed grade control turning the flow into the bank southwest of Village Du Lac Lane. Erosion along an outside bend threatening Village Du Lac Lane. Erosion along an outside bend in the tributary threatening 13150 Olive Boulevard. An existing grade control in Creve Coeur Creek is failing northwest of 13129 Bellerive Farm Drive. The affected parcels are private.



Erosion near transmission tower

Recommendation: Stabilize the LDB along the transmission tower and replace the grade control. Stabilize the RDB along Village Du Lac Lane. Stabilize the RDB threatening 13150 Olive Boulevard and install a grade control. Replace the failing grade control.



Erosion along Village Du Lac Lane



Conceptual Layout of CC-C-05

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-05 Olive Boulevard

Project Description: Bank stabilization and grade controls to address erosion threatening structures along Creve Coeur Creek and one of its tributaries.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	1.5	$ 12,000	$ 18,000
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	1.5	$ 5,000	$ 7,500
			Subtotal =	$ 33,000
			Contingency = 25%	$ 8,300
			TOTAL OPINION OF SURVEYING COST =	**$ 41,300**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	3	$ 1,000	$ 3,000
			Subtotal =	$ 11,500
			Contingency = 25%	$ 2,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 14,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
			Contingency = 25%	$ 24,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	1.5	$ 30,000	$ 45,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	3,005	$ 35	$ 105,200
Rock Grade Control	CY	220	$ 200	$ 44,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	265	$ 150	$ 39,800
Bank Stabilization	SY	1,535	$ 120.00	$ 184,200
Granular Backfill	CY	40	$ 55	$ 2,200
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	1.5	$ 50,000	$ 75,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 50,100	$ 50,100
			Subtotal =	$ 551,000
			Contingency = 30%	$ 165,300
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 716,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 894,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-05 Olive Boulevard DATE: 12/5/2023

PROJECT LOCATION: 13150 Olive Boulevard, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures along Creve Coeur Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS: The transmission tower is in the regulatory floodway.

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 13150 Olive Blvd*	300		200	1	50		200
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Transmission tower base*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	2	lots	10 points per lot				20
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: 13150 Olive Blvd driveway*	20		12		3	2	6
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10	2	5	1	25

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-05 Olive Boulevard DATE: 12/5/2023

PROJECT LOCATION: 13150 Olive Boulevard, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures along Creve Coeur Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS: The transmission tower is in the regulatory floodway.

COMMON GROUND: This project is partially located on common ground.

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						276

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-05 Olive Boulevard DATE: 12/5/2023

PROJECT LOCATION: 13150 Olive Boulevard, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures along Creve Coeur Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS: The transmission tower is in the regulatory floodway.

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**6.54**	PER 100 LF		10		65
	Riffle Pool Complex	**8.04**	PER 100 LF		10		80
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	5.35	PER 100 LF		10		54
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**219**
						TOTAL BENEFIT POINTS	**495**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$894**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.55**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-06: 1009 Fernview Drive

Problem Description: In a tributary to Creve Coeur creek west of Fernview Drive several issues were identified as follows. Minor tributary downcutting in the rear lot of 936 Bellerive Manor Drive. Large scour hole and bank erosion at the outfall in the rear lot of 1005 Fernview Drive. Perched outfall and erosion at the upper end of a tributary south of 1045 Fernview Drive. The affected parcels are private.

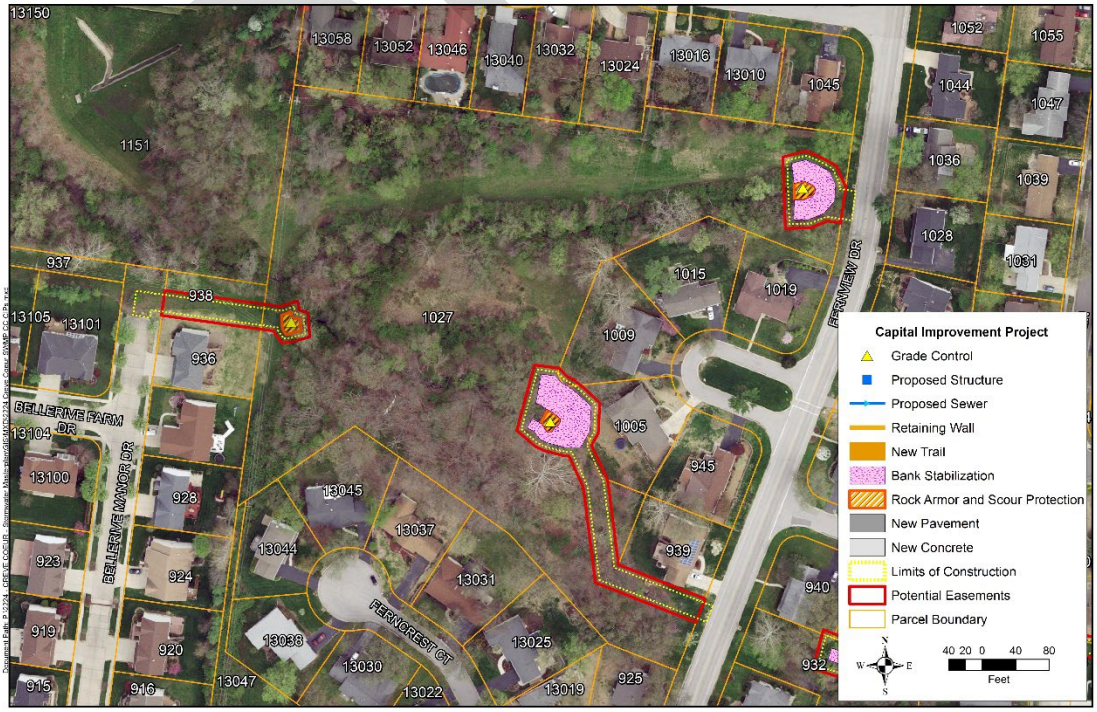


Scour hole

Recommendation: Rock armor the minor tributary and install a grade control. Stabilize the banks surrounding the scour hole and install a step grade control and stilling basin. Install a step grade control and stilling basin at the perched outfall and stabilize the banks.



Perched outfall



Conceptual Layout of CC-C-06

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-06 Fernview Drive

Project Description: Bank stabilization, grade controls, stilling basins, and rock armoring to address erosion threatening structures along a tributary to Creve Coeur Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 14,500
			Contingency = 25%	$ 3,600
			TOTAL OPINION OF SURVEYING COST =	**$ 18,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,820	$ 35	$ 63,700
Rock Grade Control	CY	165	$ 200	$ 33,000
Rock Stilling Basin / Outlet Scour Protection	CY	126	$ 100	$ 12,600
Rock Toe and Slope Protection	CY	140	$ 150	$ 21,000
Bank Stabilization	SY	710	$ 120.00	$ 85,200
Granular Backfill	CY	35	$ 55	$ 1,900
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	60	$ 50	$ 3,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 26,600	$ 26,600
			Subtotal =	$ 292,500
			Contingency = 30%	$ 87,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 380,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 490,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-06 1009 Fernview Drive DATE: 12/5/2023

PROJECT LOCATION: 1009 Fernview Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins, and rock armoring to address erosion threatening structures along a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 1005, 1009, and 1045 Fernview Dr*	300		200	1	50	2	300
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Undermined culvert*	20	2	12		3		40
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-06 1009 Fernview Drive DATE: 12/5/2023

PROJECT LOCATION: 1009 Fernview Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins, and rock armoring to address erosion threatening structures along a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**360**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-06 1009 Fernview Drive DATE: 12/5/2023

PROJECT LOCATION: 1009 Fernview Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins, and rock armoring to address erosion threatening structures along a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	**3.4**	PER 100 LF			10				34
	Riffle Pool Complex	**2.5**	PER 100 LF			10				25
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)	2.5	PER 100 LF			10				25
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**							**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		**104**
								TOTAL BENEFIT POINTS		**464**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$491**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.95**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-07: Ferngate Lane

Problem Description: In a tributary to Creve Coeur creek between Ferngate Lane and Fernway Lane several issues were identified as follows. Failing grouted riprap and erosion surrounding the outlet pipe in the rear lot of 954 Ferngate Lane. Two perched outfalls with a knickpoint in the rear lot of 12922 Ferntop Lane. The affected parcels are private.

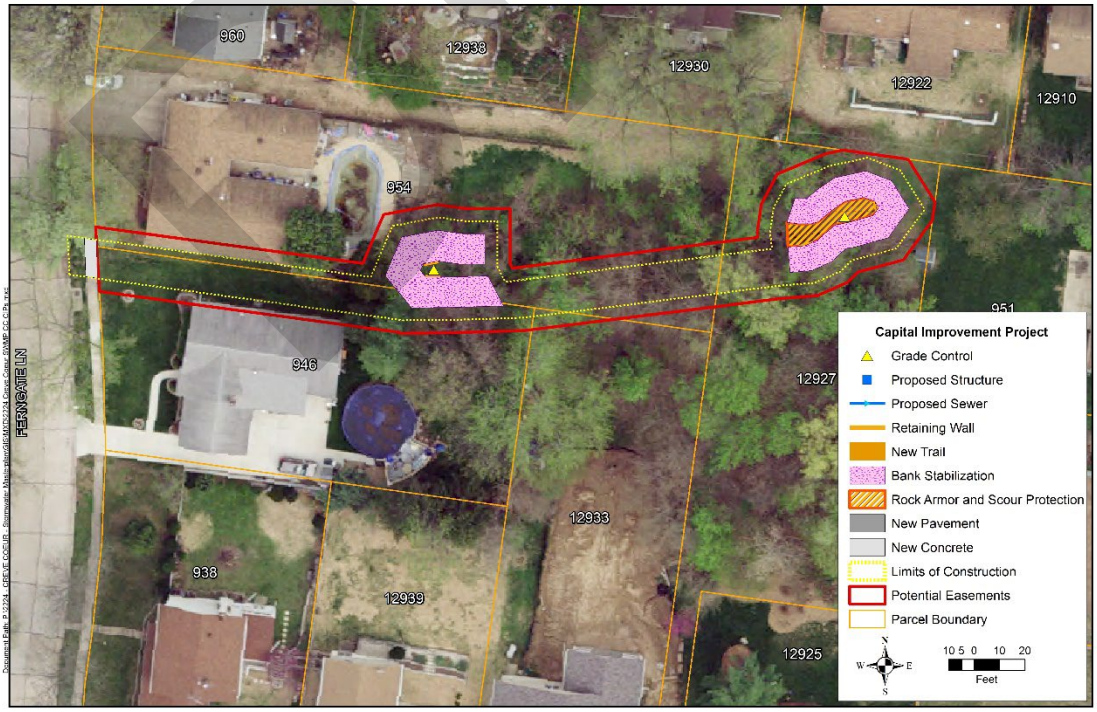
Recommendation: Install new wing walls at the outlet pipe, stabilize the banks, and install a grade control. Install a step grade control and stilling basin at the two perched outfalls. Install toe walls at the outfalls.



Outlet pipe



Perched outfall



Conceptual Layout of CC-C-07

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-07 Ferngate Lane

Project Description: Bank stabilization, grade controls, stilling basin, wing walls, and toe walls to address erosion threatening structures along a tributary to Creve Coeur Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
			Contingency = 25%	$ 2,400
			TOTAL OPINION OF SURVEYING COST =	**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	295	$ 35	$ 10,300
Rock Grade Control	CY	45	$ 200	$ 9,000
Rock Stilling Basin / Outlet Scour Protection	CY	40	$ 100	$ 4,000
Rock Toe and Slope Protection	CY	60	$ 150	$ 9,000
Bank Stabilization	SY	210	$ 120.00	$ 25,200
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF	75	$ 50	$ 3,800
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	10	$ 100	$ 1,000
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 8,500	$ 8,500
			Subtotal =	$ 93,900
			Contingency = 30%	$ 28,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 122,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 191,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-07 Ferngate Lane DATE: 12/5/2023

PROJECT LOCATION: 954 Ferngate Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basin, wing walls, and toe walls to address erosion threatening structures along a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 954 and 946 Ferngate Ln*	300		200		50	2	100
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 954 Ferngate Ln pool*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10	1	5		10

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-07 Ferngate Lane DATE: 12/5/2023

PROJECT LOCATION: 954 Ferngate Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basin, wing walls, and toe walls to address erosion threatening structures along a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**135**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-07 Ferngate Lane DATE: 12/5/2023

PROJECT LOCATION: 954 Ferngate Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basin, wing walls, and toe walls to address erosion threatening structures along a tributary to Creve Coeur Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.13**	PER 100 LF		10		21
	Riffle Pool Complex	**1.62**	PER 100 LF		10		16
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	1.62	PER 100 LF		10		16
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**74**
						TOTAL BENEFIT POINTS	**209**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$191**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.09**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

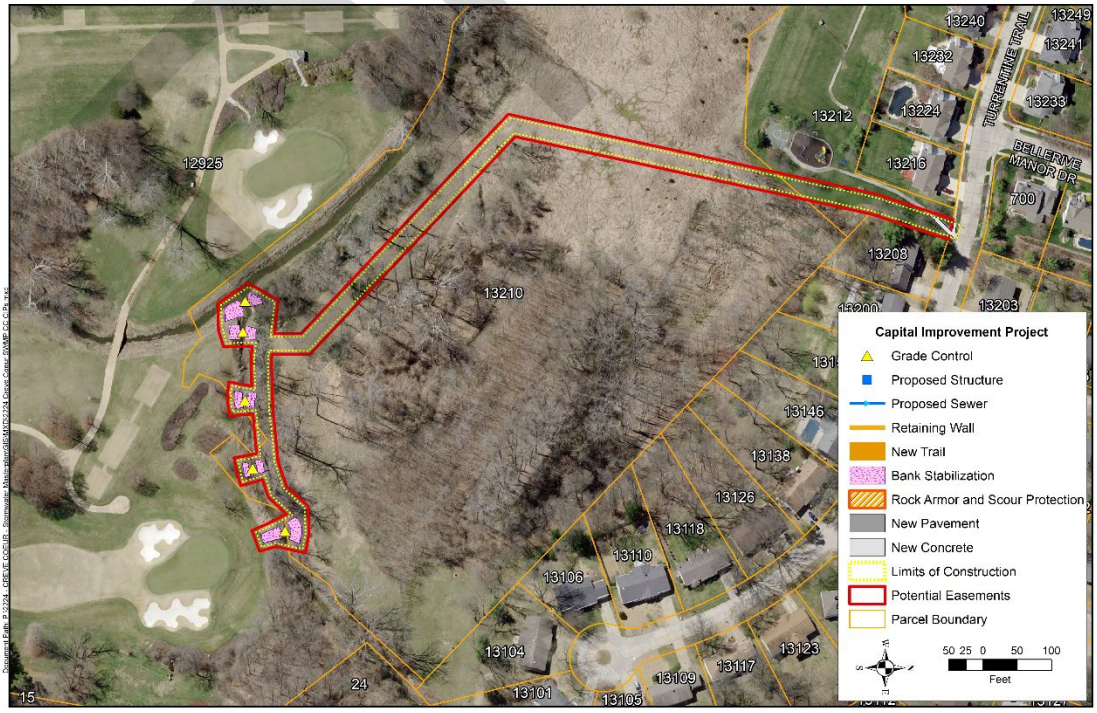
CC-C-08: Bellerive Country Club

Problem Description: Several knickpoints were observed along the downstream end of Fernridge Creek at the north end of Bellerive Country Club. The affected parcels are private.

Recommendation: Install a step grade control at the confluence and a series of grade controls along the reach.



Confluence



Conceptual Layout of CC-C-08

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-08 Bellerive Country Club

Project Description: A series of grade controls where Fernridge Creek confluences with Smith Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.9	$ 12,000	$ 10,800
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.9	$ 5,000	$ 4,500
			Subtotal =	$ 19,800
			Contingency = 25%	$ 5,000
			TOTAL OPINION OF SURVEYING COST =	**$ 24,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.9	$ 30,000	$ 27,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	740	$ 35	$ 25,900
Rock Grade Control	CY	150	$ 200	$ 30,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	95	$ 150	$ 14,300
Bank Stabilization	SY	380	$ 120.00	$ 45,600
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	35	$ 100	$ 3,500
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.9	$ 50,000	$ 45,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 19,900	$ 19,900
			Subtotal =	$ 218,800
			Contingency = 30%	$ 65,600
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 284,400**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 400,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-08 Bellerive Country Club DATE: 12/5/2023

PROJECT LOCATION: Bellerive Country Club, 12925 Ladue Road, St. Louis, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: A series of grade controls where Fernridge Creek confluences with Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	3	10		5		60

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-08 Bellerive Country Club DATE: 12/5/2023

PROJECT LOCATION: Bellerive Country Club, 12925 Ladue Road, St. Louis, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: A series of grade controls where Fernridge Creek confluences with Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
2.0 STORM SEWER / OVERLAND FLOW	**PROBLEM SOLVED CATEGORY, CONT.** Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**60**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-08 Bellerive Country Club DATE: 12/5/2023

PROJECT LOCATION: Bellerive Country Club, 12925 Ladue Road, St. Louis, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: A series of grade controls where Fernridge Creek confluences with Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.13**	PER 100 LF		10		21
	Riffle Pool Complex	**6.19**	PER 100 LF		10		62
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	6.19	PER 100 LF		10		62
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**165**
						TOTAL BENEFIT POINTS	**225**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$401**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.56**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-09: Ambois Drive

Problem Description: Several issues were observed in Fernridge Creek in the rear lots of Ambois Drive properties as follows. Erosion along the RDB with seepage threatening residential fence in the rear lot of 13046 Ambois Drive and a knickpoint. Knickpoint at a minor tributary confluence in the rear lot of 13016 Ambois Drive. Erosion along the RDB threatening residential fence, yards, and a utility pole as well as an old grade control in need of replacement in the rear lots of 13006 and 13010 Ambois Drive. The affected parcels are private.

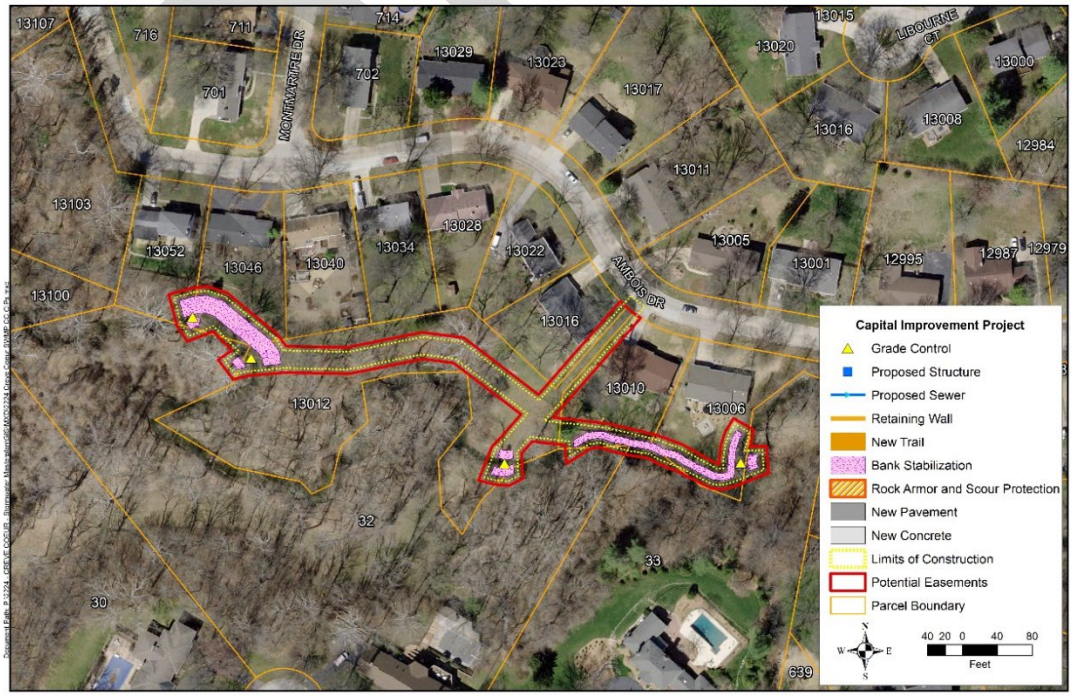


13046 Ambois Drive RDB erosion

Recommendation: Stabilize the RDB in the rear lot of 13046 Ambois Drive and install a drain to address the seepage. Install a grade control at the downstream end of the stabilization and a step grade control at the upstream end. Install a step grade control at the tributary confluence. Stabilize the RDB along the rear lots of 13006 and 13010 Ambois Drive and replace the grade control with a step grade control. Re-set the power pole guy wires.



13006 and 13010 Ambois Drive RDB erosion



Conceptual Layout of CC-C-09

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-09 Ambois Drive

Project Description: Bank stabilization and grade controls to address knickpoints and erosion threatening structures along Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.6	$ 12,000	$ 7,200
Prepare Easement Plat and Scripts	EACH	9	$ 1,500	$ 13,500
Contruction Staking and As-Built Surveying	ACRE	0.6	$ 5,000	$ 3,000
			Subtotal =	$ 23,700
			Contingency = 25%	$ 5,900
			TOTAL OPINION OF SURVEYING COST =	**$ 29,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.6	$ 30,000	$ 18,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,155	$ 35	$ 40,400
Rock Grade Control	CY	145	$ 200	$ 29,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	205	$ 150	$ 30,800
Bank Stabilization	SY	610	$ 120.00	$ 73,200
Granular Backfill	CY	30	$ 55	$ 1,700
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF	120	$ 140	$ 16,800
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.6	$ 50,000	$ 30,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 24,600	$ 24,600
			Subtotal =	$ 271,000
			Contingency = 30%	$ 81,300
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 352,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 474,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-09 Ambois Drive DATE: 12/5/2023

PROJECT LOCATION: 13010 Ambois Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address knickpoints and erosion threatening structures along Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS: 13006 Ambois Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 13046 and 13006 Ambois Dr*	300		200		50	2	100
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	2	lots	10 points per lot				20
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	4	10		5		80

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-09 Ambois Drive DATE: 12/5/2023

PROJECT LOCATION: 13010 Ambois Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address knickpoints and erosion threatening structures along Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS: 13006 Ambois Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-09 Ambois Drive DATE: 12/5/2023

PROJECT LOCATION: 13010 Ambois Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address knickpoints and erosion threatening structures along Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS: 13006 Ambois Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**4.6**	PER 100 LF		10		46
	Riffle Pool Complex	**9.39**	PER 100 LF		10		94
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	9.39	PER 100 LF		10		94
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**244**
						TOTAL BENEFIT POINTS	**444**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$474**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.94**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

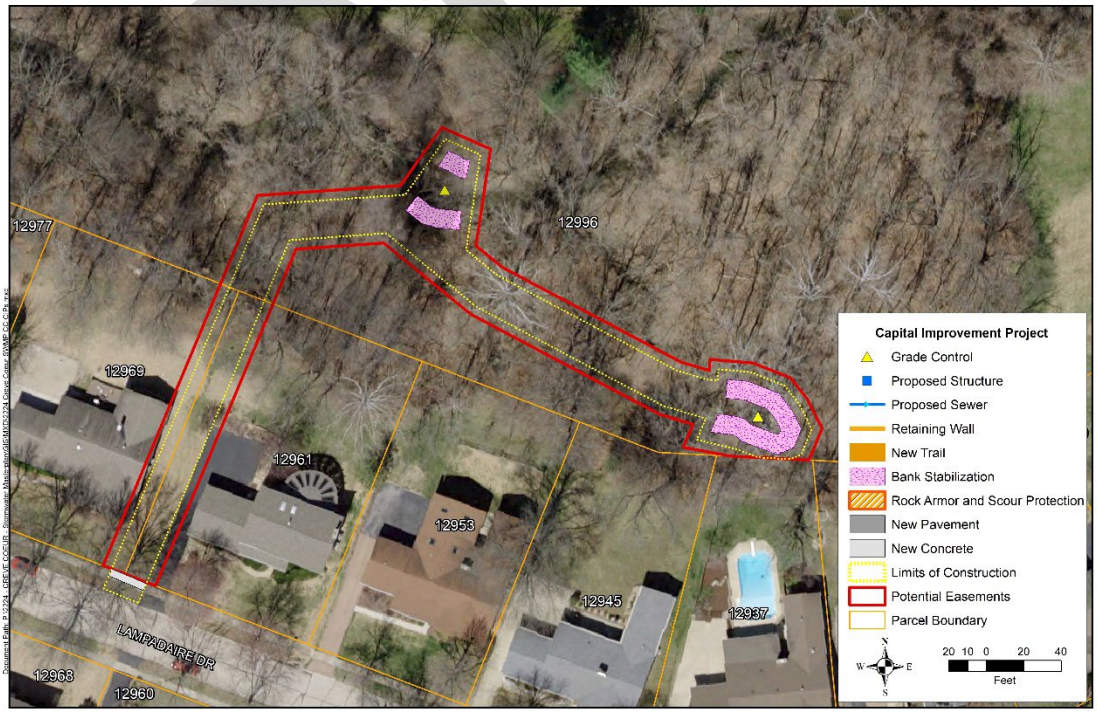
CC-C-10: Lampadaire Drive

Problem Description: Two knickpoints were observed along Fernridge Creek north of 12937 and 12953 Lampadaire Drive. The affected parcels are private.

Recommendation: Install step grade controls at the knickpoints.



Knickpoint



Conceptual Layout of CC-C-10

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-10 Lampadaire Drive

Project Description: Grade controls to stabilize knickpoints in Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.3	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.3	$ 5,000	$ 1,500
			Subtotal =	$ 9,600
			Contingency = 25%	$ 2,400
			TOTAL OPINION OF SURVEYING COST =	**$ 12,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.3	$ 30,000	$ 9,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	220	$ 35	$ 7,700
Rock Grade Control	CY	95	$ 200	$ 19,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	50	$ 150	$ 7,500
Bank Stabilization	SY	150	$ 120.00	$ 18,000
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	10	$ 100	$ 1,000
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 8,500	$ 8,500
			Subtotal =	$ 93,000
			Contingency = 30%	$ 27,900
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 120,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 190,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-10 Lampadaire Drive DATE: 12/5/2023

PROJECT LOCATION: 12961 Lampadaire Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls to stabilize knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-10 Lampadaire Drive DATE: 12/5/2023

PROJECT LOCATION: 12961 Lampadaire Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls to stabilize knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**20**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-10 Lampadaire Drive DATE: 12/5/2023

PROJECT LOCATION: 12961 Lampadaire Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls to stabilize knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.54**	PER 100 LF		10		15
	Riffle Pool Complex	**2.67**	PER 100 LF		10		27
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	2.67	PER 100 LF		10		27
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**89**
						TOTAL BENEFIT POINTS	**109**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$190**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.57**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

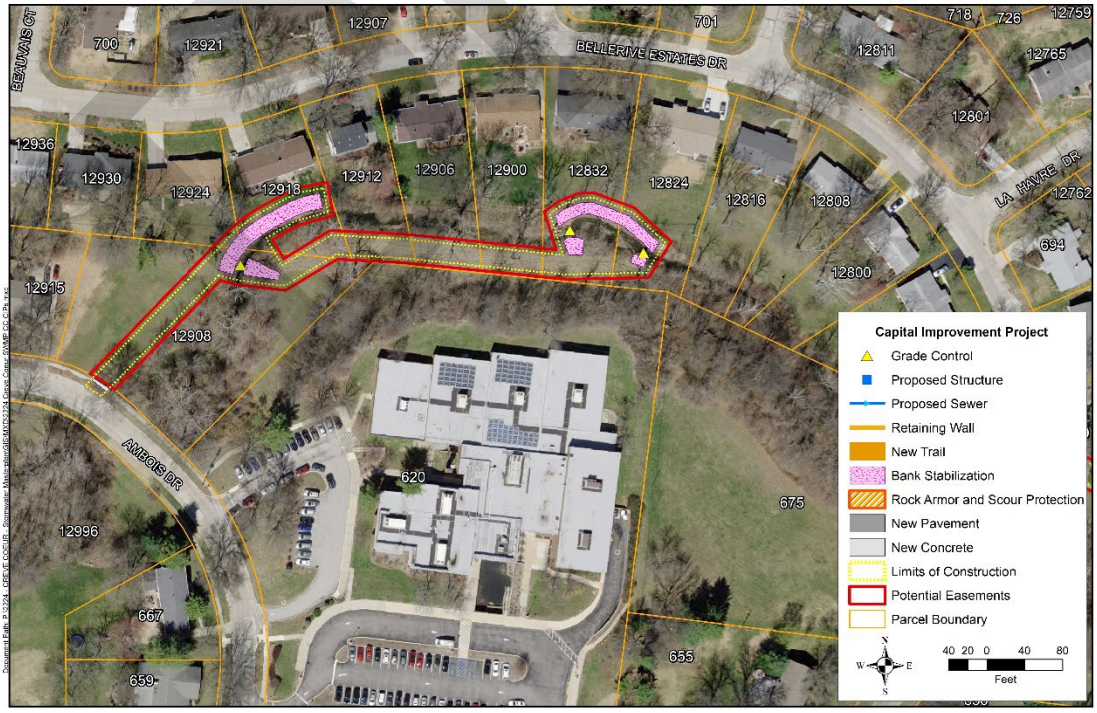
CC-C-11: Fernridge Creek at Bellerive Estates Drive

Problem Description: In Fernridge Creek along Bellerive Estates Drive several issues were observed as follows. Failing grouted riprap and erosion along an outside bend threatening residential fences in the rear lot of 12924 Bellerive Estates Drive. Erosion along the outside bend behind 12824 and 12832 Bellerive Estates Drive as well as a knickpoint. The affected parcels are private.



Erosion along outside bend

Recommendation: Replace the grouted riprap with a grade control and stabilize the outside bend. Stabilize the outside bend behind 12824 and 12832 Bellerive Estates Drive, install a grade control at the downstream end, and install a step grade control at the upstream end.



Conceptual Layout of CC-C-11

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-11 Fernridge Creek at Bellerive Estates Drive

Project Description: Bank stabilization and grade controls to address erosion threatening structures along Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	8	$ 1,500	$ 12,000
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 20,500
			Contingency = 25%	$ 5,100
			TOTAL OPINION OF SURVEYING COST =	**$ 25,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	530	$ 35	$ 18,600
Rock Grade Control	CY	115	$ 200	$ 23,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	130	$ 150	$ 19,500
Bank Stabilization	SY	505	$ 120.00	$ 60,600
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	10	$ 100	$ 1,000
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 17,000	$ 17,000
			Subtotal =	$ 187,300
			Contingency = 30%	$ 56,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 243,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 360,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-11 Fernridge Creek at Bellerive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 12918 Bellerive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion along threatening structures Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS: 12918 Bellerive Estates Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 12918 Bellerive Estates Dr*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5	2	30

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-11 Fernridge Creek at Bellerive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 12918 Bellerive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion along threatening structures Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS: 12918 Bellerive Estates Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**90**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-11 Fernridge Creek at Bellerive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 12918 Bellerive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion along threatening structures Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS: 12918 Bellerive Estates Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**3.05**	PER 100 LF		10		31
	Riffle Pool Complex	**7.22**	PER 100 LF		10		72
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	2.5	PER 100 LF		10		25
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**138**
						TOTAL BENEFIT POINTS	**228**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$360**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.63**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

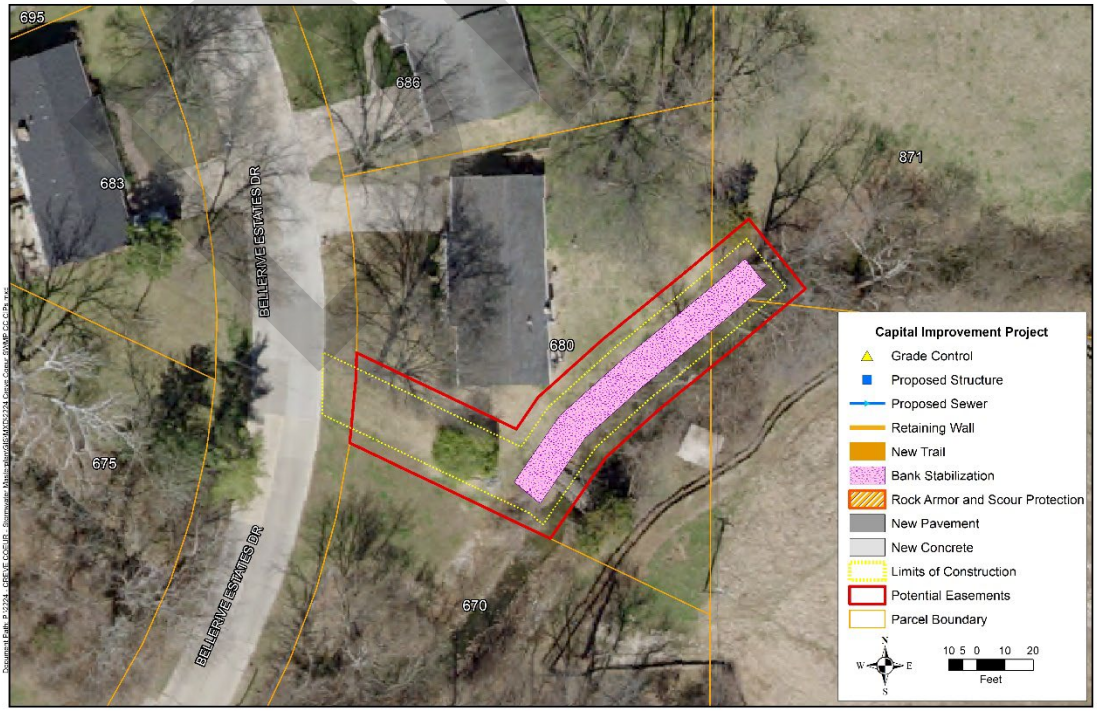
CC-C-12: 680 Bellerive Estates Drive

Problem Description: In Fernridge Creek behind 680 Bellerive Estates Drive erosion was observed along the RDB. The affected parcels are private.

Recommendation: Stabilize the RDB. This structure is located in the floodplain. City Council and Stormwater Committee will review for funding projects for structures located within the floodplain.



RDB Erosion



Conceptual Layout of CC-C-12

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-12 680 Bellerive Estates Drive

Project Description: Bank stabilization to address erosion threatening structures along Fernridge Creek. This structure is located in the floodplain. City Council and Stormwater Committee will review for funding projects for structures located within the floodplain.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 6,200
		Contingency =	25%	$ 1,600
		TOTAL OPINION OF SURVEYING COST =		**$ 7,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
		Contingency =	25%	$ 16,000
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	220	$ 35	$ 7,700
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	50	$ 150	$ 7,500
Bank Stabilization	SY	150	$ 120.00	$ 18,000
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 4,800	$ 4,800
			Subtotal =	$ 52,800
		Contingency =	30%	$ 15,800
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 68,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 167,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-12 680 Bellerive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 680 Bellerive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion threatening structures along Fernridge Creek. This structure is located in the floodplain. City Council and Stormwater Committee will review for funding projects for structures located within the floodplain.

ENVIRONMENTAL CONSIDERATIONS: 680 Bellerive Estates Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 680 Bellerive Estates Dr*	300		200	1	50		200
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-12 680 Bellerive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 680 Bellerive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion threatening structures along Fernridge Creek. This structure is located in the floodplain. City Council and Stormwater Committee will review for funding projects for structures located within the floodplain.

ENVIRONMENTAL CONSIDERATIONS: 680 Bellerive Estates Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**210**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-12 680 Bellerive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 680 Bellerive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion threatening structures along Fernridge Creek. This structure is located in the floodplain. City Council and Stormwater Committee will review for funding projects for structures located within the floodplain.

ENVIRONMENTAL CONSIDERATIONS: 680 Bellerive Estates Drive is located in the floodplain.

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	**1.15**	PER 100 LF			10				12
	Riffle Pool Complex		PER 100 LF			10				
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)		PER 100 LF			10				
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**							**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		**32**
								TOTAL BENEFIT POINTS		**242**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$167**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.45**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-13: North Mason Road

Problem Description: In Fernridge Creek upstream and downstream of North Mason Road several issues were observed as follows. RDB erosion along an outside bend threatening an old structure at 871 North Mason Road with an exposed utility line causing a knickpoint about 150 ft upstream. Knickpoints on either side of the North Mason Road bridge with an exposed sanitary line on the upstream side. Threatened pedestrian bridge abutment south of Andrews Academy (888 North Mason Road). RDB erosion along the outside bend threatening the school court. Knickpoint at the tributary confluence. The affected parcels are private.

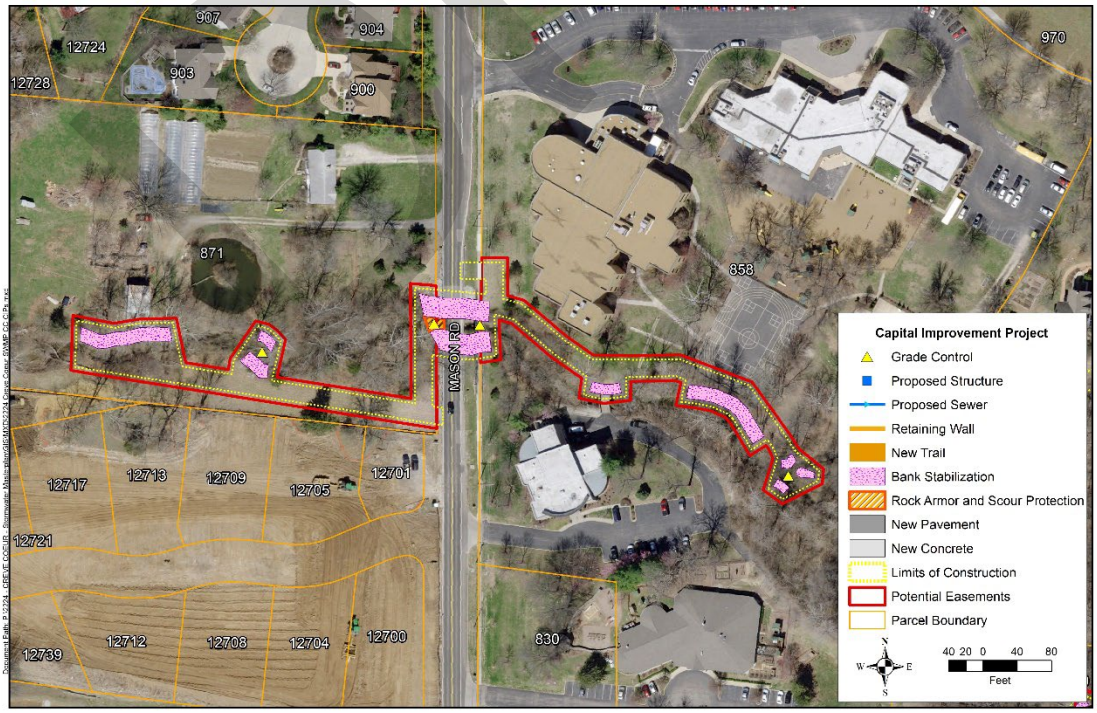


North Mason Road crossing



Threatened school court

Recommendation: Stabilize the RDB threatening the old structure and install a step grade control at the knickpoint. Install a step grade control and stilling basin downstream of North Mason Road and a grade control upstream. Stabilize the RDB to protect the threatened abutment. Stabilize the RDB to protect the school court. Install a step grade control at the confluence.



Conceptual Layout of CC-C-13

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-13 North Mason Road

Project Description: Bank stabilization, grade controls, and a stilling basin to address erosion and knickpoints threatening structures in Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.9	$ 12,000	$ 10,800
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.9	$ 5,000	$ 4,500
			Subtotal =	$ 18,300
			Contingency = 25%	$ 4,600
			TOTAL OPINION OF SURVEYING COST =	**$ 22,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	3	$ 1,000	$ 3,000
			Subtotal =	$ 11,500
			Contingency = 25%	$ 2,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 14,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
			Contingency = 25%	$ 24,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.9	$ 30,000	$ 27,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,590	$ 35	$ 55,700
Rock Grade Control	CY	145	$ 200	$ 29,000
Rock Stilling Basin / Outlet Scour Protection	CY	45	$ 100	$ 4,500
Rock Toe and Slope Protection	CY	225	$ 150	$ 33,800
Bank Stabilization	SY	970	$ 120.00	$ 116,400
Granular Backfill	CY	35	$ 55	$ 1,900
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	10	$ 100	$ 1,000
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.9	$ 50,000	$ 45,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 32,200	$ 32,200
			Subtotal =	$ 354,000
			Contingency = 30%	$ 106,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 460,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 619,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-13 North Mason Road DATE: 12/5/2023

PROJECT LOCATION: 900 North Mason Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion and knickpoints threatening structures in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 888 N Mason Rd school court*	150		100	1	25		100
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Pedestrian bridges*	20	2	12		3		40
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10	3	5		70

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-13 North Mason Road DATE: 12/5/2023

PROJECT LOCATION: 900 North Mason Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion and knickpoints threatening structures in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**220**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-13 North Mason Road DATE: 12/5/2023

PROJECT LOCATION: 900 North Mason Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion and knickpoints threatening structures in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**4.96**	PER 100 LF		10		50
	Riffle Pool Complex	**11.46**	PER 100 LF		10		115
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	11.46	PER 100 LF		10		115
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**		**100**
						TOTAL SOLUTION POINTS	**399**
						TOTAL BENEFIT POINTS	**619**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$620**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.00**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

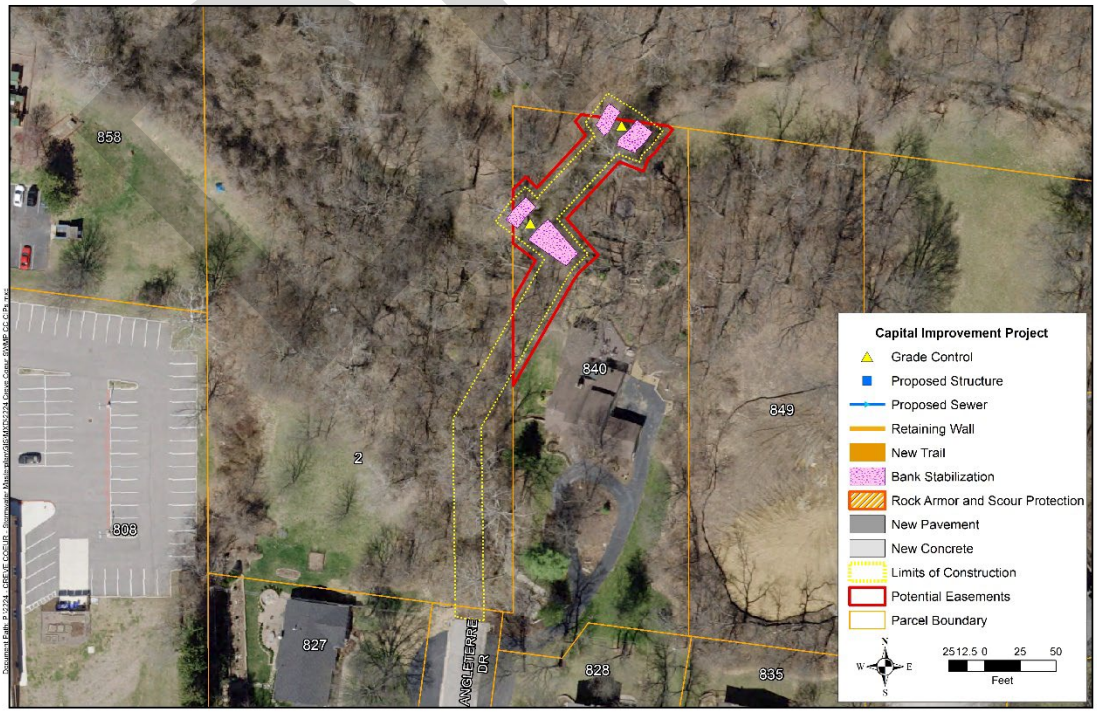
CC-C-14: 840 Angleterre Drive

Problem Description: Along a tributary to Fernridge Creek north of Angleterre Drive, two knickpoints were observed. There is also an exposed utility line. The affected parcels are private and public.

Recommendation: Install a step grade control at the knickpoint with the exposed utility and a grade control at the other knickpoint.



Knickpoint with exposed utility line



Conceptual Layout of CC-C-14

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-14 840 Angleterre Drive

Project Description: Grade controls with associated bank stabilization to address knickpoints in a tributary to Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 4,900
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 6,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	200	$ 35	$ 7,000
Rock Grade Control	CY	65	$ 200	$ 13,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	40	$ 150	$ 6,000
Bank Stabilization	SY	135	$ 120.00	$ 16,200
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 6,500	$ 6,500
			Subtotal =	$ 71,800
		Contingency =	30%	$ 21,500
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 93,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 156,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-14 840 Angleterre Drive DATE: 12/5/2023

PROJECT LOCATION: 840 Angleterre Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls with associated bank stabilization to address knickpoints in a tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5	1	25

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-14 840 Angleterre Drive DATE: 12/5/2023

PROJECT LOCATION: 840 Angleterre Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls with associated bank stabilization to address knickpoints in a tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**25**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-14 840 Angleterre Drive DATE: 12/5/2023

PROJECT LOCATION: 840 Angleterre Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls with associated bank stabilization to address knickpoints in a tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**0.7**	PER 100 LF		10		7
	Riffle Pool Complex	**3.58**	PER 100 LF		10		36
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	3.58	PER 100 LF		10		36
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**99**
						TOTAL BENEFIT POINTS	**124**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$156**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.79**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

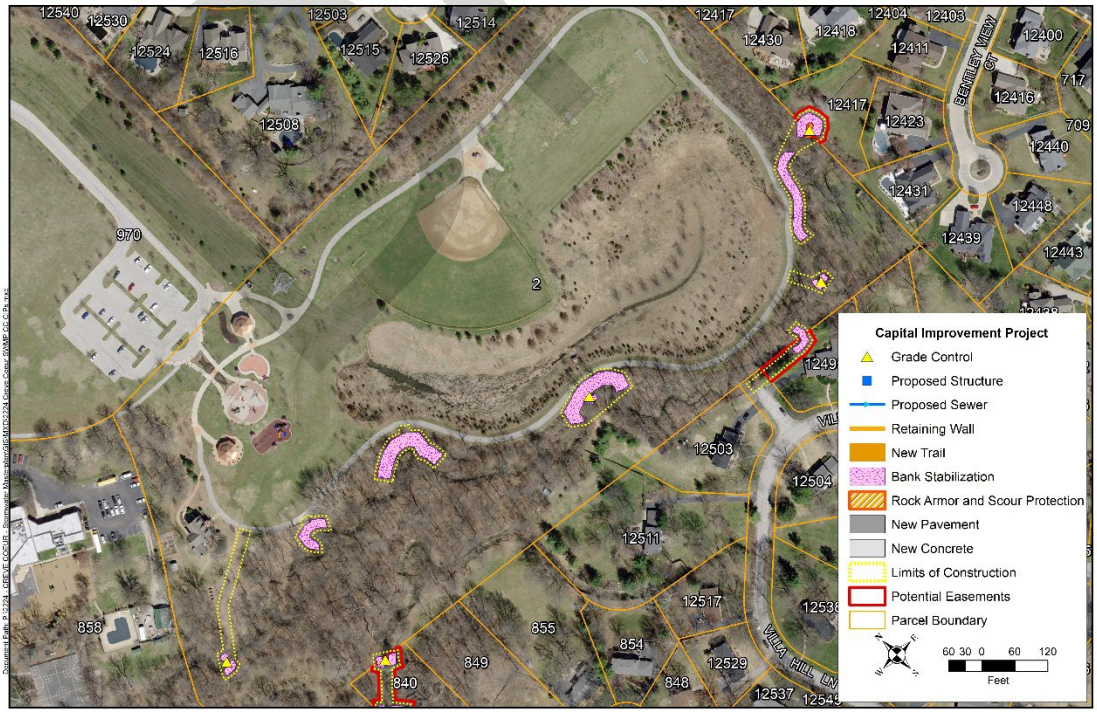
CC-C-15: Millenium Park

Problem Description: In Millenium Park several issues were identified along a tributary to Fernridge Creek as follows. Knickpoint at the west end of the property. Erosion along the outside bend threatening a sculpture. Three locations had erosion along the outside bend of the channel threatening the trail. Knickpoint north of 12511 Villa Hill Lane. Knickpoint northeast of 12495 Villa Hill Lane. Knickpoint at the outfalls on the east end of the property. The affected parcels are public and private.



Outside bend erosion

Recommendation: Install a grade control at the west knickpoint. Relocate the sculpture. Stabilize the RDB outside bends of the channel. Install a step grade control north of 12511 Villa Hill Lane and northeast of 12495 Villa Hill Lane. Install a step grade control and stilling basin at the east end of the property. This project will be combined with future project Millenium Park Phase 2.



Conceptual Layout of CC-C-15

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-15 Millenium Park

Project Description: Bank stabilization, grade controls, and a stilling basin to address erosion along a tributary to Fernridge Creek in Millenium Park. This project will be combined with future project Millenium Park Phase 2.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.8	$ 12,000	$ 9,600
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.8	$ 5,000	$ 4,000
			Subtotal =	$ 15,100
		Contingency =	25%	$ 3,800
		TOTAL OPINION OF SURVEYING COST =		**$ 18,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	100	$ 20	$ 2,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	4	$ 1,000	$ 4,000
			Subtotal =	$ 13,000
		Contingency =	25%	$ 3,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 16,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.8	$ 30,000	$ 24,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	3,605	$ 35	$ 126,200
Rock Grade Control	CY	105	$ 200	$ 21,000
Rock Stilling Basin / Outlet Scour Protection	CY	40	$ 100	$ 4,000
Rock Toe and Slope Protection	CY	290	$ 150	$ 43,500
Bank Stabilization	SY	1,560	$ 120.00	$ 187,200
Granular Backfill	CY	35	$ 55	$ 1,900
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.8	$ 50,000	$ 40,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 45,300	$ 45,300
			Subtotal =	$ 498,600
		Contingency =	30%	$ 149,600
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 648,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 805,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-15 Millenium Park DATE: 12/5/2023

PROJECT LOCATION: Millenium Park, 2 Barnes West Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion along a tributary to Fernridge Creek in Millenium Park. This project will be combined with future project Millenium Park Phase 2.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 24 Balcon Estates*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 24 Balcon Estates pool*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	4	10		5		80

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-15 Millenium Park DATE: 12/5/2023

PROJECT LOCATION: Millenium Park, 2 Barnes West Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion along a tributary to Fernridge Creek in Millenium Park. This project will be combined with future project Millenium Park Phase 2.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**80**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-15 Millenium Park DATE: 12/5/2023

PROJECT LOCATION: Millenium Park, 2 Barnes West Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion along a tributary to Fernridge Creek in Millenium Park. This project will be combined with future project Millenium Park Phase 2.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**8.52**	PER 100 LF		10		85
	Riffle Pool Complex	**9.57**	PER 100 LF		10		96
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	9.57	PER 100 LF		10		96
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**		**100**
						TOTAL SOLUTION POINTS	**397**
						TOTAL BENEFIT POINTS	**477**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$805**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.59**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

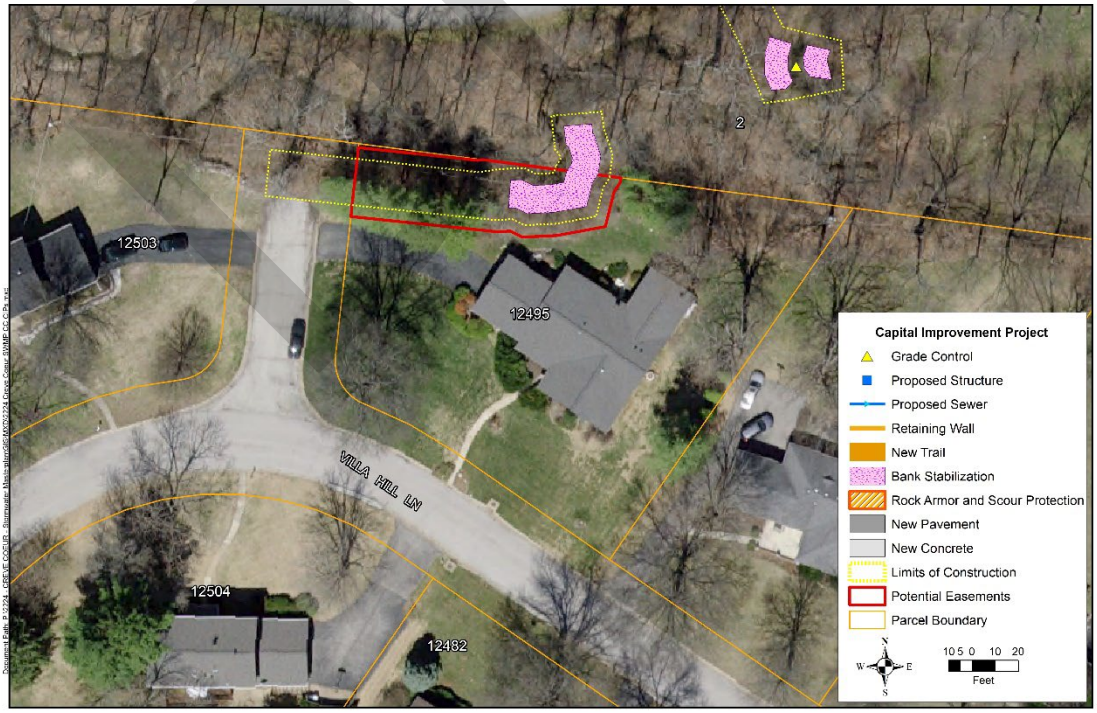
CC-C-16: Villa Hill Lane

Problem Description: Bank erosion along an outside bend threatening a retaining wall and fence was observed along a tributary to Fernridge Creek in the rear lot of 12495 Villa Hill Lane. The affected parcels are private and public.

Recommendation: Stabilize the outside bend.



Threatened fence and wall



Conceptual Layout of CC-C-16

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-16 Villa Hill Lane

Project Description: Bank stabilization to adress erosion threatening structures along an outside bend of Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 3,200
			Contingency = 25%	$ 800
			TOTAL OPINION OF SURVEYING COST =	**$ 4,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	90	$ 35	$ 3,200
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	25	$ 150	$ 3,800
Bank Stabilization	SY	80	$ 120.00	$ 9,600
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 3,000	$ 3,000
			Subtotal =	$ 33,400
			Contingency = 30%	$ 10,000
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 43,400**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 104,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-16 Villa Hill Lane DATE: 12/5/2023

PROJECT LOCATION: 12495 Villa Hill Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization to adress erosion threatening structures along an outside bend of Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 12495 Villa Hill Ln*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Retaining wall*	150	1	100		25		150
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-16 Villa Hill Lane DATE: 12/5/2023

PROJECT LOCATION: 12495 Villa Hill Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization to adress erosion threatening structures along an outside bend of Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**210**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-16 Villa Hill Lane DATE: 12/5/2023

PROJECT LOCATION: 12495 Villa Hill Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization to adress erosion threatening structures along an outside bend of Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**0.72**	PER 100 LF		10		7
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**27**
						TOTAL BENEFIT POINTS	**237**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$104**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **2.28**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

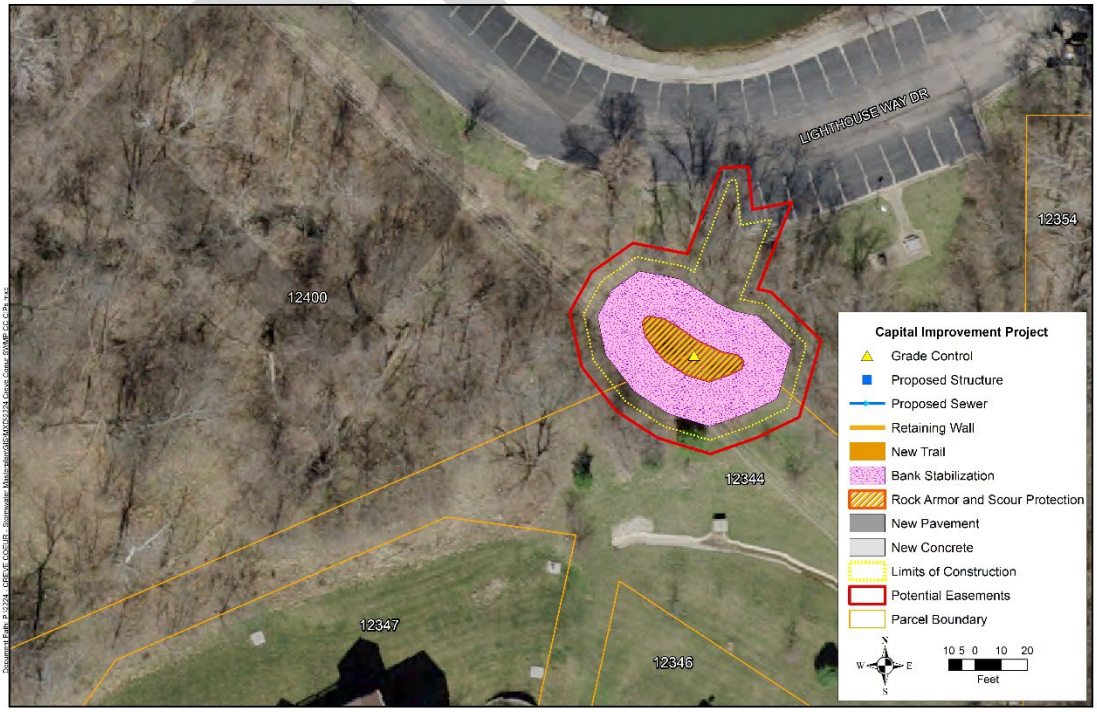
CC-C-17: 12344 Mulberry Tree Court

Problem Description: In a tributary to Fernridge Creek south of Lighthouse Way Drive two perched outfalls and a scour hole were observed. One of the outfalls has a large flanking hole on the side from piping. The affected parcels are private.

Recommendation: Install a step grade control and stilling basin.



Threatened fence



Conceptual Layout of CC-C-17

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-17 12344 Mulberry Tree Court

Project Description: Grade control and stilling basin to address perched outfalls and a scour hole in a tributary to Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 4,700
			Contingency = 25%	$ 1,200
			TOTAL OPINION OF SURVEYING COST =	**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	370	$ 35	$ 13,000
Rock Grade Control	CY	40	$ 200	$ 8,000
Rock Stilling Basin / Outlet Scour Protection	CY	70	$ 100	$ 7,000
Rock Toe and Slope Protection	CY	45	$ 150	$ 6,800
Bank Stabilization	SY	270	$ 120.00	$ 32,400
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 8,300	$ 8,300
			Subtotal =	$ 90,800
			Contingency = 30%	$ 27,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 118,000**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 180,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-17 12344 Mulberry Tree Court DATE: 12/5/2023

PROJECT LOCATION: 12344 Mulberry Tree Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and stilling basin to address perched outfalls and a scour hole in a tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-17 12344 Mulberry Tree Court DATE: 12/5/2023

PROJECT LOCATION: 12344 Mulberry Tree Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and stilling basin to address perched outfalls and a scour hole in a tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-17 12344 Mulberry Tree Court DATE: 12/5/2023

PROJECT LOCATION: 12344 Mulberry Tree Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and stilling basin to address perched outfalls and a scour hole in a tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.04**	PER 100 LF		10		20
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**40**
						TOTAL BENEFIT POINTS	**40**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$181**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.22**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

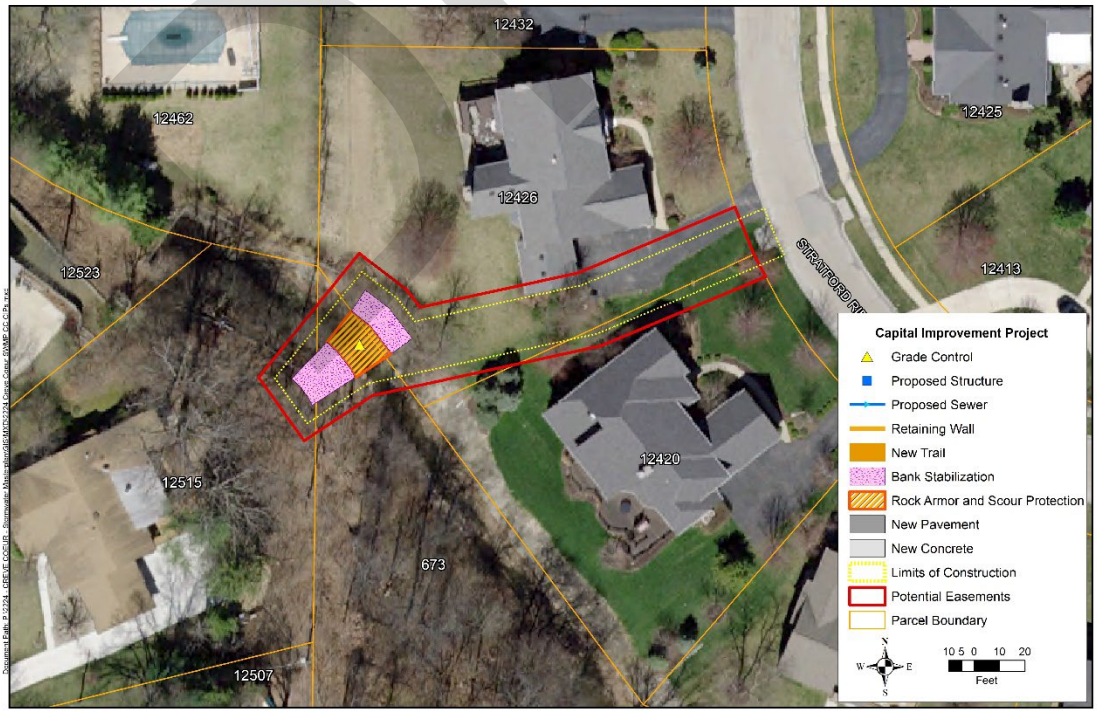
CC-C-18: 12426 Stratford Ridge Court

Problem Description: In Fernridge Creek behind 12426 Stratford Ridge Court failing reno mat and grouted riprap was observed. The affected parcels are private.

Recommendation: Install a grade control and stilling basin.



Failing reno mat



Conceptual Layout of CC-C-18

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-18 12426 Stratford Ridge Court

Project Description: Grade control and stilling basin to address failing grouted riprap in Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 7,700
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF SURVEYING COST =	**$ 9,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	165	$ 35	$ 5,800
Rock Grade Control	CY	50	$ 200	$ 10,000
Rock Stilling Basin / Outlet Scour Protection	CY	50	$ 100	$ 5,000
Rock Toe and Slope Protection	CY	20	$ 150	$ 3,000
Bank Stabilization	SY	60	$ 120.00	$ 7,200
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 4,600	$ 4,600
			Subtotal =	$ 50,700
			Contingency = 30%	$ 15,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 65,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 132,100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-18 12426 Stratford Ridge Court DATE: 12/5/2023

PROJECT LOCATION: 12426 Stratford Ridge Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and stilling basin to address failing grouted riprap in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-18 12426 Stratford Ridge Court DATE: 12/5/2023

PROJECT LOCATION: 12426 Stratford Ridge Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and stilling basin to address failing grouted riprap in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**20**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-18 12426 Stratford Ridge Court DATE: 12/5/2023

PROJECT LOCATION: 12426 Stratford Ridge Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and stilling basin to address failing grouted riprap in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**0.4**	PER 100 LF		10		4
	Riffle Pool Complex	**2.66**	PER 100 LF		10		27
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	2.66	PER 100 LF		10		27
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**77**
						TOTAL BENEFIT POINTS	**97**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$132**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.74**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-19: Questover Lane



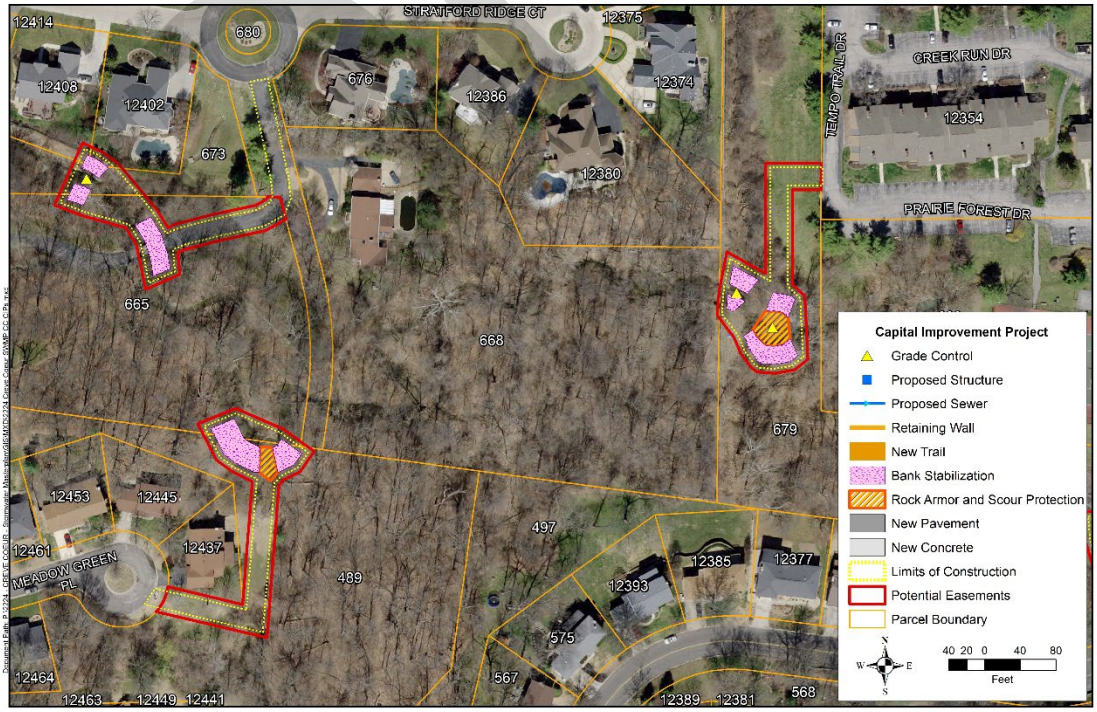
Bridge abutment



Exposed manhole and pipe

Problem Description: In Fernridge Creek between Questover Lane and Prairie Forest Drive several issues were observed as follows. Knickpoint in the rear lot of 12402 Stratford Ridge Court. Exposed utility pipe, failing grouted riprap, and an undermined abutment at the 665 Questover Lane driveway crossing. Erosion along the outside LDB of the channel with an exposed utility pipe, manhole, and telephone pedestal northeast of 12445 Meadow Green Place. Knickpoint and perched concrete spillway southeast of 12380 Whitworth Terrace Court. Knickpoint along tributary south of Prairie Forest Drive and a scour hole at the outfall. The affected parcels are private.

Recommendation: Install a grade control at the knickpoint behind 12402 Stratford Ridge Court. Stabilize the RDB to protect the bridge abutment. Stabilize the LDB to protect the manhole and utility pedestal and rock armor the outfall swale. Install a step grade control at the knickpoint southeast of 12380 Whitworth Terrace Court. Install a step grade control and stilling basin downstream of the concrete spillway. Install a step grade control and stilling basin at the tributary knickpoint and outfall.



Conceptual Layout of CC-C-19

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-19 Questover Lane

Project Description: Bank stabilization, grade controls, and stilling basins to address erosion in Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.8	$ 12,000	$ 9,600
Prepare Easement Plat and Scripts	EACH	6	$ 1,500	$ 9,000
Contruction Staking and As-Built Surveying	ACRE	0.8	$ 5,000	$ 4,000
			Subtotal =	$ 22,600
			Contingency = 25%	$ 5,700
			TOTAL OPINION OF SURVEYING COST =	**$ 28,300**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	3	$ 1,000	$ 3,000
			Subtotal =	$ 11,500
			Contingency = 25%	$ 2,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 14,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.8	$ 30,000	$ 24,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	2,380	$ 35	$ 83,300
Rock Grade Control	CY	200	$ 200	$ 40,000
Rock Stilling Basin / Outlet Scour Protection	CY	185	$ 100	$ 18,500
Rock Toe and Slope Protection	CY	225	$ 150	$ 33,800
Bank Stabilization	SY	775	$ 120.00	$ 93,000
Granular Backfill	CY	50	$ 55	$ 2,800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	60	$ 50	$ 3,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.8	$ 50,000	$ 40,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 34,400	$ 34,400
			Subtotal =	$ 378,300
			Contingency = 30%	$ 113,500
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 491,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 614,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-19 Questover Lane DATE: 12/5/2023

PROJECT LOCATION: 665 Questover Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Undermined driveway bridge*	20	2	12		3		40
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-19 Questover Lane DATE: 12/5/2023

PROJECT LOCATION: 665 Questover Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**80**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-19 Questover Lane DATE: 12/5/2023

PROJECT LOCATION: 665 Questover Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**3.72**	PER 100 LF		10		37
	Riffle Pool Complex	**4.42**	PER 100 LF		10		44
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	4.42	PER 100 LF		10		44
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**136**
						TOTAL BENEFIT POINTS	**216**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$615**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.35**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-20: Falaise Drive

Problem Description: In Fernridge Creek between Cross Creek Drive and Royal Valley Drive several issues were observed as follows. Two knickpoints and wingwalls being flanked downstream of Cross Creek Drive. Knickpoint caused by an exposed utility line. Knickpoint at the upstream outfall. The affected parcels are private.

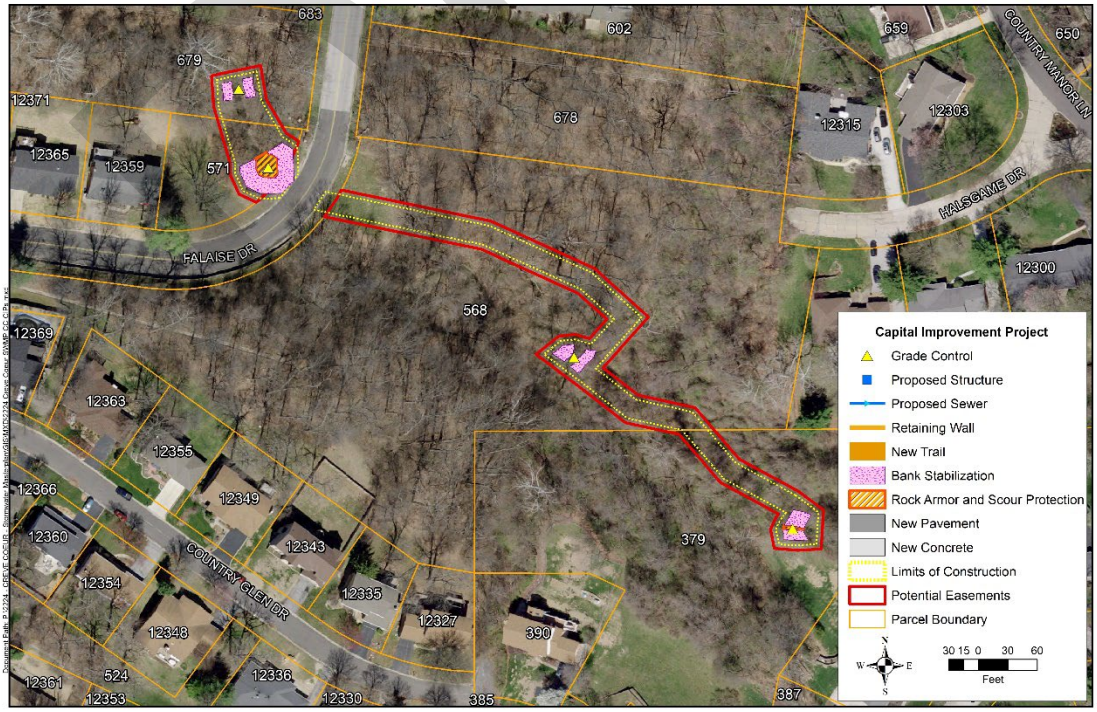
Recommendation: Install step grade controls at the knickpoints downstream of Cross Creek Drive and a stilling basin at the outfall. Install a step grade control at the exposed utility line. Install a step grade control and stilling basin at the upstream outfall.



Cross Creek Drive outfall



Exposed utility line



Conceptual Layout of CC-C-20

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-20 Falaise Drive

Project Description: Bank stabilization, grade controls, and stilling basins to address knickpoints in Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 14,500
			Contingency = 25%	$ 3,600
			TOTAL OPINION OF SURVEYING COST =	**$ 18,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	765	$ 35	$ 26,800
Rock Grade Control	CY	140	$ 200	$ 28,000
Rock Stilling Basin / Outlet Scour Protection	CY	85	$ 100	$ 8,500
Rock Toe and Slope Protection	CY	85	$ 150	$ 12,800
Bank Stabilization	SY	325	$ 120.00	$ 39,000
Granular Backfill	CY	25	$ 55	$ 1,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 16,400	$ 16,400
			Subtotal =	$ 180,400
			Contingency = 30%	$ 54,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 234,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 345,100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-20 Falaise Drive DATE: 12/5/2023

PROJECT LOCATION: 571 Falaise Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address: Cross Creek Dr, undermined culvert*	35	3	25		6		105
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-20 Falaise Drive DATE: 12/5/2023

PROJECT LOCATION: 571 Falaise Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**145**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-20 Falaise Drive DATE: 12/5/2023

PROJECT LOCATION: 571 Falaise Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.47**	PER 100 LF		10		25
	Riffle Pool Complex	**4.71**	PER 100 LF		10		47
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	4.71	PER 100 LF		10		47
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**139**
						TOTAL BENEFIT POINTS	**284**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$345**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.82**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-21: Blackheath Court and Country Manor Lane

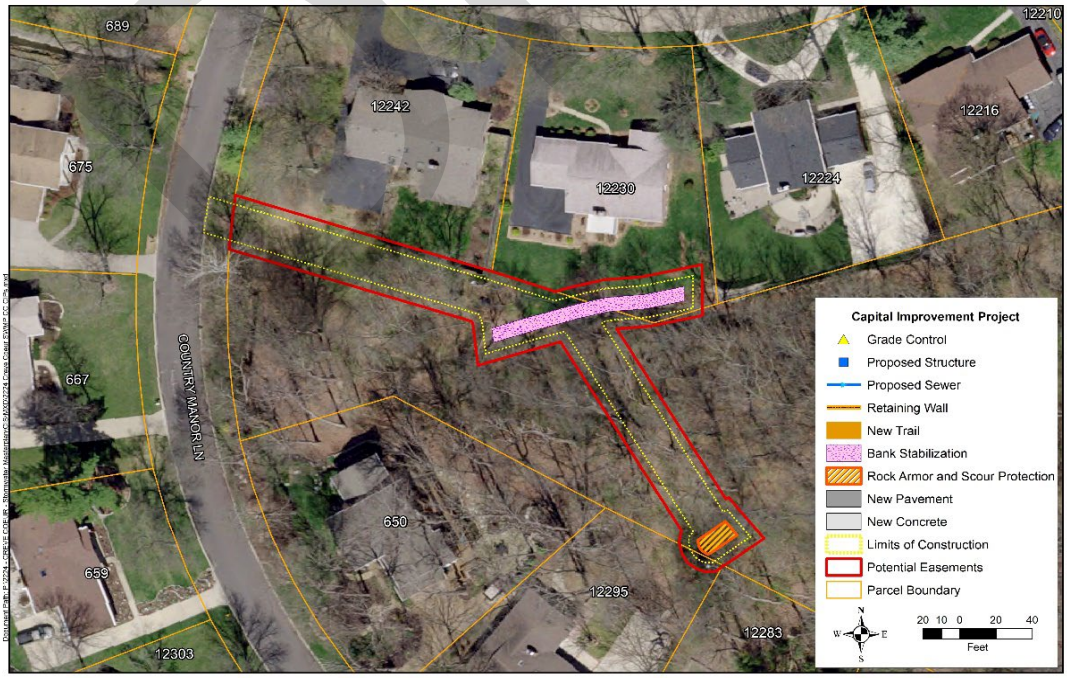
Problem Description: In an upper tributary to Fernridge Creek erosion was observed along the RDB in the rear yard of 12230 Blackheath Court. Erosion at the outfall behind 12295 Country Manor Lane was also reported. The affected parcels are private.

Recommendation: Stabilize the RDB and rock armor the pipe outfall.



RDB erosion

Draft



Conceptual Layout of CC-C-21

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-21 Blackheath Court and Country Manor Lane

Project Description: Bank stabilization and rock armoring to address erosion in an upper tributary to Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
			Contingency = 25%	$ 2,400
			TOTAL OPINION OF SURVEYING COST =	**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	100	$ 35	$ 3,500
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	85	$ 150	$ 12,800
Bank Stabilization	SY	95	$ 120.00	$ 11,400
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 5,100	$ 5,100
			Subtotal =	$ 55,600
			Contingency = 30%	$ 16,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 72,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 140,700**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-21 Blackheath Court and Country Manor Lane DATE: 12/5/2023

PROJECT LOCATION: 12230 Blackheath Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and rock armoring to address erosion in an upper tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-21 Blackheath Court and Country Manor Lane DATE: 12/5/2023

PROJECT LOCATION: 12230 Blackheath Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and rock armoring to address erosion in an upper tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-21 Blackheath Court and Country Manor Lane DATE: 12/5/2023

PROJECT LOCATION: 12230 Blackheath Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and rock armoring to address erosion in an upper tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.08**	PER 100 LF		10		11
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**31**
						TOTAL BENEFIT POINTS	**31**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$141**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.22**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

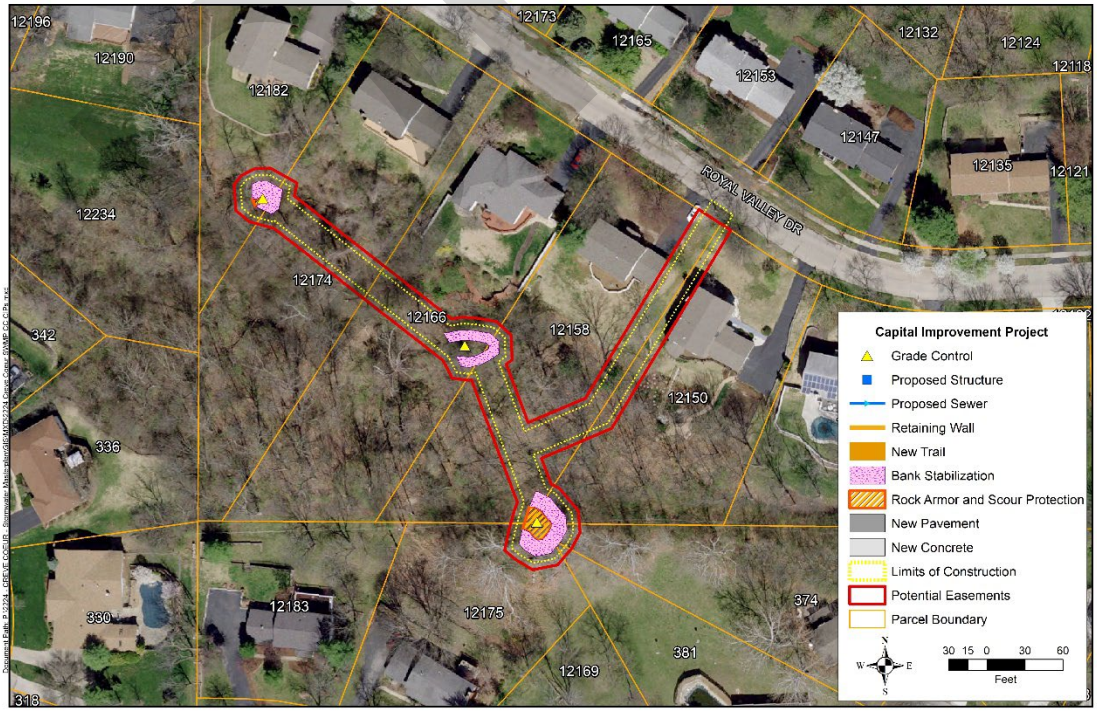
CC-C-22: Royal Valley Drive

Problem Description: In Fernridge Creek between Royal Valley Drive and Hibler Court several issues were observed as follows. Failed pipe segment with a knickpoint in the rear lot of 12182 Royal Valley Drive. Perched outfall and erosion threatening residential fence in the rear lot of 12166 Royal Valley Drive. Knickpoint and pipe section failure at the upstream end of the channel. The affected parcels are private.



Threatened fence

Recommendation: Install a step grade control and stilling basin in the rear lot of 12182 Royal Valley Drive. Install a step grade control at the perched outfall. Install a step grade control and stilling basin at the upstream end of the channel.



Conceptual Layout of CC-C-22

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-22 Royal Valley Drive

Project Description: Grade controls and stilling basins to address knickpoints in Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.3	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	8	$ 1,500	$ 12,000
Contruction Staking and As-Built Surveying	ACRE	0.3	$ 5,000	$ 1,500
			Subtotal =	$ 17,100
			Contingency = 25%	$ 4,300
			TOTAL OPINION OF SURVEYING COST =	**$ 21,400**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.3	$ 30,000	$ 9,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	475	$ 35	$ 16,600
Rock Grade Control	CY	110	$ 200	$ 22,000
Rock Stilling Basin / Outlet Scour Protection	CY	65	$ 100	$ 6,500
Rock Toe and Slope Protection	CY	65	$ 150	$ 9,800
Bank Stabilization	SY	215	$ 120.00	$ 25,800
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 11,200	$ 11,200
			Subtotal =	$ 123,500
			Contingency = 30%	$ 37,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 160,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 239,300**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-22 Royal Valley Drive DATE: 12/5/2023

PROJECT LOCATION: 12182 Royal Valley Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls and stilling basins to address knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-22 Royal Valley Drive DATE: 12/5/2023

PROJECT LOCATION: 12182 Royal Valley Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls and stilling basins to address knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-22 Royal Valley Drive DATE: 12/5/2023

PROJECT LOCATION: 12182 Royal Valley Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls and stilling basins to address knickpoints in Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.32**	PER 100 LF		10		23
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**33**
						TOTAL BENEFIT POINTS	**33**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$239**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.14**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

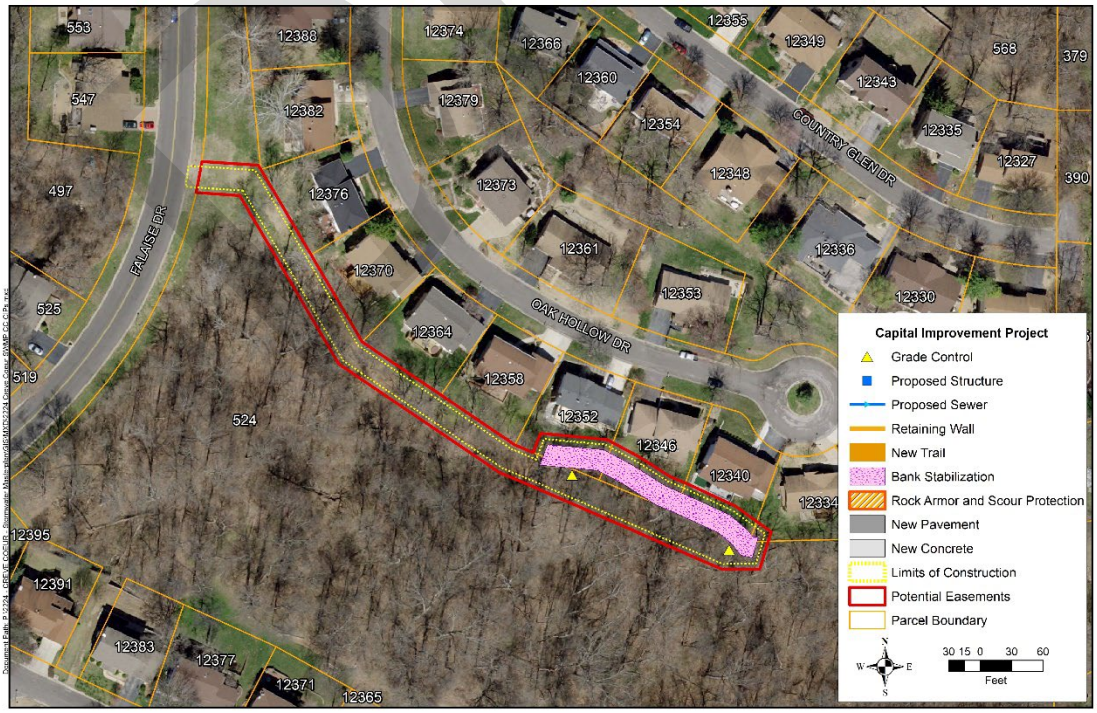
Draft

CC-C-23: Oak Hollow Drive

Problem Description: In an upper tributary to Fernridge Creek between Oak Hollow Drive and Woodline Drive several issues were reported as follows. Erosion along the RDB threatening the backyards of 12340, 12346, and 12352 Oak Hollow Drive. Two minor tributaries downcutting in the common ground (524 Falaise Drive). The affected parcels are private.

Recommendation: Stabilize the RDB along Oak Hollow Drive and install grade controls at the minor tributary confluences.

Draft



Conceptual Layout of CC-C-23

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-23 Oak Hollow Drive

Project Description: Bank stabilization and grade controls to address erosion threatening structures along an upper tributary to Fernridge Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 16,000
			Contingency = 25%	$ 4,000
			TOTAL OPINION OF SURVEYING COST =	**$ 20,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	415	$ 35	$ 14,500
Rock Grade Control	CY	60	$ 200	$ 12,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	100	$ 150	$ 15,000
Bank Stabilization	SY	500	$ 120.00	$ 60,000
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 14,900	$ 14,900
			Subtotal =	$ 163,700
			Contingency = 30%	$ 49,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 212,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 323,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-23 Oak Hollow Drive DATE: 12/5/2023

PROJECT LOCATION: 12346 Oak Hollow Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures along an upper tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 12346, 12352, and 12358 Oak Hollow Dr*	300		200	1	50	2	300
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	3	lots	10 points per lot				30
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-23 Oak Hollow Drive DATE: 12/5/2023

PROJECT LOCATION: 12346 Oak Hollow Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures along an upper tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						370

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-23 Oak Hollow Drive DATE: 12/5/2023

PROJECT LOCATION: 12346 Oak Hollow Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures along an upper tributary to Fernridge Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.25**	PER 100 LF		10		23
	Riffle Pool Complex	**4.45**	PER 100 LF		10		45
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	4.45	PER 100 LF		10		45
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**132**
						TOTAL BENEFIT POINTS	**502**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$323**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.55**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-03: Ferntrails Lane

Problem description: Flooding of a sinkhole area which was reportedly mowed in the past but now floods frequently.



Sinkhole

Recommendation: Build berm and swale to shift overland flow path away from the houses. Study the potential to increase storage capacity of the sinkhole and increasing drainage area to the detention basin behind the Holy Cross Evangelical Lutheran Church.

Special Considerations: Investigate the area for a natural outlet that can be cleaned out and protected against clogging. Storage capacity of sinkhole should not be decreased as overflow goes to another sinkhole area to the west.



Conceptual Layout of CC-S-03

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-03 Ferntrails Lane

Project Description: Berm and swale to shift overland flow away from houses.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.20	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.20	$ 5,000	$ 1,000
			Subtotal =	$ 4,900
			Contingency = 25%	$ 1,200
			TOTAL OPINION OF SURVEYING COST =	**$ 6,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	190	$ 15	$ 2,900
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 12,900
			Contingency = 30%	$ 3,900
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 16,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 78,300**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-03: Ferntrails Lane DATE: 11/14/2023

PROJECT LOCATION: 13096 Ferntrails Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm and swale to shift overland flow away from houses.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-03: Ferntrails Lane DATE: 11/14/2023

PROJECT LOCATION: 13096 Ferntrails Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm and swale to shift overland flow away from houses.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-03: Ferntrails Lane DATE: 11/14/2023

PROJECT LOCATION: 13096 Ferntrails Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm and swale to shift overland flow away from houses.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**20**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$78**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.26**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-04: Fernpark Drive

Problem description: Yard and basement flooding at 1032 Fernpark Drive.

Recommendation: Construct yard drain at soutwest corner of property to collect flow from adjacent property. Pipe to street and construct curb inlet and pipe to existing inlet (16P4-017D) to the north. Construct a swale along the south side of the house.

Special Considerations: Owner recently installed french drain system along south side of house. Monitor situation to see if this has solved the issue.



South side of house looking east



Conceptual Layout of CC-S-04

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-04 Fernpark Drive

Project Description: Swale, yard drain, storm sewer, and curb inlet to address yard and basement flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.05	$ 12,000	$ 600
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.05	$ 5,000	$ 300
			Subtotal =	$ 3,900
			Contingency = 25%	$ 1,000
			TOTAL OPINION OF SURVEYING COST =	**$ 4,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	24.00	$ 55	$ 1,300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	2	$ 3,500	$ 7,000
Sewer Pipe Small	LF	180	$ 140	$ 25,200
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA	1	$ 3,130	$ 3,100
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	64	$ 15	$ 1,000
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 42,600
			Contingency = 30%	$ 12,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 55,400**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 115,700**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-04: Fernpark Drive DATE: 11/14/2023

PROJECT LOCATION: 1032 Fernpark Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, yard drain, storm sewer, and curb inlet to address yard and basement flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-04: Fernpark Drive DATE: 11/14/2023

PROJECT LOCATION: 1032 Fernpark Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, yard drain, storm sewer, and curb inlet to address yard and basement flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200	1	50		200
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**220**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-04: Fernpark Drive DATE: 11/14/2023

PROJECT LOCATION: 1032 Fernpark Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, yard drain, storm sewer, and curb inlet to address yard and basement flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY											
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000				
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50				
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit					
	Bioswales		PER 100 LF			10					
	Forebays		AC			200					
	Wet Ponds		AC			100					
	Wetlands		AC			50					
	Biostabilization of banks (per bank)		PER 100 LF			10					
	Riffle Pool Complex		PER 100 LF			10					
	4.2. Eliminates combined sewer (per project)		EA			100					
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10					
	4.4 Preserves natural resource areas	No. Units				Points per Unit					
	Lakes, Wetlands, etc.		AC			30					
	Natural Corridor (min. 25ft width)		PER 100 LF			10					
	4.5 Conservation Easement		EA			20					
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)				
	Points for Easements		**20**					**20**			
	5.2. Recreational/Educational	Yes = 100 No = 0 pts									
								TOTAL SOLUTION POINTS			**20**
								TOTAL BENEFIT POINTS			**240**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$116**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **2.07**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-05: 740 North Mason Road

Problem description: Houses on the south side of Villa Hill Lane sit lower than the cemetery to the south. The majority of the cemetery has a swale and berm along the property line and being a cemetery has little impervious area.



Eroded berm at inlet

Recommendation: Construct or reconstruct the berm and swale along the north property line. Swale should be reinforced with Instaturf ShearForce. Construct berm around existing inlet 17P3-063D.

Special Considerations: Recommendation is for surface flow, for groundwater and wet yards days after rains an underdrain system is recommended for those property owners that have this issue.



Conceptual Layout of CC-S-05

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-05 740 North Mason Road

Project Description: Reconstructed berm and swale to contain overland flow in the cemetery.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.70	$ 12,000	$ 8,400
Prepare Easement Plat and Scripts	EACH	14	$ 1,500	$ 21,000
Contruction Staking and As-Built Surveying	ACRE	0.70	$ 5,000	$ 3,500
			Subtotal =	$ 32,900
			Contingency = 25%	$ 8,200
			TOTAL OPINION OF SURVEYING COST =	**$ 41,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	1,162	$ 15	$ 17,400
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 32,400
			Contingency = 30%	$ 9,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 42,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 138,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-05: 740 North Mason Road DATE: 11/14/2023

PROJECT LOCATION: 740 North Mason Road, St. Louis, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Reconstructed berm and swale to contain overland flow in the cemetery.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-05: 740 North Mason Road DATE: 11/14/2023

PROJECT LOCATION: 740 North Mason Road, St. Louis, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Reconstructed berm and swale to contain overland flow in the cemetery.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6	12	0		**72**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		4	Points/lot:		10	40
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**142**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-05: 740 North Mason Road DATE: 11/14/2023

PROJECT LOCATION: 740 North Mason Road, St. Louis, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Reconstructed berm and swale to contain overland flow in the cemetery.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements				**5**			**5**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**5**
							TOTAL BENEFIT POINTS	**147**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$139**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.06**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-06: Aurburndale Drive

Problem description: Street flooding on North Mason Road at Aurburndale Drive.



East side of North Mason Road

Recommendation: Construct shoulder and swale on both sides of the road from North Walling Drive to Mason Forest Drive and extend a storm sewer on the west side north halfway to North Walling Drive from existing inlet 17P3-031D. Overlay North Mason Road with a better defined cross slope and possibly adjust the street profile.

Special Considerations: On the east side south of Aurburndale Drive grading may dictate inlets set over the existing storm sewer. North of Aurburndale Drive on the east side a curb maybe needed due to the adjacent sidewalk and the elevation difference between the street pavement and the sidewalk.



Conceptual Layout of CC-S-06

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-06 Auburndale Drive

Project Description: Shoulder and swale along N Mason Rd to address street flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.05	$ 12,000	$ 600
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.05	$ 5,000	$ 300
			Subtotal =	$ 3,900
			Contingency = 25%	$ 1,000
			TOTAL OPINION OF SURVEYING COST =	**$ 4,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	2	$ 3,500	$ 7,000
Sewer Pipe Small	LF	348	$ 140	$ 48,700
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	1,225	$ 15	$ 18,400
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	15.6	$ 100	$ 1,600
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.4	$ 50,000	$ 20,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 98,100
			Contingency = 30%	$ 29,400
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 127,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 187,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-06: Auburndale Drive DATE: 11/14/2023

PROJECT LOCATION: 39 Auburndale Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Shoulder and swale along N Mason Rd to address street flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-06: Auburndale Drive DATE: 11/14/2023

PROJECT LOCATION: 39 Auburndale Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Shoulder and swale along N Mason Rd to address street flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*		350		250		65		
		Basement (1 lot per structure)* *Address:*		250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*		300		200		50		
		If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	*	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*		100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*		50		35		12		
		Yard Flooding (1 per lot) *Address:*		10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*		200		150		25	2	50
		Traffic obstruction (> 6" of water) on arterial street *Address:*		50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*		25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*		10		6		1		
		Ponding (per ponding area) *Address:*		No. Ponds:		2	Points/pond:		5	10
	2.2.	Moderate Risk Erosion of misc. structures *Address:*		No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*		No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)		Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition						0		0
				TOTAL PROBLEM POINTS						**60**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-06: Auburndale Drive DATE: 11/14/2023

PROJECT LOCATION: 39 Auburndale Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Shoulder and swale along N Mason Rd to address street flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**					**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**20**
							TOTAL BENEFIT POINTS	**80**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$188**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.43**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-07: Mason Forest Drive

Problem description: Yard flooding at 12574 Mason Forest Drive and 416 Hibler Woods Court due to yard grading and adjacent runoff. Street and structural flooding at 12602 Mason Forest Drive which may be partially due to flow bypassing inlets.



Inlet 17P3-011D

Recommendation: Construct swale in the rear of #12574 and install a manhole with a slotted cover over the existing storm sewer. Open all four sides of inlet 17P3-011D. Modify other inlets as needed to minimize bypass and increase inlet capacity.

Special Considerations: Hydraulic analysis of storm sewer system is needed that accounts for potential bypass at inlets and inlet capacity. Analysis should include culvert at Hibler Road and the open channel on 21614 Mason Forest Drive. Initial analyis shows adequate capacity of 36" pipe at #21614.



Conceptual Layout of CC-S-07

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-07 Mason Forest Drive

Project Description: Swale, slotted manhole, and inlet modifications to address yard, street, and structural flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 4,700
			Contingency = 25%	$ 1,200
			TOTAL OPINION OF SURVEYING COST =	**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	1	$ 3,500	$ 3,500
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	52	$ 15	$ 800
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 9,300
			Contingency = 30%	$ 2,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 12,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 73,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-07: Mason Forest Drive DATE: 11/14/2023

PROJECT LOCATION: 12574 Mason Forest Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, slotted manhole, and inlet modifications to address yard, street, and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-07: Mason Forest Drive DATE: 11/14/2023

PROJECT LOCATION: 12574 Mason Forest Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, slotted manhole, and inlet modifications to address yard, street, and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200	1	50		200
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y	50	50
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35	1	12		35
		Yard Flooding (1 per lot) *Address:*	10		6	3	0		**18**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25	0	
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6	1	1		6
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**324**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-07: Mason Forest Drive DATE: 11/14/2023

PROJECT LOCATION: 12574 Mason Forest Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, slotted manhole, and inlet modifications to address yard, street, and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**344**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$73**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **4.69**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

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South Creve Coeur Creek Watershed

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South Creve Coeur Creek Watershed

PP Number	Project Name
CC-C-24	17 Chamblee Lane
CC-C-25	Chasselle and Chamblee Lane
CC-C-26	Chamonix Court
CC-C-27	Montsouris Drive
CC-C-28	2 Chasselle Lane
CC-C-29	Royal Manor Drive
CC-C-30	151 Royal Gate Drive
CC-C-31	Boothbay Court
CC-C-32	Conway Downs Drive
CC-C-33	Bellington Lane
CC-C-34	Williamsburg Road
CC-C-35	12 Broadview Farm Road
CC-C-36	438 Twin Creek Road
CC-C-37	Balcon Estates
CC-S-01	Cuiseaux Court
CC-S-02	Broadview Farms Subdivision
CC-S-08	228 Falling Leaves Court
CC-S-09	252 Bellington Lan
CC-S-10	12229 Ladue Woods Drive

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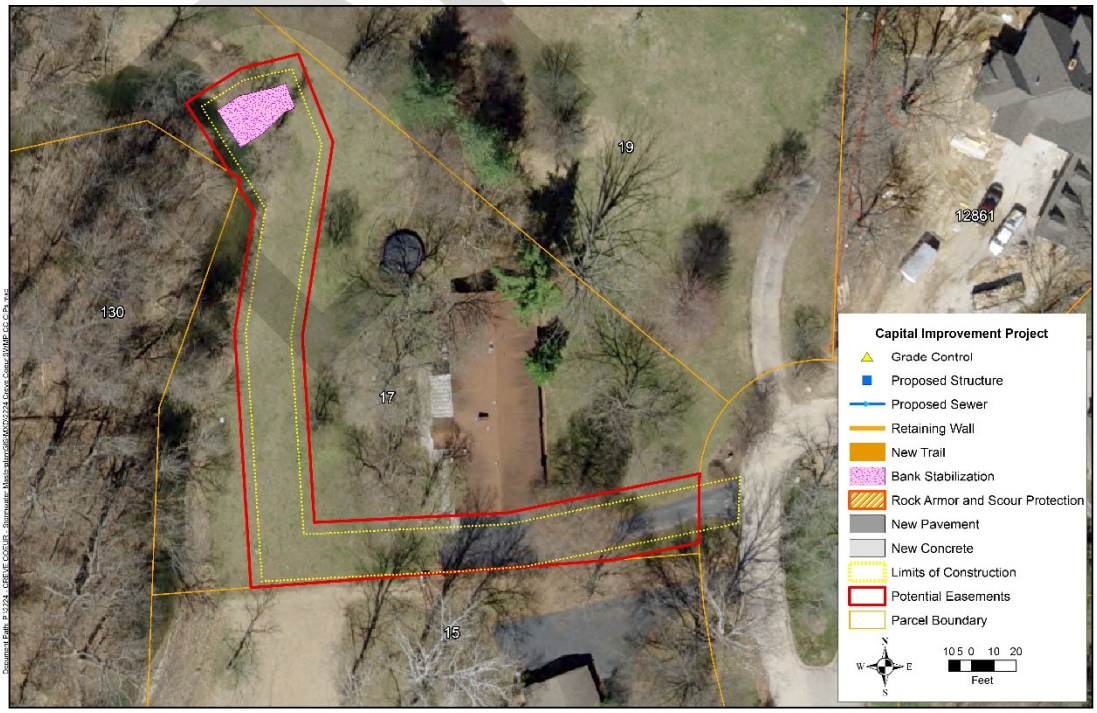
CC-C-24: 17 Chamblee Lane

Problem Description: There is bank sloughing along an outside bend of Smith Creek in the rear lot of 17 Chamblee Lane. The top of the bank is 5 feet from two exposed manholes surrounded by sinkholes. The affected parcel is private.

Recommendation: Stabilize the outside bend of the channel and fill the area surrounding the manholes with compacted fill.



Bank sloughing and sinkholes



Conceptual Layout of CC-C-24

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-24 17 Chamblee Lane

Project Description: Bank stabilization and fill to address sloughing and sinkholes along Smith Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 4,900
			Contingency = 25%	$ 1,200
			TOTAL OPINION OF SURVEYING COST =	**$ 6,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	30	$ 35	$ 1,100
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	10	$ 150	$ 1,500
Bank Stabilization	SY	60	$ 120.00	$ 7,200
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 3,200	$ 3,200
			Subtotal =	$ 35,500
			Contingency = 30%	$ 10,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 46,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 108,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-24 17 Chamblee Lane DATE: 12/5/2023

PROJECT LOCATION: 17 Chamblee Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and fill to address sloughing and sinkholes along Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-24 17 Chamblee Lane DATE: 12/5/2023

PROJECT LOCATION: 17 Chamblee Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and fill to address sloughing and sinkholes along Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-24 17 Chamblee Lane DATE: 12/5/2023

PROJECT LOCATION: 17 Chamblee Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and fill to address sloughing and sinkholes along Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**0.2**	PER 100 LF		10		2
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**22**
						TOTAL BENEFIT POINTS	**22**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$109**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.20**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

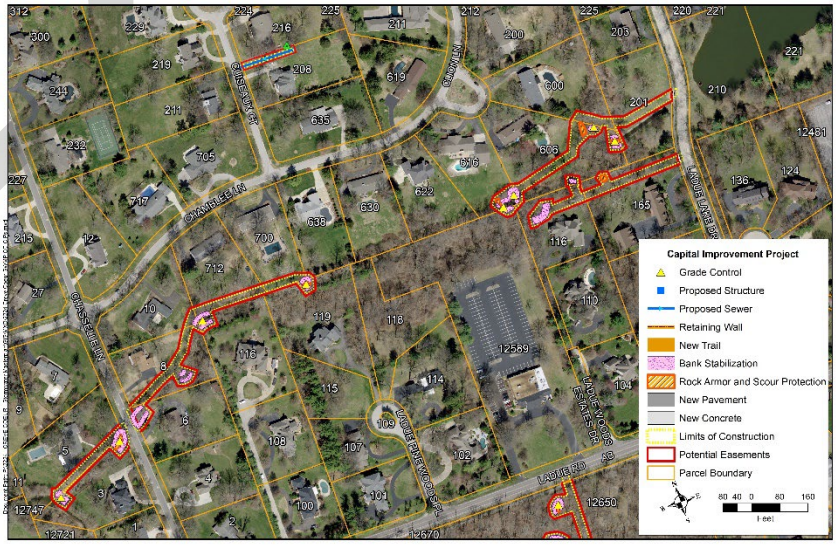
CC-C-25: Chasselle and Chamblee Lane



Downstream of Chasselle Ln culvert

Problem Description: Along a tributary to Smith Creek, several issues were observed between the confluence and Ladue Lake Drive as follows. An exposed sanitary line causing a knickpoint at the confluence. Erosion along both banks on either side of the Chasselle Lane culvert with a knickpoint downstream. A pedestrian bridge with undermined abutments in the rear lot of 10 Chamblee Lane. Knickpoint along the outside bend of the channel with erosion threatening a pipe and utility pole southeast of 10 Chamblee Lane. Perched outfall with a scour hole and bank erosion in the rear lot of 700 Chamblee Ln. Perched outfall between the rear lots of 606 and 616 Chamblee Lane as well as an incised drainage way. Erosion along the outside bend of the channel threatening the retaining wall in the rear lot of 116 Ladue Woods Estates Drive. Threatened utility pole at top of bank in the rear lot of 116 Ladue Woods Estates Drive. Perched outfall northeast of 116 Ladue Woods Estates Drive. Incision along a minor tributary and a knickpoint at the end of a concrete swale southeast of 606 Chamblee Lane. Knickpoint and bank erosion at the end of the concrete channel coming from the Ladue Lake Drive culvert. The affected parcels are private.

Recommendation: Install a step grade control at the confluence. Stabilize both banks upstream and downstream of the Chasselle Lane culvert and install a step grade control and stilling basin downstream. Stabilize both banks around the pedestrian bridge. Install a step grade control southeast of 10 Chamblee Lane. Install a grade control and stilling basin at the perched outfall in the rear lot of 700 Chamblee Lane. Install two step grade controls at the perched outfall and incised drainage way in the rear lots of 606 and 616 Chamblee Lane. Rock armor the drainage way. Stabilize the outside bend threatening the retaining wall. Stabilize the bank with the threatened utility pole. Rock armor the perched outfall northeast of 116 Ladue Woods Estates Drive. Rock armor the minor tributary and install a step grade control and toe wall at the end of the concrete swale. Install a step grade control and stilling basin at the end of the concrete channel.



Conceptual Layout of CC-C-25

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-25 Chasselle and Chamblee Lane

Project Description: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	1.5	$ 12,000	$ 18,000
Prepare Easement Plat and Scripts	EACH	16	$ 1,500	$ 24,000
Contruction Staking and As-Built Surveying	ACRE	1.5	$ 5,000	$ 7,500
			Subtotal =	$ 49,500
			Contingency = 25%	$ 12,400
			TOTAL OPINION OF SURVEYING COST =	**$ 61,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	225	$ 20	$ 4,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	9	$ 1,000	$ 9,000
			Subtotal =	$ 20,500
			Contingency = 25%	$ 5,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 25,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	180	$ 160	$ 28,800
ROW	HOURS	80	$ 160	$ 12,800
Permitting	HOURS	80	$ 160	$ 12,800
Final Design	HOURS	120	$ 160	$ 19,200
Develop Plans and Construction Documents	HOURS	200	$ 160	$ 32,000
Construction Support	HOURS	200	$ 160	$ 32,000
			$ -	$ -
			Subtotal =	$ 137,600
			Contingency = 25%	$ 34,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 172,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	1.5	$ 30,000	$ 45,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	3,005	$ 35	$ 105,200
Rock Grade Control	CY	300	$ 200	$ 60,000
Rock Stilling Basin / Outlet Scour Protection	CY	200	$ 100	$ 20,000
Rock Toe and Slope Protection	CY	485	$ 150	$ 72,800
Bank Stabilization	SY	1,150	$ 120.00	$ 138,000
Granular Backfill	CY	80	$ 55	$ 4,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	20	$ 100	$ 2,000
Curb - Concrete Rem & Rep	LF	112	$ 50	$ 5,600
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	1.5	$ 50,000	$ 75,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 53,900	$ 53,900
			Subtotal =	$ 592,900
			Contingency = 30%	$ 177,900
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 770,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 1,030,300**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-25 Chasselle and Chamblee Lane DATE: 12/5/2023

PROJECT LOCATION: 700 Chamblee Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 116 Ladue Woods Estates Dr*	300		200	1	50		200
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Undermined culvert, Chasselle Ln*	20	2	12	3	3		76
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	5	10	1	5		110

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-25 Chasselle and Chamblee Lane DATE: 12/5/2023

PROJECT LOCATION: 700 Chamblee Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**396**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-25 Chasselle and Chamblee Lane DATE: 12/5/2023

PROJECT LOCATION: 700 Chamblee Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**8.87**	PER 100 LF		10		89
	Riffle Pool Complex	**14.22**	PER 100 LF		10		142
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	14.22	PER 100 LF		10		142
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements					0	
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
					TOTAL SOLUTION POINTS		**373**
					TOTAL BENEFIT POINTS		**769**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$1,030**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.75**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-26: Chamonix Court



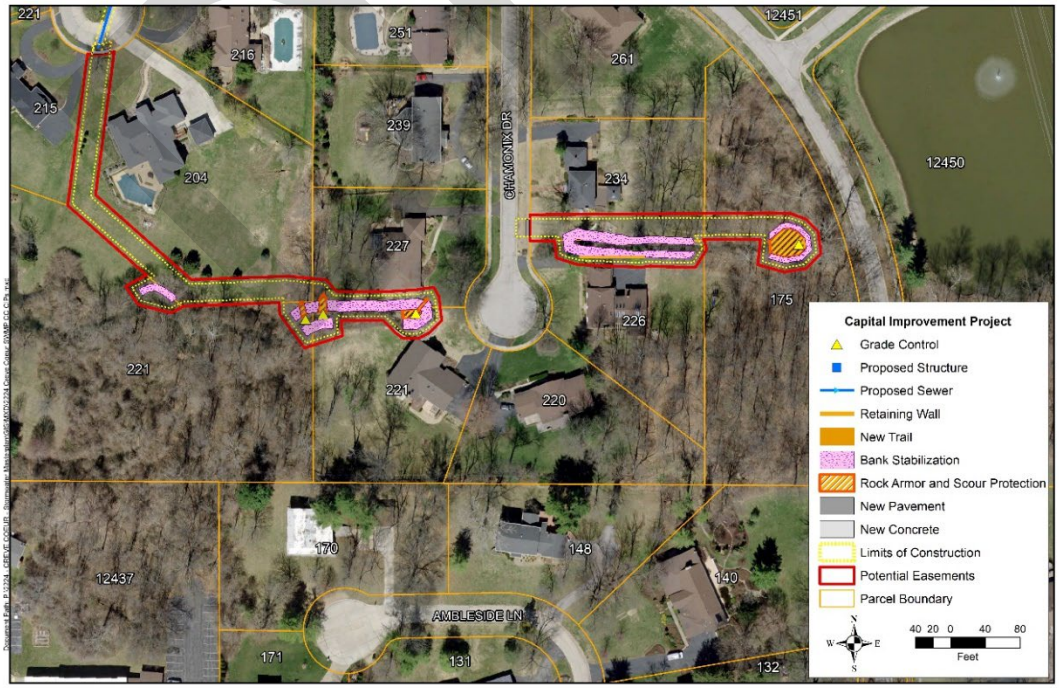
Exposed manhole along outside bend



Failing retaining walls

Problem Description: In a tributary to Smith Creek between Falling Leaves Court and Falaise Drive multiple issues were observed as follows. An exposed manhole along an outside bend in the channel in the rear lot of 204 Falling Leaves Court. Erosion along the RDB on 227 Chamonix Court as well as two incising tributaries and a knickpoint in the channel. An eroding swale from the front yard of 227 Chamonix Court and a knickpoint at the Chamonix Court culvert outfall. Failing retaining walls between 226 and 234 Chamonix Court. Perched Falaise Drive culvert outfall and scour hole. The affected parcels are private.

Recommendation: Stabilize the outside bend to protect the exposed manhole. Stabilize the RDB along 227 Chamonix Court, rock armor the incising tributaries, and install step grade controls where they meet the channel. Rock armor the yard swale and install a step grade control and stilling basin downstream of the culvert outfall. Replace the failing retaining wall with bank stabilization and a new retaining wall along 226 Chamonix Court. Install a grade control and stilling basin downstream of the Falaise Drive culvert outfall. The City Council and Stormwater Committee will review to determine if City funds will be used for the primarily aesthetic feature.



Conceptual Layout of CC-C-26

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-26 Chamonix Court

Project Description: Bank stabilization, grade controls, rock armoring, stilling basin, and a retaining wall to address erosion and knickpoints threatening structures along a tributary to Smith Creek. The City Council and Stormwater Committee will review to determine if City funds will be used for the primarily aesthetic feature.

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.7	$ 12,000	$ 8,400
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	0.7	$ 5,000	$ 3,500
			Subtotal =	$ 22,400
			Contingency = 25%	$ 5,600
			TOTAL OPINION OF SURVEYING COST =	**$ 28,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
			Contingency = 25%	$ 24,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.7	$ 30,000	$ 21,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	1,390	$ 35	$ 48,700
Rock Grade Control	CY	185	$ 200	$ 37,000
Rock Stilling Basin / Outlet Scour Protection	CY	195	$ 100	$ 19,500
Rock Toe and Slope Protection	CY	330	$ 150	$ 49,500
Bank Stabilization	SY	710	$ 120.00	$ 85,200
Granular Backfill	CY	60	$ 55	$ 3,300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	350	$ 50	$ 17,500
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	20	$ 100	$ 2,000
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.7	$ 50,000	$ 35,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 32,800	$ 32,800
			Subtotal =	$ 361,000
			Contingency = 30%	$ 108,300
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 469,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 631,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-26 Chamonix Court DATE: 12/5/2023

PROJECT LOCATION: 227 Chamonix Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, rock armoring, stilling basin, and a retaining wall to address erosion and knickpoints threatening structures along a tributary to Smith Creek. The City Council and Stormwater Committee will review to determine if City funds will be used for the primarily aesthetic feature.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 221, 226, 227, and 234 Chamonix Ct*	300		200	2	50	2	500
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Failing retaining wall*	150	2	100		25		300
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5	1	5

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-26 Chamonix Court DATE: 12/5/2023

PROJECT LOCATION: 227 Chamonix Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, rock armoring, stilling basin, and a retaining wall to address erosion and knickpoints threatening structures along a tributary to Smith Creek. The City Council and Stormwater Committee will review to determine if City funds will be used for the primarily aesthetic feature.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						805

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-26 Chamonix Court DATE: 12/5/2023

PROJECT LOCATION: 227 Chamonix Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, rock armoring, stilling basin, and a retaining wall to address erosion and knickpoints threatening structures along a tributary to Smith Creek. The City Council and Stormwater Committee will review to determine if City funds will be used for the primarily aesthetic feature.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**7.33**	PER 100 LF		10		73
	Riffle Pool Complex	**1.28**	PER 100 LF		10		13
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**96**
						TOTAL BENEFIT POINTS	**901**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$632**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.43**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

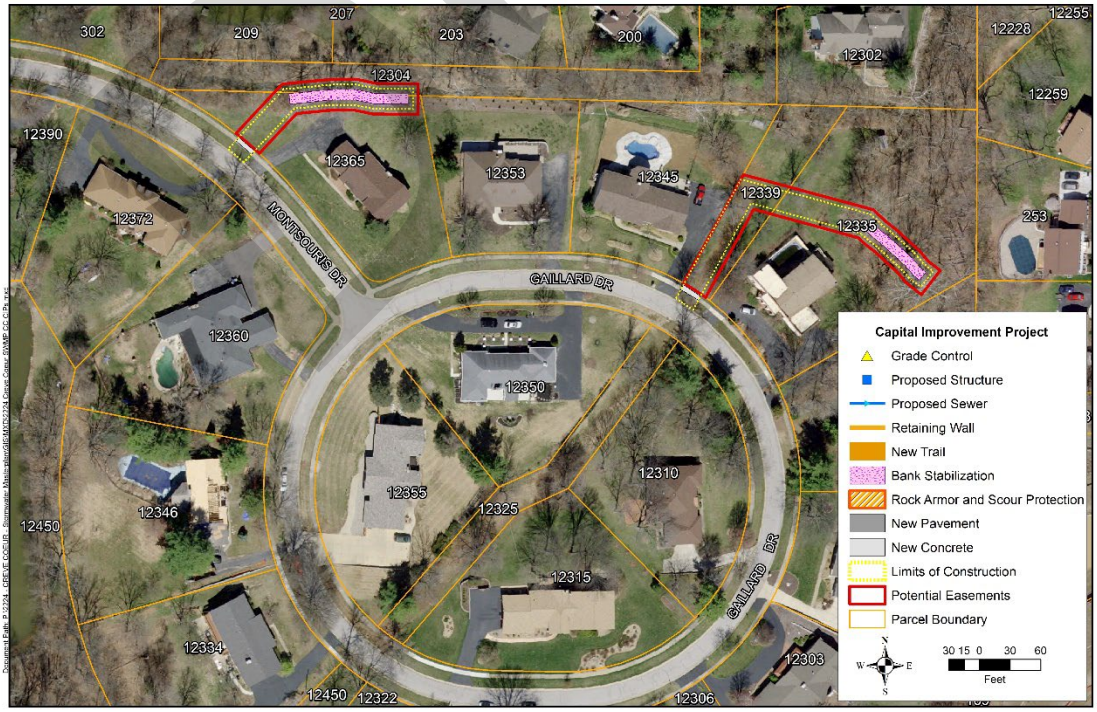
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CC-C-27: Montsouris Drive

Problem Description: In the unnamed tributary along Montsouris Drive issues were reported as follows. Erosion along the LDB behind 12335 Gaillard Drive threatening a retaining wall. Erosion along the LDB behind 12365 Montsouris Drive. The affected parcels are private.

Recommendation: Stabilize the LDB in both locations.

Draft



Conceptual Layout of CC-C-27

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-27 Montsouris Drive

Project Description: Bank stabilization to address erosion along an unnamed tributary near Montsouris Drive.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
			Contingency = 25%	$ 2,400
			TOTAL OPINION OF SURVEYING COST =	**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	100	$ 35	$ 3,500
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	85	$ 150	$ 12,800
Bank Stabilization	SY	210	$ 120.00	$ 25,200
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	20	$ 100	$ 2,000
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 6,800	$ 6,800
			Subtotal =	$ 74,400
			Contingency = 30%	$ 22,300
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 96,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 167,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-27 Montsouris Drive DATE: 12/5/2023

PROJECT LOCATION: 12365 Montsouris Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion along an unnamed tributary near Montsouris Drive.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-27 Montsouris Drive DATE: 12/5/2023

PROJECT LOCATION: 12365 Montsouris Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion along an unnamed tributary near Montsouris Drive.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-27 Montsouris Drive DATE: 12/5/2023

PROJECT LOCATION: 12365 Montsouris Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion along an unnamed tributary near Montsouris Drive.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.9**	PER 100 LF		10		19
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**39**
						TOTAL BENEFIT POINTS	**39**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$167**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.23**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-28: 2 Chasselle Lane

Problem Description: There is bank cutting in a roadside swale along Ladue Road threatening the roadway. The affected parcel is private.

Recommendation: Install a grade control at the downstream end of the swale and line the swale with rock to prevent erosion. Work to be done is located in MoDOT ROW. City Council and Stormwater Committee need to evaluate if City funds will be used in MoDOT ROW.



Swale threatening roadway



Conceptual Layout of CC-C-28

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-28 2 Chasselle Lane

Project Description: Grade control and rock armoring to address bank cutting along Ladue Rd. Work to be done is located in MoDOT ROW. City Council and Stormwater Committee need to evaluate if City funds will be used in MoDOT ROW.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 3,200
		Contingency =	25%	$ 800
		TOTAL OPINION OF SURVEYING COST =		**$ 4,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	0	$ 20	$ -
Geotechnical Report	LUMP	0	$ 7,000	$ -
Global Stability Analysis	EACH	0	$ 1,000	$ -
			Subtotal =	$ -
		Contingency =	25%	$ -
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	135	$ 35	$ 4,700
Rock Grade Control	CY	15	$ 200	$ 3,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	110	$ 150	$ 16,500
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 3,900	$ 3,900
			Subtotal =	$ 43,200
		Contingency =	30%	$ 13,000
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 56,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 106,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-28 2 Chasselle Lane DATE: 12/5/2023

PROJECT LOCATION: 2 Chasselle Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and rock armoring to address bank cutting along Ladue Rd. Work to be done is located in MoDOT ROW. City Council and Stormwater Committee need to evaluate if City funds will be used in MoDOT ROW.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address: Ladue Rd*	75	1	50		12		75
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-28 2 Chasselle Lane DATE: 12/5/2023

PROJECT LOCATION: 2 Chasselle Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and rock armoring to address bank cutting along Ladue Rd. Work to be done is located in MoDOT ROW. City Council and Stormwater Committee need to evaluate if City funds will be used in MoDOT ROW.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**75**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-28 2 Chasselle Lane DATE: 12/5/2023

PROJECT LOCATION: 2 Chasselle Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control and rock armoring to address bank cutting along Ladue Rd. Work to be done is located in MoDOT ROW. City Council and Stormwater Committee need to evaluate if City funds will be used in MoDOT ROW.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales	1.64	PER 100 LF			10				16
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)		PER 100 LF			10				
	Riffle Pool Complex		PER 100 LF			10				
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)		PER 100 LF			10				
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**							**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		**36**
								TOTAL BENEFIT POINTS		**111**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$106**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.05**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

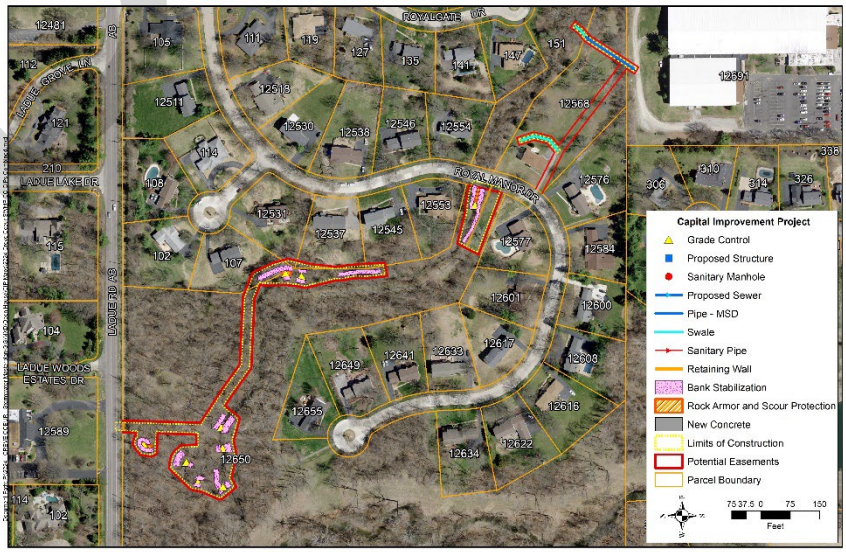
CC-C-29: Royal Manor Drive



Failing retaining wall

Problem Description: In a tributary to Smith Creek upstream of Royal Manor Drive several issues were observed as follows. Pipe outfall from the trail along Ladue Road cutting a scour hole at the upstream end of a minor tributary. Knickpoint where the minor tributary confluences with the tributary. Exposed sanitary line along the RDB channel toe upstream of this confluence. An exposed utility line crossing the channel causing a knickpoint. Bank erosion threatening a pedestrian bridge with a knickpoint downstream north of 12655 Royal Manor Drive. Erosion along the RDB with two perched pipe outfalls and a wall being undermined west of 12531 Royal Manor Drive. Exposed utility line crossing causing a knickpoint upstream of the perched outfalls. Failing retaining wall along the RDB behind 12537 and 12545 Royal Manor Drive. Erosion along both banks downstream of the Royal Manor Drive culvert as well as a knickpoint. Yard and basement flooding at 12568 Royal Manor Drive due to outfall of the adjacent Racquet & Tennis Club. The affected parcels are private.

Recommendation: Install a grade control and stilling basin downstream of the trail. Install a series of grade controls at the downstream end of the minor tributary and at the confluence. Stabilize the RDB to protect the exposed sanitary line along the toe. Install a grade control at the exposed utility line knickpoint. Stabilize both banks along the pedestrian bridge and install a grade control on the downstream end. Stabilize the RDB surrounding the pipe outfalls and install a stilling basin and grade control. Install a step grade control at the exposed utility line knickpoint. Replace the failing retaining wall with bank stabilization. Stabilize both banks downstream of Royal Manor Drive and install a stilling basin and grade control. Construct area inlet on Racquet & Tennis Club property to convey flow across 12568 and discharge into a rock swale on the subdivision common ground. A grass swale should also be constructed on the west side of the house to convey flow around the house.



Conceptual Layout of CC-C-29

Special Considerations: Owner has recently installed yard drains and underdrains in the yard. MSD is in easement negotiations for a sanitary sewer project that will also traverse 12568 and the common ground.

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-29 Royal Manor Drive

Project Description: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek as well as an area inlet and swales to convey overland flow.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	1.7	$ 12,000	$ 20,400
Prepare Easement Plat and Scripts	EACH	8	$ 1,500	$ 12,000
Contruction Staking and As-Built Surveying	ACRE	1.7	$ 5,000	$ 8,500
			Subtotal =	$ 40,900
		Contingency =	25%	$ 10,200
		TOTAL OPINION OF SURVEYING COST =		**$ 51,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	125	$ 20	$ 2,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	3	$ 1,000	$ 3,000
			Subtotal =	$ 12,500
		Contingency =	25%	$ 3,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 15,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	1.7	$ 30,000	$ 51,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,690	$ 35	$ 59,200
Rock Grade Control	CY	340	$ 200	$ 68,000
Rock Stilling Basin / Outlet Scour Protection	CY	340	$ 100	$ 34,000
Rock Toe and Slope Protection	CY	375	$ 150	$ 56,300
Bank Stabilization	SY	950	$ 120.00	$ 114,000
Granular Backfill	CY	70	$ 55	$ 3,900
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	2	$ 3,500	$ 7,000
Sewer Pipe Small	LF	140	$ 140	$ 19,600
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea	1	$ 2,580	$ 2,600
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	180	$ 15	$ 2,700
Asphaltic Concrete Pavement	SY	90	$ 150	$ 13,500
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	95	$ 50	$ 4,800
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	1.7	$ 50,000	$ 85,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 52,700	$ 52,700
			Subtotal =	$ 579,800
		Contingency =	30%	$ 173,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 753,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 942,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-29 Royal Manor Drive DATE: 12/5/2023

PROJECT LOCATION: 12553 Royal Manor Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek as well as an area inlet and swales to convey overland flow.

ENVIRONMENTAL CONSIDERATIONS: The pedestrian bridge and retaining wall are located in the floodplain.

COMMON GROUND: The majority of this project is located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Pedestrian bridge, failing retaining wall*	150	3	100		25		450
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Royal Manor Dr*	20		12		3	1	3
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	5	10	1	5		110

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-29 Royal Manor Drive DATE: 12/5/2023

PROJECT LOCATION: 12553 Royal Manor Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek as well as an area inlet and swales to convey overland flow.

ENVIRONMENTAL CONSIDERATIONS: The pedestrian bridge and retaining wall are located in the floodplain.

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200	1	50		200
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35	1	12		35
		Yard Flooding (1 per lot) *Address:*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		1	Points/lot:		10	10
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**818**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-29 Royal Manor Drive DATE: 12/5/2023

PROJECT LOCATION: 12553 Royal Manor Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek as well as an area inlet and swales to convey overland flow.

ENVIRONMENTAL CONSIDERATIONS: The pedestrian bridge and retaining wall are located in the floodplain.

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**8.73**	PER 100 LF		10		87
	Riffle Pool Complex	**11.22**	PER 100 LF		10		112
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	14.47	PER 100 LF		10		145
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**		**100**
						TOTAL SOLUTION POINTS	**454**
						TOTAL BENEFIT POINTS	**1272**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$942**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.35**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-30: 151 Royal Gate Drive

Problem Description: In Rosenfelder Creek between Royal Manor Drive and Royal Gate Drive multiple issues were observed as follows. There is a knickpoint in the channel south of 150 Royal Gate Drive at a minor tributary confluence and pipe outfall. There is a perched pipe along the RDB directly south of Royal Gate Drive. There is an exposed sanitary line along the LDB toe of bank between 12568 Royal Manor Drive and 147 Royal Gate Drive. There is an exposed sanitary crossing causing a knickpoint southeast of 12554 Royal Manor Drive. The affected parcels are private.

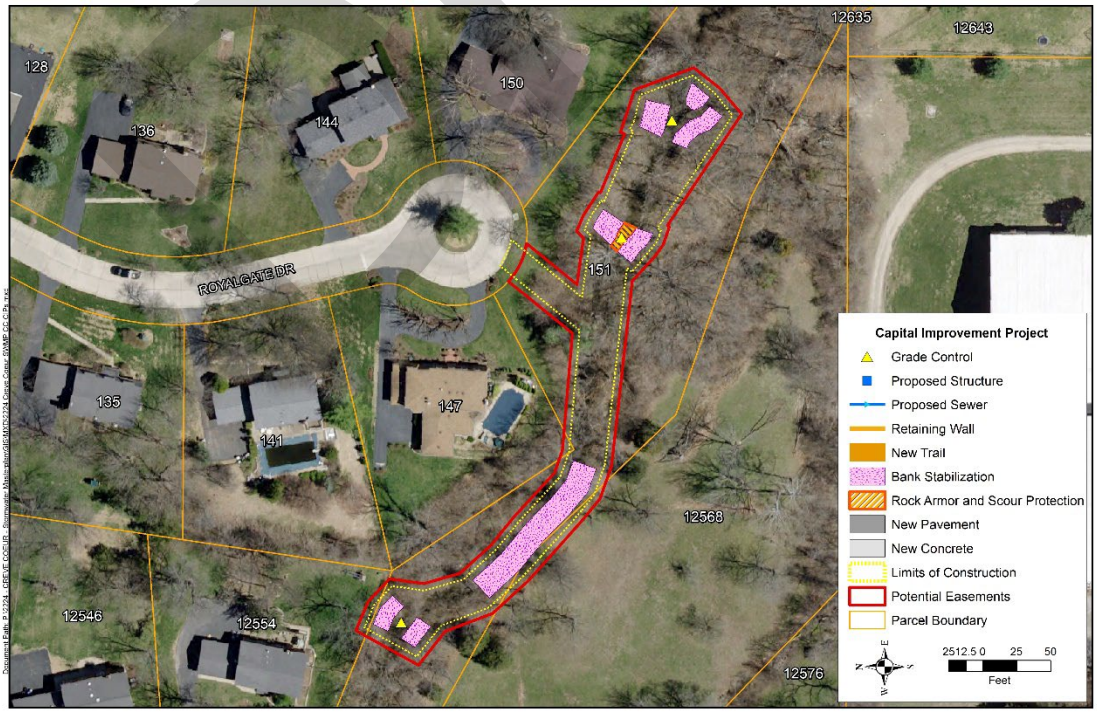


Exposed sanitary line along toe of bank

Recommendation: Install a grade control at the knickpoint near the stormwater outfall and tributary confluence and stabilize the tributary banks. Install a grade control structure and stilling basin at the perched pipe outfall. Stabilize the banks along the exposed sanitary line at the toe of bank. Install a grade control at the exposed sanitary crossing.



Exposed sanitary crossing



Conceptual Layout of CC-C-30

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-30 151 Royal Gate Drive

Project Description: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Rosenfelder Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 14,500
			Contingency = 25%	$ 3,600
			TOTAL OPINION OF SURVEYING COST =	**$ 18,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	860	$ 35	$ 30,100
Rock Grade Control	CY	95	$ 200	$ 19,000
Rock Stilling Basin / Outlet Scour Protection	CY	25	$ 100	$ 2,500
Rock Toe and Slope Protection	CY	135	$ 150	$ 20,300
Bank Stabilization	SY	490	$ 120.00	$ 58,800
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 17,800	$ 17,800
			Subtotal =	$ 196,100
			Contingency = 30%	$ 58,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 254,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 365,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-30 151 Royal Gate Drive DATE: 12/5/2023

PROJECT LOCATION: 151 Royal Gate Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 150 Royal Gate Dr*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-30 151 Royal Gate Drive DATE: 12/5/2023

PROJECT LOCATION: 151 Royal Gate Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						90

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-30 151 Royal Gate Drive DATE: 12/5/2023

PROJECT LOCATION: 151 Royal Gate Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)	**2.87**	PER 100 LF		10				29
	Riffle Pool Complex	**6**	PER 100 LF		10				60
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)	6	PER 100 LF		10				60
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**						**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
							TOTAL SOLUTION POINTS		**169**
							TOTAL BENEFIT POINTS		**259**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$366**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.71**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

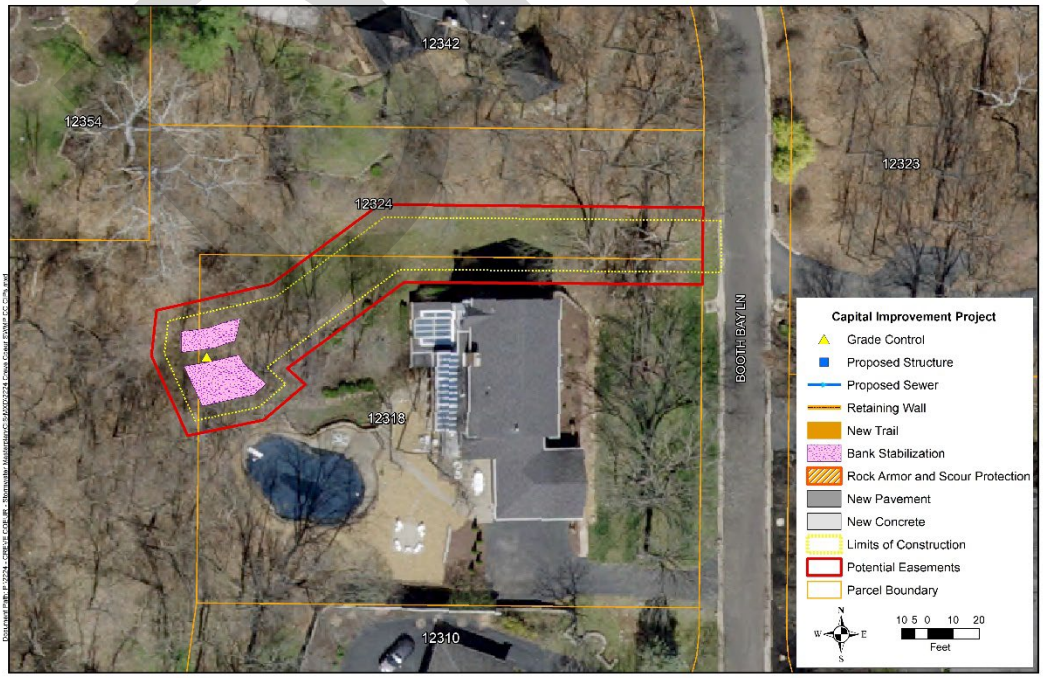
Draft

CC-C-31: Boothbay Court

Problem Description: In an upper tributary to Rosenfelder Creek erosion was reported at the pipe outfall in the rear lot of 12318 Boothbay Court. The affected parcels are private.

Recommendation: Install a grade control at the outfall.

Draft



Conceptual Layout of CC-C-31

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-31 Boothbay Court

Project Description: Grade control with associated bank stabilization to address pipe outfall erosion threatening structures.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 4,700
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	90	$ 35	$ 3,200
Rock Grade Control	CY	15	$ 200	$ 3,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	20	$ 150	$ 3,000
Bank Stabilization	SY	65	$ 120.00	$ 7,800
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 3,200	$ 3,200
			Subtotal =	$ 35,000
		Contingency =	30%	$ 10,500
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 45,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 108,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-31 Boothbay Court DATE: 12/5/2023

PROJECT LOCATION: 12318 Boothbay Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control with associated bank stabilization to address pipe outfall erosion threatening structures.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 12318 Boothbay Ct pool*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-31 Boothbay Court DATE: 12/5/2023

PROJECT LOCATION: 12318 Boothbay Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control with associated bank stabilization to address pipe outfall erosion threatening structures.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**25**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-31 Boothbay Court DATE: 12/5/2023

PROJECT LOCATION: 12318 Boothbay Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control with associated bank stabilization to address pipe outfall erosion threatening structures.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**0.5**	PER 100 LF		10		5
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**25**
						TOTAL BENEFIT POINTS	**50**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$108**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.46**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-32: Conway Downs Drive

Problem Description: In Rosenfelder Creek along Conway Downs Drive multiple issues were observed as follows. At the upstream end of the tributary in the rear lot of 233 Bellington Lane, there are 2 perched outfalls and a scour hole. In the rear lot of 12533 Conway Downs Drive, there is a knickpoint. The upstream bridge abutments at the 12555 Conway Downs Drive bridge crossing are beginning to be flanked. There is a knickpoint behind 12567 Conway Downs Drive. The affected parcels are private.

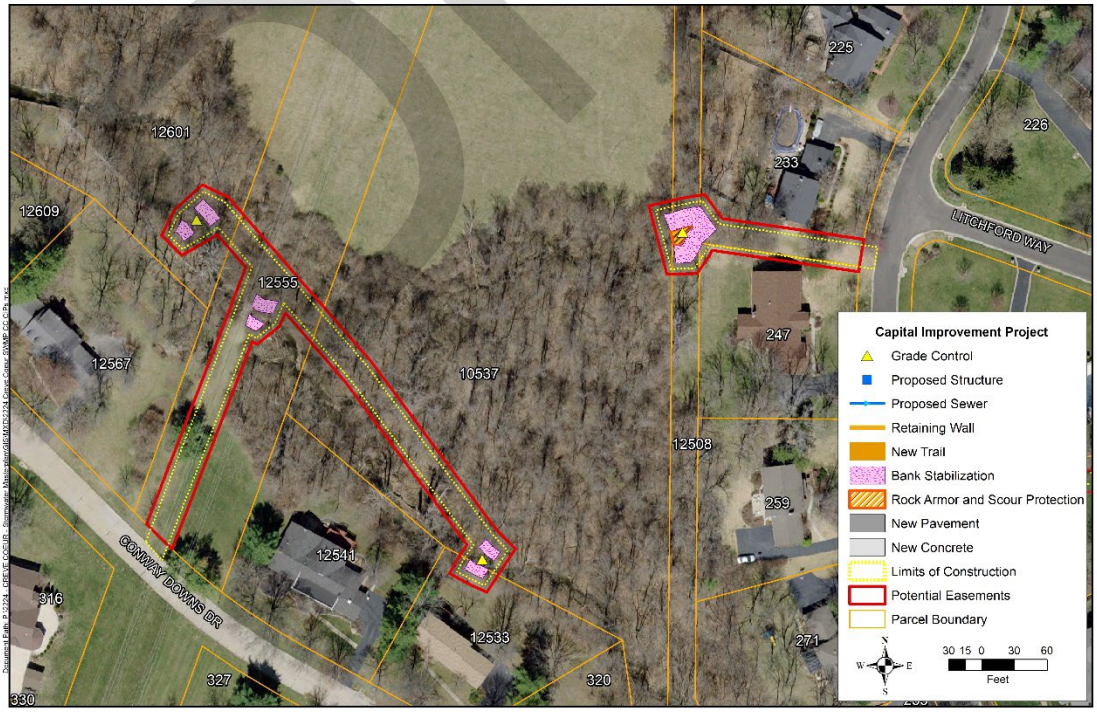


Tributary perched outfall and scour hole

Recommendation: Install a step grade control structure and stilling basin at the perched outfalls. Install a step grade control at the knickpoint in the rear lot of 12533 Conway Downs Drive. Stabilize both banks upstream of the bridge. Install a step grade control behind 12567 Conway Downs Drive.



Upstream side of bridge



Conceptual Layout of CC-C-32

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-32 Conway Downs Drive

Project Description: Bank stabilization, grade controls, and a stilling basin to address erosion in Rosenfelder Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 19,000
			Contingency = 25%	$ 4,800
			TOTAL OPINION OF SURVEYING COST =	**$ 23,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	615	$ 35	$ 21,500
Rock Grade Control	CY	125	$ 200	$ 25,000
Rock Stilling Basin / Outlet Scour Protection	CY	30	$ 100	$ 3,000
Rock Toe and Slope Protection	CY	75	$ 150	$ 11,300
Bank Stabilization	SY	280	$ 120.00	$ 33,600
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 14,300	$ 14,300
			Subtotal =	$ 157,300
			Contingency = 30%	$ 47,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 204,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 319,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-32 Conway Downs Drive DATE: 12/5/2023

PROJECT LOCATION: 12567 Conway Downs Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion in Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Bridge*	20	2	12		3		40
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-32 Conway Downs Drive DATE: 12/5/2023

PROJECT LOCATION: 12567 Conway Downs Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion in Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**80**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-32 Conway Downs Drive DATE: 12/5/2023

PROJECT LOCATION: 12567 Conway Downs Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion in Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.18**	PER 100 LF		10		22
	Riffle Pool Complex	**3.73**	PER 100 LF		10		37
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	3.73	PER 100 LF		10		37
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**106**
						TOTAL BENEFIT POINTS	**186**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$320**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.58**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-33: Bellington Lane



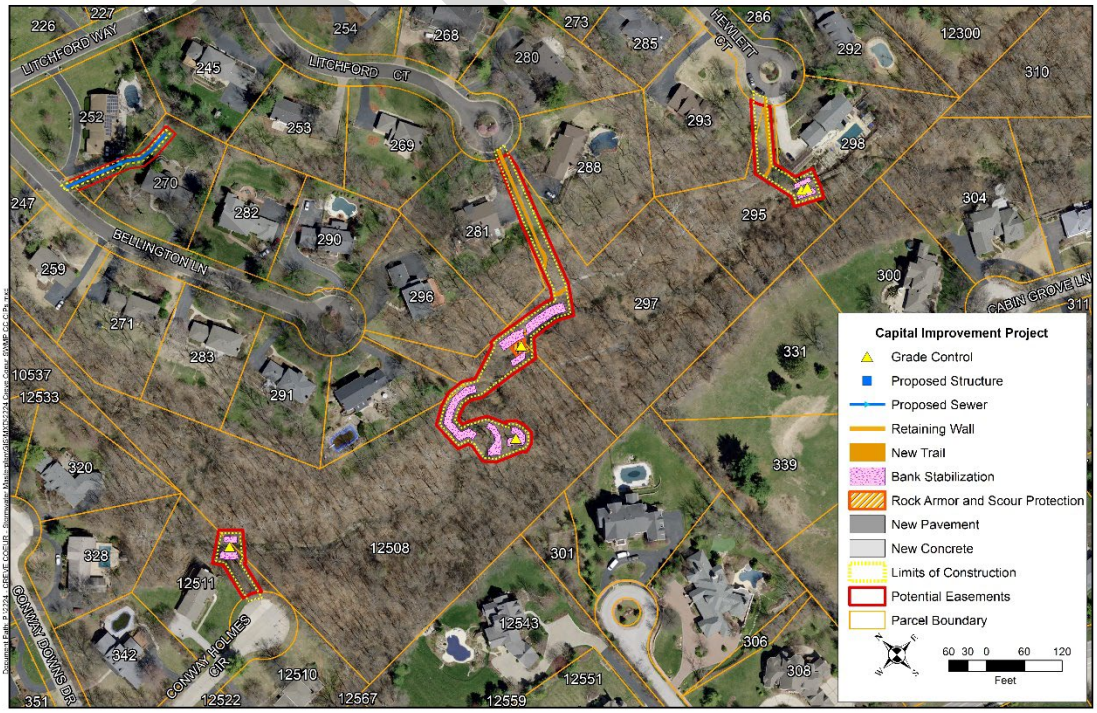
Outside bend erosion



Pedestrian bridge

Problem Description: In Rosenfelder Creek between Conway Holmes Circle and Hewlett Court multiple issues were observed as follows. There is a perched pipe with fallen segments located east of 12511 Conway Holmes Circle. There is erosion along a minor tributary confluence and a knickpoint in the tributary north of 300 Bel Arbor Lane. There is erosion along an outside bend threatening residential fence in the rear lot of 297 Bellington Lane. The pedestrian bridge crossing Rosenfelder Creek in lots 12508 Conway Holmes Circle and 297 Hewlett Court has failing bridge abutments, a knickpoint downstream of the bridge, and erosion along the RDB upstream of the bridge. There is a knickpoint southwest of 298 Hewlett Court. The affected parcels are private.

Recommendation: Install a grade control at the perched pipe. Stabize the LDB at the tributary confluence and install a step grade control in the tributary. Stabilize the RDB outside bend and replace the fence. Replace the failing pedestrian bridge abutments, install a step grade control and stilling basin, and stabilize the RDB upstream of the bridge. Install two step grade controls at the knickpoint southwest of 298 Hewlett Court.



Conceptual Layout of CC-C-33

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-33 Bellington Lane

Project Description: Bank stabilization, grade controls, a stilling basin, and replacing bridge abutments to address erosion in Rosenfelder Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.6	$ 12,000	$ 7,200
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	0.6	$ 5,000	$ 3,000
			Subtotal =	$ 20,700
			Contingency = 25%	$ 5,200
			TOTAL OPINION OF SURVEYING COST =	**$ 25,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	3	$ 1,000	$ 3,000
			Subtotal =	$ 11,500
			Contingency = 25%	$ 2,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 14,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
			Contingency = 25%	$ 24,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.6	$ 30,000	$ 18,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	990	$ 35	$ 34,700
Rock Grade Control	CY	180	$ 200	$ 36,000
Rock Stilling Basin / Outlet Scour Protection	CY	60	$ 100	$ 6,000
Rock Toe and Slope Protection	CY	205	$ 150	$ 30,800
Bank Stabilization	SY	650	$ 120.00	$ 78,000
Granular Backfill	CY	35	$ 55	$ 1,900
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	50	$ 50	$ 2,500
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	180	$ 150	$ 27,000
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	60	$ 50	$ 3,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.6	$ 50,000	$ 30,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 27,500	$ 27,500
			Subtotal =	$ 302,900
			Contingency = 30%	$ 90,900
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 393,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 556,100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-33 Bellington Lane DATE: 12/5/2023

PROJECT LOCATION: 296 Bellington Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, a stilling basin, and replacing bridge abutments to address erosion in Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 12511 Conway Holmes Cir*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Pedestrian bridge*	150	1	100		25		150
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-33 Bellington Lane DATE: 12/5/2023

PROJECT LOCATION: 296 Bellington Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, a stilling basin, and replacing bridge abutments to address erosion in Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**220**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-33 Bellington Lane DATE: 12/5/2023

PROJECT LOCATION: 296 Bellington Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, a stilling basin, and replacing bridge abutments to address erosion in Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**6.39**	PER 100 LF		10		64
	Riffle Pool Complex	**3.46**	PER 100 LF		10		35
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	3.46	PER 100 LF		10		35
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**143**
						TOTAL BENEFIT POINTS	**363**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$556**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.65**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

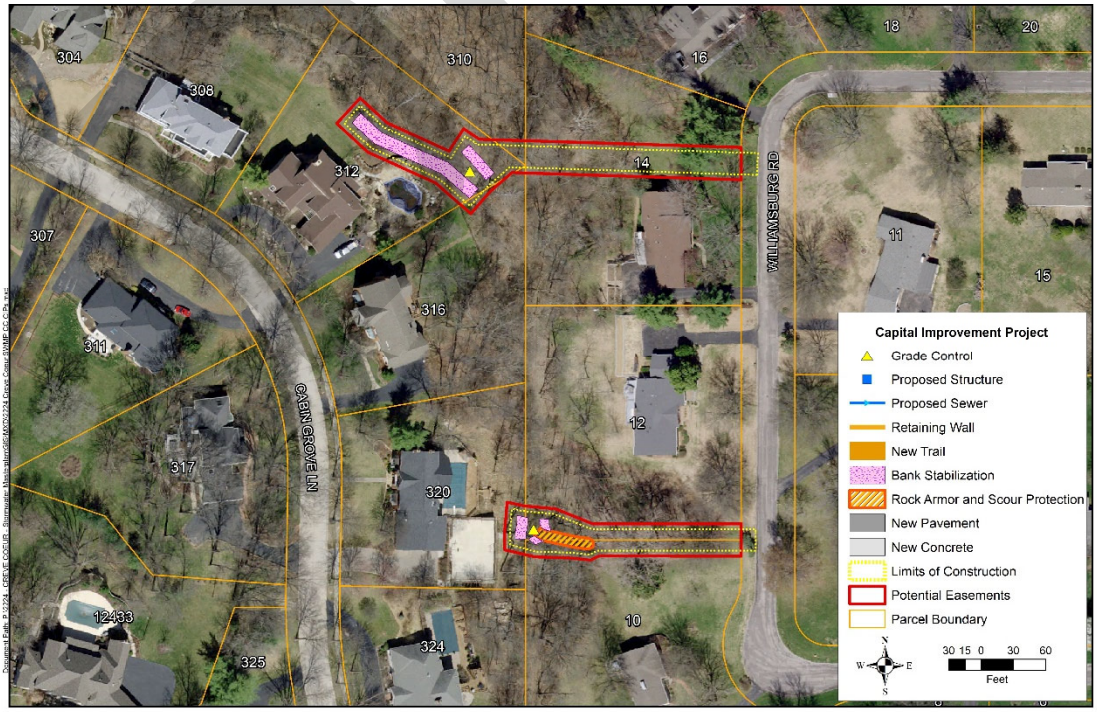
CC-C-34: Williamsburg Road

Problem Description: There is bank erosion along Rosenfelder Creek threatening the fence and pool in rear lot of 312 Cabin Grove Lane along with a 2 foot knickpoint. There is also erosion in the northwest corner of 10 Williamsburg Road where an outfall drainage way meets the channel. The affected parcels are private.



Threatened fence and pool

Recommendation: Stabilize the LDB along the rear lot of 312 Cabin Grove Ln and install a step grade control at the knickpoint. Rock armor the outfall drainage way and install a grade control at the confluence.



Conceptual Layout of CC-C-34

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-34 Williamsburg Road

Project Description: Bank stabilization, grade controls, and rock armoring to address knickpoints and erosion threatening structures along Rosenfelder Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.3	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	0.3	$ 5,000	$ 1,500
			Subtotal =	$ 15,600
			Contingency = 25%	$ 3,900
			TOTAL OPINION OF SURVEYING COST =	**$ 19,500**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.3	$ 30,000	$ 9,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	385	$ 35	$ 13,500
Rock Grade Control	CY	100	$ 200	$ 20,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	170	$ 150	$ 25,500
Bank Stabilization	SY	250	$ 120.00	$ 30,000
Granular Backfill	CY	25	$ 55	$ 1,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 12,200	$ 12,200
			Subtotal =	$ 134,100
			Contingency = 30%	$ 40,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 174,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 285,100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-34 Williamsburg Road DATE: 12/5/2023

PROJECT LOCATION: 14 Williamsburg Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and rock armoring to address knickpoints and erosion threatening structures along Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 312 Cabin Grove Ln*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 312 Cabin Grove Ln pool*	150		100	1	25		100
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-34 Williamsburg Road DATE: 12/5/2023

PROJECT LOCATION: 14 Williamsburg Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and rock armoring to address knickpoints and erosion threatening structures along Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**180**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-34 Williamsburg Road DATE: 12/5/2023

PROJECT LOCATION: 14 Williamsburg Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and rock armoring to address knickpoints and erosion threatening structures along Rosenfelder Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.09**	PER 100 LF		10		21
	Riffle Pool Complex	**3.49**	PER 100 LF		10		35
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	3.49	PER 100 LF		10		35
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**101**
						TOTAL BENEFIT POINTS	**281**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$285**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.98**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

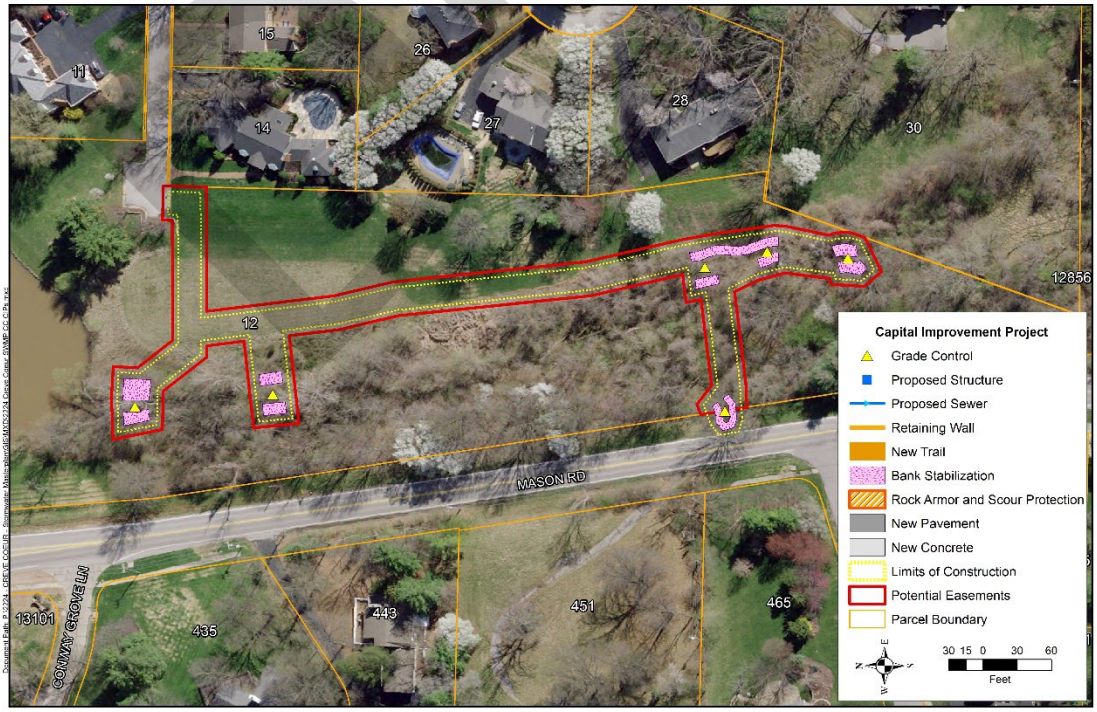
CC-C-35: 12 Broadview Farm Road

Problem Description: Several knickpoints were observed along a tributary to Smith Creek which runs parallel to South Mason Road. Bank mass wasting was seen along the rear lot of 28 Broadview Farm Road. The affected parcel is private.

Recommendation: Install step grade controls at the knickpoints and a grade control at the upstream end of the incision to halt it. Stabilize the bank along the rear lot of 28 Broadview Farm Road.



Bank mass wasting



Conceptual Layout of CC-C-35

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-35 12 Broadview Farm Road

Project Description: Bank stabilization and grade controls to address erosion in a tributary to Smith Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.6	$ 12,000	$ 7,200
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.6	$ 5,000	$ 3,000
			Subtotal =	$ 11,700
			Contingency = 25%	$ 2,900
			TOTAL OPINION OF SURVEYING COST =	**$ 14,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.6	$ 30,000	$ 18,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	470	$ 35	$ 16,500
Rock Grade Control	CY	180	$ 200	$ 36,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	130	$ 150	$ 19,500
Bank Stabilization	SY	310	$ 120.00	$ 37,200
Granular Backfill	CY	25	$ 55	$ 1,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.6	$ 50,000	$ 30,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 16,500	$ 16,500
			Subtotal =	$ 181,600
			Contingency = 30%	$ 54,500
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 236,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 343,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-35 12 Broadview Farm Road DATE: 12/5/2023

PROJECT LOCATION: 12 Broadview Farm Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion in a tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address: Mason Rd*	35		25		6	1	6
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-35 12 Broadview Farm Road DATE: 12/5/2023

PROJECT LOCATION: 12 Broadview Farm Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion in a tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						46

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-35 12 Broadview Farm Road DATE: 12/5/2023

PROJECT LOCATION: 12 Broadview Farm Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion in a tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**3.19**	PER 100 LF		10		32
	Riffle Pool Complex	**5.32**	PER 100 LF		10		53
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.	1.10	AC		30		33
	Natural Corridor (min. 25ft width)	5.32	PER 100 LF		10		53
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**191**
						TOTAL BENEFIT POINTS	**237**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$343**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.69**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-C-36: 438 Twin Creek Road

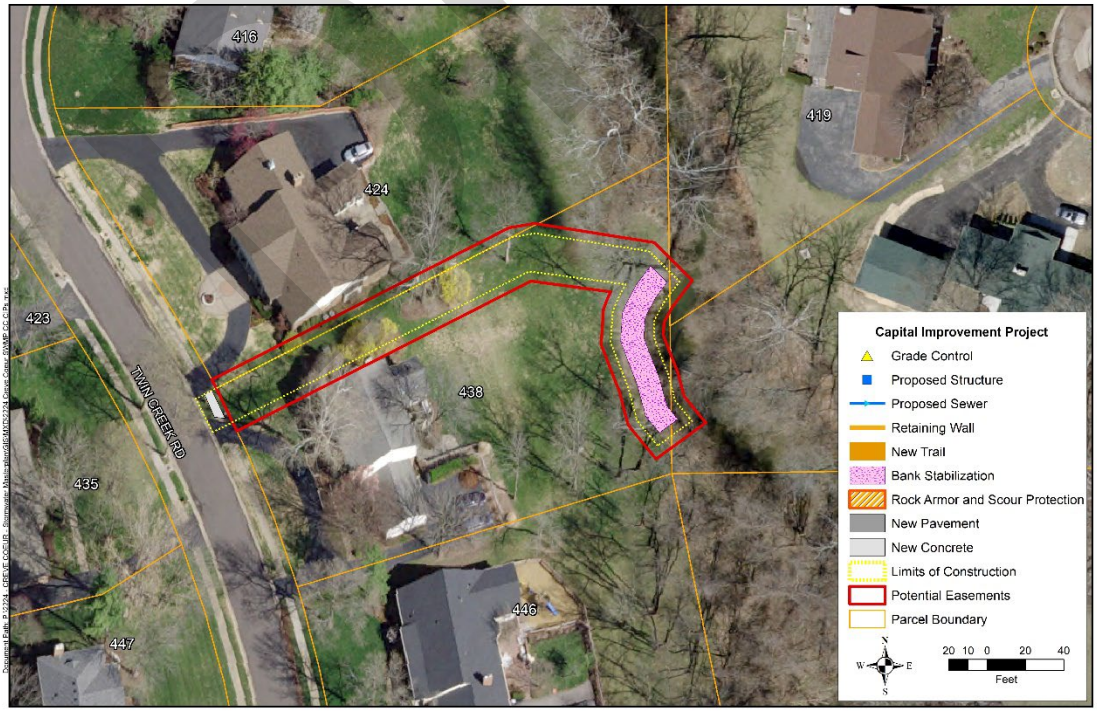
Problem Description: In Smith Creek behind 438 Twin Creek Road erosion was reported along the LDB. The affected parcels are private.

Recommendation: Stabilize the LDB.



LDB Erosion

Draft



Conceptual Layout of CC-C-36

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-36 438 Twin Creek Road

Project Description: Bank stabilization to address erosion along Smith Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
			Contingency = 25%	$ 2,400
			TOTAL OPINION OF SURVEYING COST =	**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	65	$ 35	$ 2,300
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	35	$ 150	$ 5,300
Bank Stabilization	SY	115	$ 120.00	$ 13,800
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	5	$ 100	$ 500
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 4,500	$ 4,500
			Subtotal =	$ 49,200
			Contingency = 30%	$ 14,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 64,000**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 132,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-36 438 Twin Creek Road DATE: 12/5/2023

PROJECT LOCATION: 438 Twin Creek Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion along Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-36 438 Twin Creek Road DATE: 12/5/2023

PROJECT LOCATION: 438 Twin Creek Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion along Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-36 438 Twin Creek Road DATE: 12/5/2023

PROJECT LOCATION: 438 Twin Creek Road, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion along Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**0.96**	PER 100 LF		10		10
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**30**
						TOTAL BENEFIT POINTS	**30**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$132**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.22**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

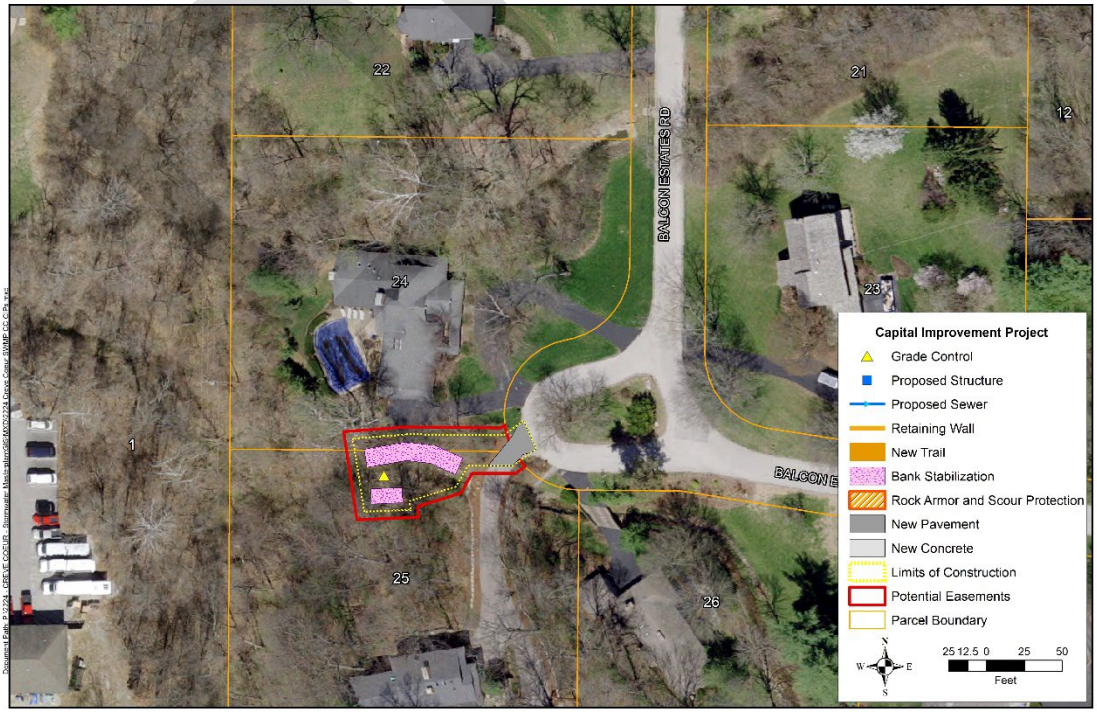
CC-C-37: Balcon Estates

Problem Description: In the unnamed tributary along Balcon Estates scour along the RDB is threatening the driveway of 24 Balcon Estates. The affected parcels are private.

Recommendation: Stabilize the RDB and install a grade control.



Scour threatening driveway



Conceptual Layout of CC-C-37

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-C-37 Balcon Estates

Project Description: Bank stabilization and grade control to address erosion threatening structures along an unnamed tributary to Smith Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 4,700
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	210	$ 35	$ 7,400
Rock Grade Control	CY	45	$ 200	$ 9,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	35	$ 150	$ 5,300
Bank Stabilization	SY	110	$ 120.00	$ 13,200
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	45	$ 150	$ 6,800
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 5,700	$ 5,700
			Subtotal =	$ 62,200
		Contingency =	30%	$ 18,700
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 80,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 143,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-37 Balcon Estates DATE: 12/5/2023

PROJECT LOCATION: 24 Balcon Estates, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade control to address erosion threatening structures along an unnamed tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 24 Balcon Estates*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 24 Balcon Estates pool*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: 24 Balcon Estates driveway*	20		12		3	1	3
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-37 Balcon Estates DATE: 12/5/2023

PROJECT LOCATION: 24 Balcon Estates, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade control to address erosion threatening structures along an unnamed tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**88**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-C-37 Balcon Estates DATE: 12/5/2023

PROJECT LOCATION: 24 Balcon Estates, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade control to address erosion threatening structures along an unnamed tributary to Smith Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	**0.88**	PER 100 LF			10				9
	Riffle Pool Complex	**0.72**	PER 100 LF			10				7
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)	0.72	PER 100 LF			10				7
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**							**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		**43**
								TOTAL BENEFIT POINTS		**131**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$143**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.91**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-01: Cuiseaux Court

Problem description: Runoff naturally drains onto 208 Cuiseaux Court. from the rear yards of homes on Cuiseaux Court and Clion Lane, north of #208. The house and pool altered the natural drainage path with the driveway on the north side of the house partially blocking the drainage path to the street.



Drainage pathway

Recommendation: Install a MSD 2 grate inlet w/ side intake east of the driveway along the property line and pipe to the existing storm sewer along the street at a new MH.

Special Considerations: The root zone of trees on #216 will need to be considered in the location of the inlet and pipe particularly a large pin oak and the placement of the inlet.



Conceptual Layout of CC-S-01

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-01 Cuiseaux Court

Project Description: New inlet and pipe to existing storm sewer to convey runoff from the rear lots of Cuiseaux Court.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	1.00	$ 12,000	$ 12,000
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	1.00	$ 5,000	$ 5,000
			Subtotal =	$ 18,500
			Contingency = 25%	$ 4,600
			TOTAL OPINION OF SURVEYING COST =	**$ 23,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	2.00	$ 55	$ 100
New Culvert	LF		$ 500.0	$ -
Manhole	LF	4	$ 625	$ 2,500
Inlet	EA	1.00	$ 3,500	$ 3,500
Sewer Pipe Small	LF	170	$ 140	$ 23,800
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 11,000	$ -
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 4,000	$ 4,000
			Subtotal =	$ 43,900
			Contingency = 30%	$ 13,200
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 57,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 135,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-01 Cuiseaux Court DATE: 7/31/2023

PROJECT LOCATION: 208 Cuiseaux Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: New inlet and pipe to existing storm sewer to convey runoff from the rear lots of Cuiseaux Court.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-01 Cuiseaux Court DATE: 7/31/2023

PROJECT LOCATION: 208 Cuiseaux Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: New inlet and pipe to existing storm sewer to convey runoff from the rear lots of Cuiseaux Court.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 208 CUISEAUX CT*	50		35	1	12		35
		Yard Flooding (1 per lot) *Address: 208 CUISEAUX CT*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**75**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-01 Cuiseaux Court DATE: 7/31/2023

PROJECT LOCATION: 208 Cuiseaux Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: New inlet and pipe to existing storm sewer to convey runoff from the rear lots of Cuiseaux Court.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)		PER 100 LF		10				
	Riffle Pool Complex		PER 100 LF		10				
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)		PER 100 LF		10				
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**						**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
							TOTAL SOLUTION POINTS		**20**
							TOTAL BENEFIT POINTS		**95**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$136**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.70**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-02: Broadview Farms Subdivision

Problem description: Water ponds along the curb near 18, 19, 21 and 22 Broadview Farms Road. At 1 Broadview Farms Road, water ponds in the side yard even with a 24" FES that drains the area. A Curb Inlet (CI) uphill has significant bypass potential and the curb along the east side of Broadview Farms Road. has the potential to be overtopped allowing additional flow to this area.



Pooling at end of driveway

Recommendation: For the water ponding along the curb, mill and overlay the street and adjust the pavement slope to drain across the street. At 1 Broadview Farms Road, reset the CI top and reconstruct the curb along Broadview Farms Road.

Special Considerations: Concrete should be considered in lieu of asphalt to provide a more precise grade and cross slope on the street to ensure proper drainage. The hydraulic grade line for the storm sewer downstream of the flared end section needs to be checked to ensure water isn't backing up into this area. A check valve in the adjacent inlet on the pipe should be considered.



Conceptual Layout of CC-S-02

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-02 Broadview Farms Subdivision

Project Description: Overlay street, adjust pavement slope, reset curb inlet, and reconstruct curb to address ponding along Broadview Farm Rd.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	1.00	$ 12,000	$ 12,000
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	1.00	$ 5,000	$ 5,000
			Subtotal =	$ 24,500
			Contingency = 25%	$ 6,100
			TOTAL OPINION OF SURVEYING COST =	**$ 30,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
			Contingency = 25%	$ -
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	30.0	$ 150	$ 4,500
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	240	$ 50	$ 12,000
Utility Relocation	LUMP		$ 11,000	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 2,200	$ 2,200
			Subtotal =	$ 23,700
			Contingency = 30%	$ 7,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 30,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 107,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-02 Broadview Farms Subdivision DATE: 12/6/2023

PROJECT LOCATION: 19 Broadview Farm Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Overlay street, adjust pavement slope, reset curb inlet, and reconstruct curb to address ponding along Broadview Farm Rd.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-02 Broadview Farms Subdivision DATE: 12/6/2023

PROJECT LOCATION: 19 Broadview Farm Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Overlay street, adjust pavement slope, reset curb inlet, and reconstruct curb to address ponding along Broadview Farm Rd.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address: 1 BROADVIEW FARM RD*	10		6	1	0		**6**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		3	Points/pond:		5	15
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**36**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-02 Broadview Farms Subdivision DATE: 12/6/2023

PROJECT LOCATION: 19 Broadview Farm Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Overlay street, adjust pavement slope, reset curb inlet, and reconstruct curb to address ponding along Broadview Farm Rd.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)		PER 100 LF		10				
	Riffle Pool Complex		PER 100 LF		10				
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)		PER 100 LF		10				
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		20				20		
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
						TOTAL SOLUTION POINTS			20
						TOTAL BENEFIT POINTS			56

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$107**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.52**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-08: 228 Falling Leaves Court

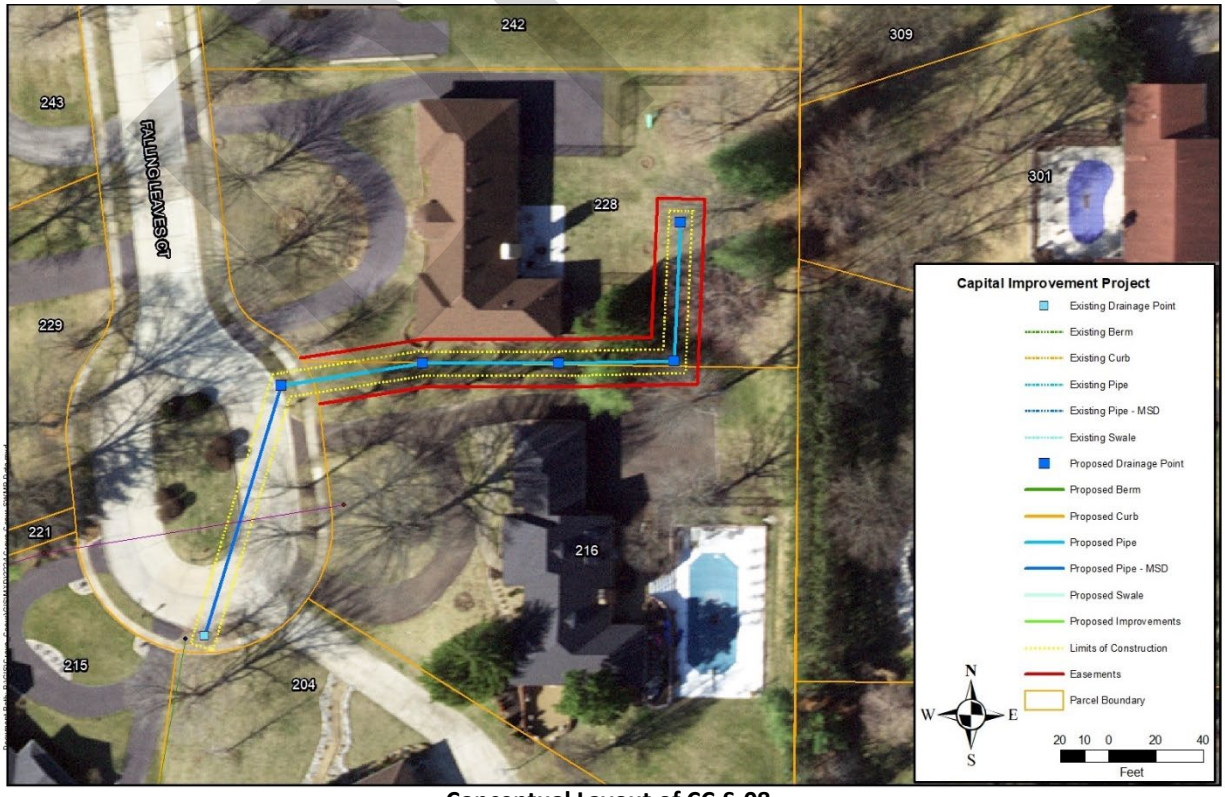
Problem description: Yard ponding at 228 Falling Leaves Court in the rear yard and along south property line.



Rear yard of 228

Recommendation: Construct yard drain in rear yard and three drains along sidge property line. Connect downspouts on south side of house. Construct MSD curb inlet at street and new pipe to existing inlet (18O1-104D) at south end of cul-de-sac.

Special Considerations: System along south property line may need to be public if crossing the property line otherwise if flow is low enough the private pipe could discharge at a pop-up.



Conceptual Layout of CC-S-08

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-08 228 Falling Leaves Court

Project Description: Drains, curb inlet, and storm sewer to address yard ponding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 4,700
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
		Contingency =	25%	$ 1,900
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	36.6	$ 55	$ 2,000
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	4	$ 3,500	$ 14,000
Sewer Pipe Small	LF	334	$ 140	$ 46,800
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	90.0	$ 100	$ 9,000
Curb - Concrete Rem & Rep	LF	60	$ 50	$ 3,000
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 82,200
		Contingency =	30%	$ 24,700
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 106,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 168,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-08: 228 Falling Leaves Court DATE: 11/14/2023

PROJECT LOCATION: 228 Falling Leaves Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Drains, curb inlet, and storm sewer to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-08: 228 Falling Leaves Court DATE: 11/14/2023

PROJECT LOCATION: 228 Falling Leaves Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Drains, curb inlet, and storm sewer to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**25**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-08: 228 Falling Leaves Court DATE: 11/14/2023

PROJECT LOCATION: 228 Falling Leaves Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Drains, curb inlet, and storm sewer to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**45**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$168**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.27**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-09: 252 Bellington Lane

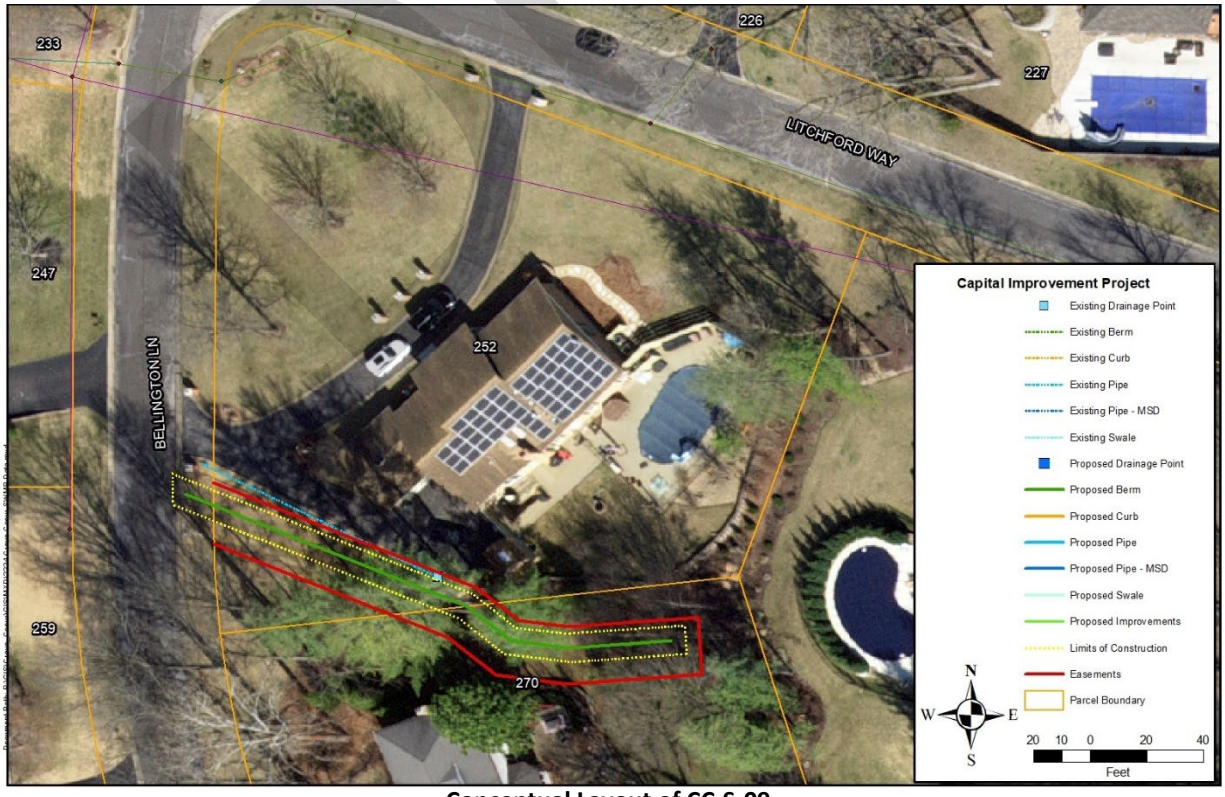
Problem description: Yard and basement flooding at 252 Bellington Lane due to flow from uphill properties.

Recommendation: Construct a berm and swale with underdrain to intercept the flow from the south and direct it to the street to the west. Swap out an existing inlet grate with a dome inlet grate to minimize clogging.



Existing inlet

Draft



Conceptual Layout of CC-S-09

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-09 252 Bellington Lane

Project Description: Berm, swale, and inlet modifications to address yard and basement flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 4,700
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
		Contingency =	25%	$ -
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	183	$ 15	$ 2,700
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 7,700
		Contingency =	30%	$ 2,300
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 10,000**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 61,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-09: 252 Bellington Lane DATE: 11/14/2023

PROJECT LOCATION: 252 Bellington Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swale, and inlet modifications to address yard and basement flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-09: 252 Bellington Lane DATE: 11/14/2023

PROJECT LOCATION: 252 Bellington Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swale, and inlet modifications to address yard and basement flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50	1	50
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**60**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-09: 252 Bellington Lane DATE: 11/14/2023

PROJECT LOCATION: 252 Bellington Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swale, and inlet modifications to address yard and basement flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**80**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$62**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.29**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

CC-S-10: 12229 Ladue Woods Drive

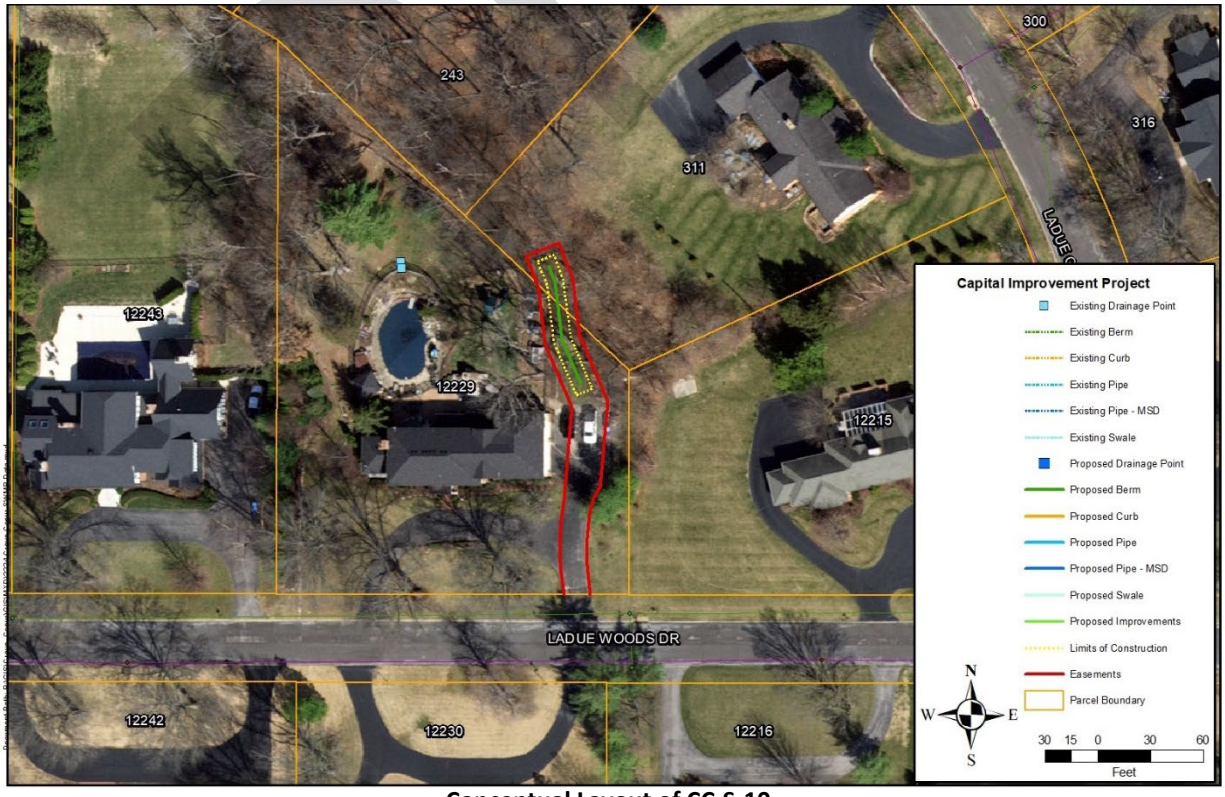
Problem description: Yard flooding at 12229 Ladue Woods Drive.

Recommendation: Construct berm to intercept flow from hillside that is flowing towards the east end of the house.

Special Considerations: Need additional information from owner. Owner not home during field visit. Yard drains in main flow path through property that is blocked by the pool.



Yard drain uphill of pool



Conceptual Layout of CC-S-10

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: CC-S-10 12229 Ladue Woods Drive

Project Description: Berm to address yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 4,700
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
		Contingency =	25%	$ 1,900
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	70	$ 15	$ 1,100
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 6,100
		Contingency =	30%	$ 1,800
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 7,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 69,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-10: 12229 Ladue Woods Drive DATE: 11/14/2023

PROJECT LOCATION: 12229 Ladue Woods Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-10: 12229 Ladue Woods Drive DATE: 11/14/2023

PROJECT LOCATION: 12229 Ladue Woods Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12	1	12
		Yard Flooding (1 per lot) *Address:*	10		6	1	0		**6**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**18**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: CC-S-10: 12229 Ladue Woods Drive DATE: 11/14/2023

PROJECT LOCATION: 12229 Ladue Woods Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)		PER 100 LF		10				
	Riffle Pool Complex		PER 100 LF		10				
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)		PER 100 LF		10				
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**						**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
							TOTAL SOLUTION POINTS		**20**
							TOTAL BENEFIT POINTS		**38**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$69**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.55**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

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West Deer Creek Watershed

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West Deer Creek Watershed

PP Number	Project Name
DC-C-01	Deer Creek in Malcolm Terrace Park
DC-C-03	996 East Rue De La Banque Street
DC-C-04	11572 New London Drive
DC-C-05	Westwood Country Club
DC-C-06	Malcolm Terrace Park
DC-C-07	New Salem Drive
DC-C-08	New Salem Drive and Camfield Square Drive
DC-C-09	281 Magna Carta Drive
DC-C-10	Villa Coublay Drive
DC-C-11	Brooktrail Court South
DC-C-12	Brooktrail Court North
DC-C-13	Executive Estates Drive
DC-S-01	Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive
DC-S-02	Sackston Woods lane
DC-S-03	Woodbridge Manor Road
DC-S-04	561 Sarah Lane
DC-S-05	Ladue Meadows
DC-S-06	Fairways Circle
DC-S-07	East Ladue Estates Drive
DC-S-08	121 Mystic Meadows Lane
DC-S-09	Pine Manor Drive
DC-S-11	554 North Mosley Road
DC-S-13	Morwood Lane
DC-S-14	Mary Meadows Lane

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DC-C-01: Deer Creek in Malcolm Terrace Park

Problem description: Bank erosion along Deer Creek is threatening a City service bridge, a low water crossing, and a trail in Malcolm Terrace Park. The affected parcels are owned by the City.

Recommendation: Install rock grade control extending underneath the bridge along with bank stabilization to protect the existing bridge piers and abutments. Stabilize the banks on the outside bends upstream of the bridge that is threatening the access road. Project plans were previously prepared by the City and shelved due to funding. An existing sanitary line underneath the bridge will need to be replaced.

Replace the concrete low water crossing and install a grade control structure downstream. Stabilize the bank on the outside bend upstream of the low water crossing. Turning vanes may be needed with the bank stabilization to train water over the crossing and prevent flanking.

Stabilize the bank on the outside bend next to the trail or relocate the trail within Right Of Way. Bank stabilization should also include construction of rock armored swales for the incising drainageways on the bank.

Water Quality Alternative Recommendations: Stabilize both banks upstream of the bridge and extend the stabilization upstream to address the leaning utility pole beyond the project limits shown.

At the trail, Deer Creek is beginning to form an oxbow cutoff. Rock armor the cutoff point to prevent the cutoff from occuring and sending a new round of incision through the channel. Only implement if the bank stabilization option is selected because the bend will continue to grow if the cutoff is armored.



Underside of bridge

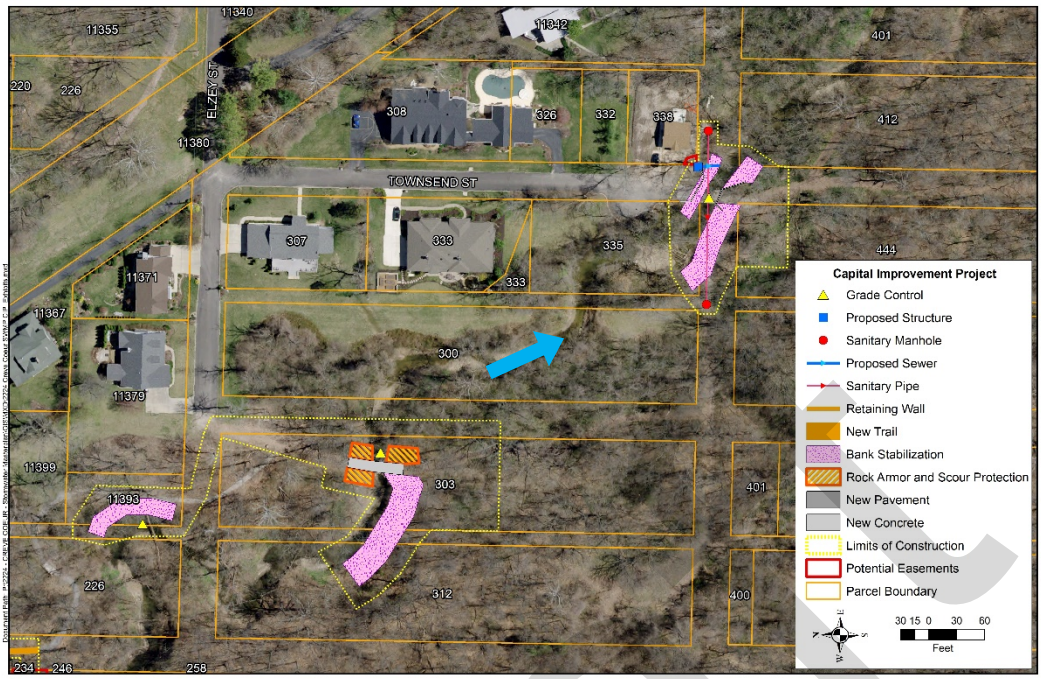


Low water crossing

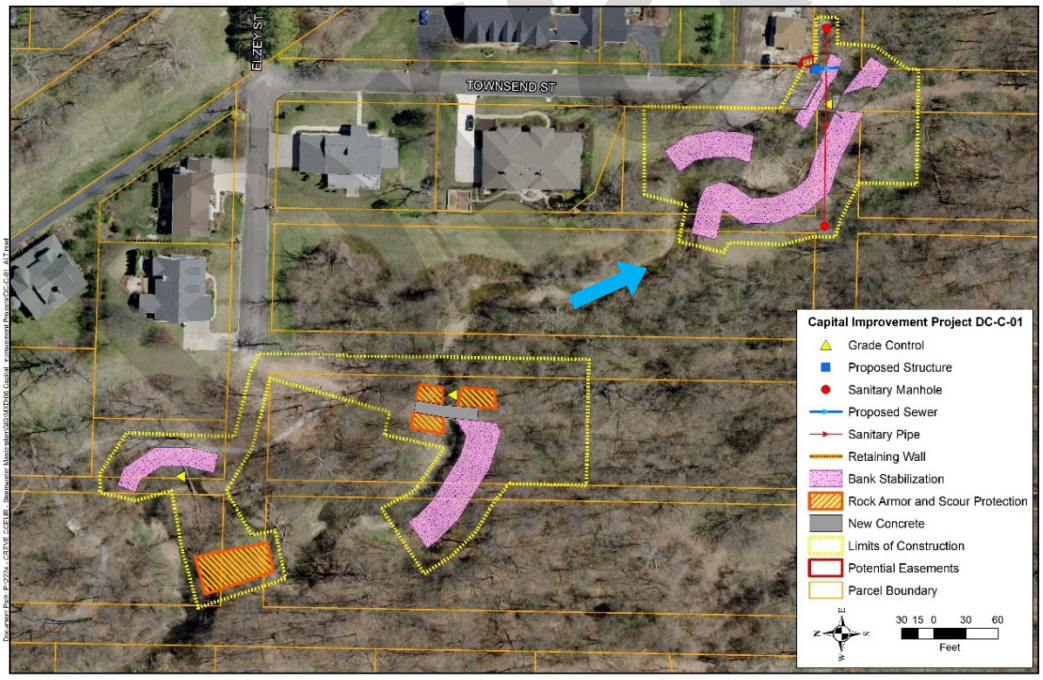


Outside bank next to trail

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Conceptual Layout of DC-C-01



Conceptual Layout of DC-C-01 Alternative

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-01 Deer Creek in Malcolm Terrace Park

Project Description: Bank Stabilization to address erosion at bridge, low water crossing and trail with associated grade controls and a low water crossing replacement.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	1.00	$ 12,000	$ 12,000
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	1.00	$ 5,000	$ 5,000
			Subtotal =	$ 18,500
			Contingency = 25%	$ 4,600
			TOTAL OPINION OF SURVEYING COST =	**$ 23,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	100	$ 20	$ 2,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	4	$ 1,000	$ 4,000
			Subtotal =	$ 13,000
			Contingency = 25%	$ 3,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 16,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	180	$ 160	$ 28,800
ROW	HOURS	80	$ 160	$ 12,800
Permitting	HOURS	80	$ 160	$ 12,800
Final Design	HOURS	120	$ 160	$ 19,200
Develop Plans and Construction Documents	HOURS	200	$ 160	$ 32,000
Construction Support	HOURS	200	$ 160	$ 32,000
			$ -	$ -
			Subtotal =	$ 137,600
			Contingency = 25%	$ 34,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 172,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	1	$ 30,000	$ 30,000
Removal of Existing Structures	LUMP	3	$ 2,000	$ 6,000
Excavation and Embankment in Place	CY	3,100	$ 35	$ 108,500
Rock Grade Control	CY	200	$ 200	$ 40,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	790	$ 150	$ 118,500
Bank Stabilization	SY	1,100	$ 120.00	$ 132,000
Granular Backfill	CY	90.00	$ 55	$ 5,000
New Culvert	LF		$ 500.0	$ -
Manhole	LF	30	$ 625	$ 18,800
Inlet	EA	1.00	$ 3,500	$ 3,500
Sewer Pipe Small	LF	30	$ 140	$ 4,200
Sewer Pipe Medium	LF	210	$ 220	$ 46,200
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	1,040	$ 50	$ 52,000
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	75	$ 100	$ 7,500
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	1	$ 50,000	$ 50,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 63,300	$ 63,300
			Subtotal =	$ 696,500
			Contingency = 30%	$ 209,000
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 905,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 1,116,900**

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-01a Deer Creek in Malcolm Terrace Park

Project Description: Bank Stabilization to address erosion at bridge with associated grade controls. City design plans were advanced to an 80% level prior to putting on hold due to funding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.40	$ 12,000	$ 4,800
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.40	$ 5,000	$ 2,000
			Subtotal =	$ 8,300
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF SURVEYING COST =		**$ 10,400**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		Design Work Already Completed =		$ (97,600)
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 24,400**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0	$ 30,000	$ 12,000
Removal of Existing Structures	LUMP	2	$ 2,000	$ 4,000
Excavation and Embankment in Place	CY	1,200	$ 35	$ 42,000
Rock Grade Control	CY	130	$ 200	$ 26,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	100	$ 150	$ 15,000
Bank Stabilization	SY	500	$ 120.00	$ 60,000
Granular Backfill	CY	20.00	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF	30	$ 625	$ 18,800
Inlet	EA	1.00	$ 3,500	$ 3,500
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF	210	$ 220	$ 46,200
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	1,040	$ 50	$ 52,000
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	0.4	$ 50,000	$ 20,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 31,200	$ 31,200
			Subtotal =	$ 342,800
		Contingency =	30%	$ 102,800
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 445,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 491,700**

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-01b Deer Creek in Malcolm Terrace Park

Project Description: Bank Stabilization to address erosion at low water crossing with associated grade controls and a low water crossing replacement.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.70	$ 12,000	$ 8,400
Prepare Easement Plat and Scripts	EACH	0	$ 1,500	$ -
Contruction Staking and As-Built Surveying	ACRE	0.70	$ 5,000	$ 3,500
			Subtotal =	$ 11,900
			Contingency = 25%	$ 3,000
			TOTAL OPINION OF SURVEYING COST =	**$ 14,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
			Contingency = 25%	$ 2,100
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
			Contingency = 25%	$ 24,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	1	$ 30,000	$ 21,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	1,700	$ 35	$ 59,500
Rock Grade Control	CY	30	$ 200	$ 6,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	660	$ 150	$ 99,000
Bank Stabilization	SY	500	$ 120.00	$ 60,000
Granular Backfill	CY	60.00	$ 55	$ 3,300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF	30	$ 140	$ 4,200
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	75	$ 100	$ 7,500
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	0.7	$ 50,000	$ 35,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 30,900	$ 30,900
			Subtotal =	$ 339,400
			Contingency = 30%	$ 101,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 441,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 588,700**

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-01 Deer Creek in Malcolm Terrace Park

Project Description: Bank Stabilization to address erosion at bridge, low water crossing and trail with associated grade controls and a low water crossing replacement.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	2.00	$ 12,000	$ 24,000
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	2.00	$ 5,000	$ 10,000
			Subtotal =	$ 35,500
			Contingency = 25%	$ 8,900
			TOTAL OPINION OF SURVEYING COST =	**$ 44,400**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	3	$ 1,000	$ 3,000
			Subtotal =	$ 11,500
			Contingency = 25%	$ 2,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 14,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	180	$ 160	$ 28,800
ROW	HOURS	80	$ 160	$ 12,800
Permitting	HOURS	80	$ 160	$ 12,800
Final Design	HOURS	120	$ 160	$ 19,200
Develop Plans and Construction Documents	HOURS	200	$ 160	$ 32,000
Construction Support	HOURS	200	$ 160	$ 32,000
			$ -	$ -
			Subtotal =	$ 137,600
			Contingency = 25%	$ 34,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 172,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	2	$ 30,000	$ 60,000
Removal of Existing Structures	LUMP	3	$ 2,000	$ 6,000
Excavation and Embankment in Place	CY	4,200	$ 35	$ 147,000
Rock Grade Control	CY	150	$ 200	$ 30,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	1,200	$ 150	$ 180,000
Bank Stabilization	SY	1,610	$ 120.00	$ 193,200
Granular Backfill	CY	115	$ 55	$ 6,300
New Culvert	LF		$ 500.0	$ -
Manhole	LF	30	$ 625	$ 18,800
Inlet	EA	1	$ 3,500	$ 3,500
Sewer Pipe Small	LF	30	$ 140	$ 4,200
Sewer Pipe Medium	LF	210	$ 220	$ 46,200
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	1,040	$ 50	$ 52,000
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	75	$ 100	$ 7,500
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	2	$ 50,000	$ 100,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 86,600	$ 86,600
			Subtotal =	$ 952,300
			Contingency = 30%	$ 285,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 1,238,000**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 1,468,800**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge, low water crossing and trail with associated grade controls and a low water crossing replacement.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing and service bridge are in the regulatory floodway.		
COMMON GROUND:			

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address: Low water crossing*	10	1	5		1		10
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Low water crossing, service bridge*	20	31	12		3		620
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	3	10		5		60

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge, low water crossing and trail with associated grade controls and a low water crossing replacement.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing and service bridge are in the regulatory floodway.		
COMMON GROUND:			

			PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
			Basement (1 lot per structure)* *Address:*	250		200		50		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		*	If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
			Attached Garage (1 lot per structure) *Address:*	100		75		25		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
			Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
			Ponding (per ponding area) *Address:*	No. Ponds:		Points/pond:		5		
	2.2.		Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		Points/lot:		20		
	2.3.		Yard Erosion (1 per lot) *Address:*	No. Lots:		Points/lot:		10		
	2.4		Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
			Points for Condition	30						30
				TOTAL PROBLEM POINTS						**720**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge, low water crossing and trail with associated grade controls and a low water crossing replacement.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing and service bridge are in the regulatory floodway.		
COMMON GROUND:			

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000		
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:		2		Points per Add'l Proj.:	50		100
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit			
	Bioswales		PER 100 LF			10			
	Forebays		AC			200			
	Wet Ponds		AC			100			
	Wetlands		AC			50			
	Biostabilization of banks (per bank)	5	PER 100 LF			10			50
	Riffle Pool Complex	6.78	PER 100 LF			10			68
	4.2. Eliminates combined sewer (per project)		EA			100			
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10			
	4.4 Preserves natural resource areas	No. Units				Points per Unit			
	Lakes, Wetlands, etc.		AC			30			
	Natural Corridor (min. 25ft width)	6.78	PER 100 LF			10			68
	4.5 Conservation Easement		EA			20			
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**						20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts				**Yes**			100
							TOTAL SOLUTION POINTS		**406**
							TOTAL BENEFIT POINTS		**1126**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS=	**$1,117**
BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS=	**1.01**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01a: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge with associated grade controls. City design plans were advanced to an 80% level prior to putting on hold due to funding.		
ENVIRONMENTAL CONSIDERATIONS:	The service bridge is in the regulatory floodway.		
COMMON GROUND:			

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Service bridge*	20	26	12		3		520
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01a: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge with associated grade controls. City design plans were advanced to an 80% level prior to putting on hold due to funding.		
ENVIRONMENTAL CONSIDERATIONS:	The service bridge is in the regulatory floodway.		
COMMON GROUND:			

				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*		350		250		65		
		Basement (1 lot per structure)* *Address:*		250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*		300		200		50		
		If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	*	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*		100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*		50		35		12		
		Yard Flooding (1 per lot) *Address:*		10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*		200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*		50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*		25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*		10		6		1		
		Ponding (per ponding area) *Address:*		No. Ponds:		Points/pond:		5		
	2.2.	Moderate Risk Erosion of misc. structures *Address:*		No. Lots:		Points/lot:		20		
	2.3.	Yard Erosion (1 per lot) *Address:*		No. Lots:		Points/lot:		10		
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)		Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition		30						30
				TOTAL PROBLEM POINTS						**570**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01a: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge with associated grade controls. City design plans were advanced to an 80% level prior to putting on hold due to funding.		
ENVIRONMENTAL CONSIDERATIONS:	The service bridge is in the regulatory floodway.		
COMMON GROUND:			

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	3	PER 100 LF		10		30
	Riffle Pool Complex	3.25	PER 100 LF		10		33
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	3.25	PER 100 LF		10		33
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**		100
						TOTAL SOLUTION POINTS	**215**
						TOTAL BENEFIT POINTS	**785**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS=	**$492**
BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS=	**1.60**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01b: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	2
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at low water crossing with associated grade controls and a low water crossing replacement.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing is in the regulatory floodway.		
COMMON GROUND:			

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address: Low water crossing*	10	1	5		1		10
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Low water crossing, service bridge*	20	4	12		3		80
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01b: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	2
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at low water crossing with associated grade controls and a low water crossing replacement.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing is in the regulatory floodway.		
COMMON GROUND:			

				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*		350		250		65		
		Basement (1 lot per structure)* *Address:*		250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*		300		200		50		
		If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	*	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*		100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*		50		35		12		
		Yard Flooding (1 per lot) *Address:*		10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*		200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*		50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*		25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*		10		6		1		
		Ponding (per ponding area) *Address:*		No. Ponds:		Points/pond:		5		
	2.2.	Moderate Risk Erosion of misc. structures *Address:*		No. Lots:		Points/lot:		20		
	2.3.	Yard Erosion (1 per lot) *Address:*		No. Lots:		Points/lot:		10		
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)		Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition								0
				TOTAL PROBLEM POINTS						**90**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01b: Deer Creek in Malcolm Terrace Park	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	2
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at low water crossing with associated grade controls and a low water crossing replacement.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing is in the regulatory floodway.		
COMMON GROUND:			

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	2	PER 100 LF			10				20
	Riffle Pool Complex	0.49	PER 100 LF			10				5
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)	0.49	PER 100 LF			10				5
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements	**50**								50
	5.2. Recreational/Educational	Yes = 100 No = 0 pts				**Yes**				100
									TOTAL SOLUTION POINTS	**180**
									TOTAL BENEFIT POINTS	**270**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS=	**$589**
BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS=	**0.46**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01: Deer Creek in Malcolm Terrace Park Alternative	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge and low water crossing with associated grade controls, low water crossing replacement, and trail relocation.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing and service bridge are in the regulatory floodway.		
COMMON GROUND:			

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address: Low water crossing*	10	1	5		1		10
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Low water crossing, service bridge*	20	34	12		3		680
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	3	10		5		60

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01: Deer Creek in Malcolm Terrace Park Alternative	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge and low water crossing with associated grade controls, low water crossing replacement, and trail relocation.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing and service bridge are in the regulatory floodway.		
COMMON GROUND:			

			PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
			Basement (1 lot per structure)* *Address:*	250		200		50		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		*	If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
			Attached Garage (1 lot per structure) *Address:*	100		75		25		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
			Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
			Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.		Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.		Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4		Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
			Points for Condition	30						30
				TOTAL PROBLEM POINTS						**780**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-01: Deer Creek in Malcolm Terrace Park Alternative	DATE:	7/31/2023
PROJECT LOCATION:	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Bank Stabilization to address erosion at bridge and low water crossing with associated grade controls, low water crossing replacement, and trail relocation.		
ENVIRONMENTAL CONSIDERATIONS:	The low water crossing and service bridge are in the regulatory floodway.		
COMMON GROUND:			

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:		2		Points per Add'l Proj.:	50	100
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)	7	PER 100 LF			10		70
	Riffle Pool Complex	6.78	PER 100 LF			10		68
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)	6.78	PER 100 LF			10		68
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**					20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**			100
						TOTAL SOLUTION POINTS		**426**
						TOTAL BENEFIT POINTS		**1206**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS=	**$1,469**
BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS=	**0.82**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

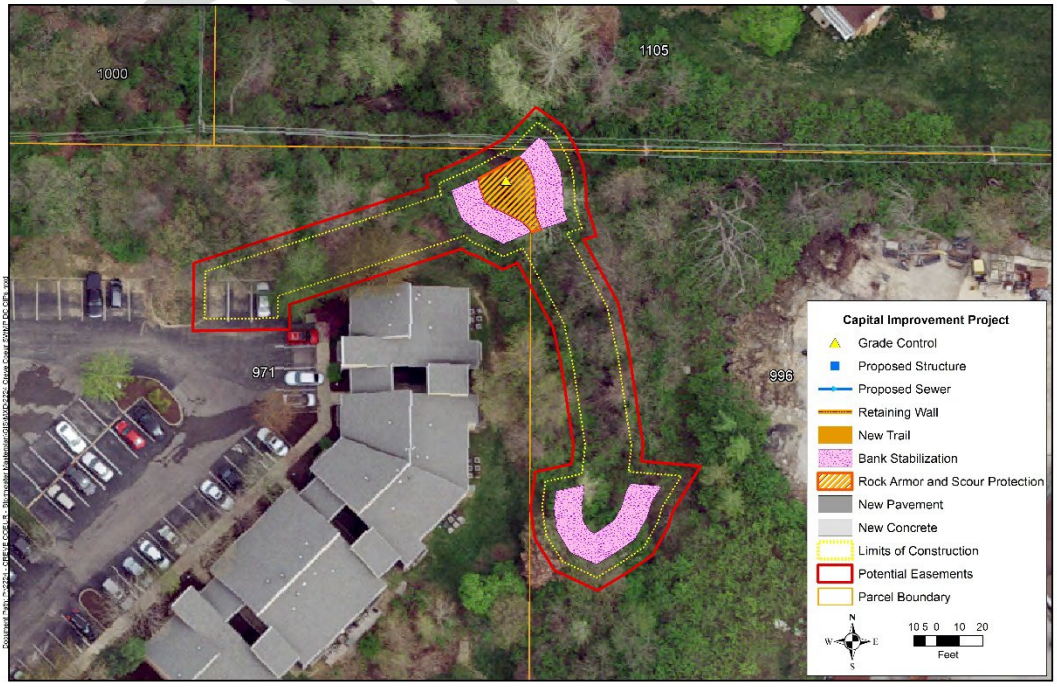
DC-C-03: 996 East Rue De La Banque Street

Problem Description: Along an upper tributary to Creve Coeur Creek west of the 996 East Rue De La Banque Street City maintenance yard erosion was observed around the outfall. There was also a knickpoint near an exposed sanitary line and manhole. The affected parcels are private and public.

Recommendation: Stabilize the banks surrounding the outfall. Install a step grade control and stilling basin at the knickpoint.



Exposed manhole and sanitary line



Conceptual Layout of DC-C-03

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-03 996 East Rue De La Banque Street

Project Description: Bank Stabilization and a stilling basin to address knickpoints threatening structures in an upper tributary.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 7,900
			Contingency = 25%	$ 2,000
			TOTAL OPINION OF SURVEYING COST =	**$ 9,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	225	$ 35	$ 7,900
Rock Grade Control	CY	70	$ 200	$ 14,000
Rock Stilling Basin / Outlet Scour Protection	CY	75	$ 100	$ 7,500
Rock Toe and Slope Protection	CY	55	$ 150	$ 8,300
Bank Stabilization	SY	190	$ 120.00	$ 22,800
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	65	$ 150	$ 9,800
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	56	$ 50	$ 2,800
Utility Relocation	LUMP	0	$ 5,500	$ -
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 9,000	$ 9,000
			Subtotal =	$ 98,900
			Contingency = 30%	$ 29,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 128,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 195,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-03 996 East Rue De La Banque Street DATE: 12/4/2023

PROJECT LOCATION: 996 East Rue De La Banque Street, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank Stabilization and a stilling basin to address knickpoints threatening structures in an upper tributary.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 1022 E Rue De La Bangue Apt*	300		200	1	50		200
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50	0	
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-03 996 East Rue De La Banque Street DATE: 12/4/2023

PROJECT LOCATION: 996 East Rue De La Banque Street, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank Stabilization and a stilling basin to address knickpoints threatening structures in an upper tributary.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						220

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-03 996 East Rue De La Banque Street DATE: 12/4/2023

PROJECT LOCATION: 996 East Rue De La Banque Street, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank Stabilization and a stilling basin to address knickpoints threatening structures in an upper tributary.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2**	PER 100 LF		10		20
	Riffle Pool Complex	**1.84**	PER 100 LF		10		18
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	1.84	PER 100 LF		10		18
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
					TOTAL SOLUTION POINTS		**77**
					TOTAL BENEFIT POINTS		**297**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$196**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.52**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

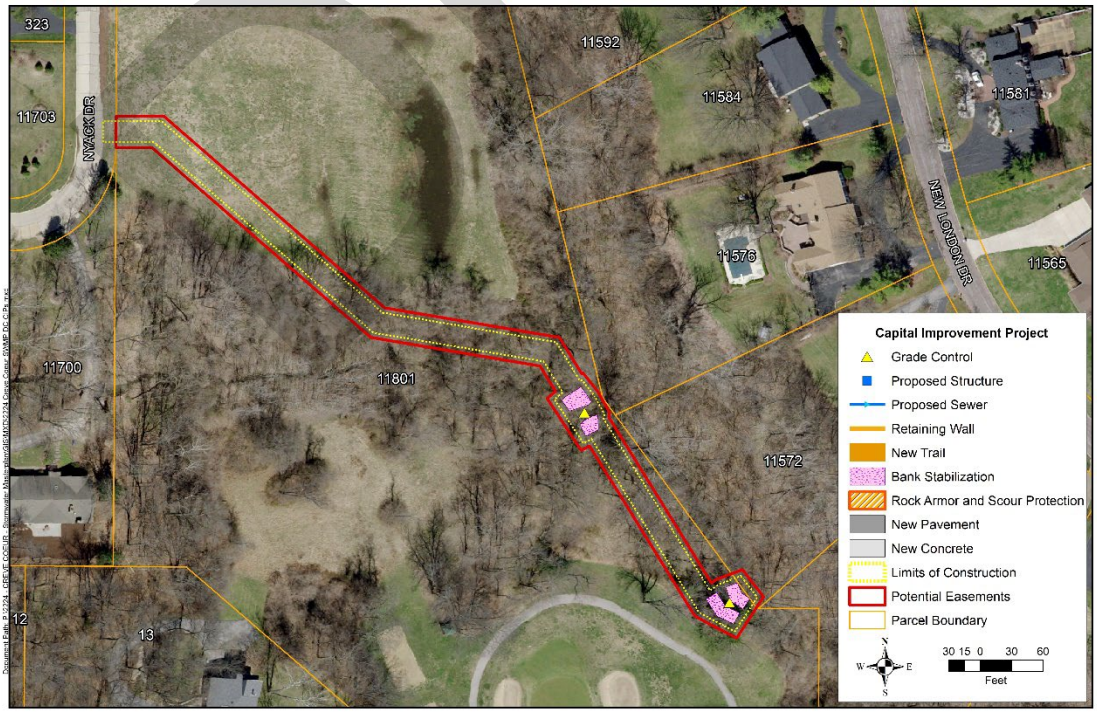
DC-C-04: 11572 New London Drive

Problem Description: In the unnamed tributary behind lot 1572 New London Drive the existing concrete grade control structure is failing. The affected parcels are private.

Recommendation: Install a new step grade control structure with associated bank stabilization to replace the failing concrete grade control structure in the unnamed tributary behind lot 1572 New London Drive.



Failing concrete grade control



Conceptual Layout of DC-C-04

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-04 11572 New London Drive

Project Description: Bank stabilization to address erosion in an unnamed tributary.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.4	$ 12,000	$ 4,800
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.4	$ 5,000	$ 2,000
			Subtotal =	$ 9,800
		Contingency =	25%	$ 2,500
		TOTAL OPINION OF SURVEYING COST =		**$ 12,300**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.4	$ 30,000	$ 12,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	120	$ 35	$ 4,200
Rock Grade Control	CY	55	$ 200	$ 11,000
Rock Stilling Basin / Outlet Scour Protection	CY	0	$ 100	$ -
Rock Toe and Slope Protection	CY	45	$ 150	$ 6,800
Bank Stabilization	SY	145	$ 120.00	$ 17,400
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	0	$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.4	$ 50,000	$ 20,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 7,900	$ 7,900
			Subtotal =	$ 86,400
		Contingency =	30%	$ 25,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 112,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 181,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-04 11572 New London Drive DATE: 12/4/2023

PROJECT LOCATION: 11572 New London Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion in an unnamed tributary.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-04 11572 New London Drive DATE: 12/4/2023

PROJECT LOCATION: 11572 New London Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion in an unnamed tributary.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		Points/pond:		5		
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		Points/lot:		20		
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		Points/lot:		10		
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**40**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-04 11572 New London Drive DATE: 12/4/2023

PROJECT LOCATION: 11572 New London Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion in an unnamed tributary.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)	**2**	PER 100 LF		10				20
	Riffle Pool Complex	**5.42**	PER 100 LF		10				54
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)	**5.42**	PER 100 LF		10				54
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**						**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
							TOTAL SOLUTION POINTS		**148**
							TOTAL BENEFIT POINTS		**188**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$182**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.04**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

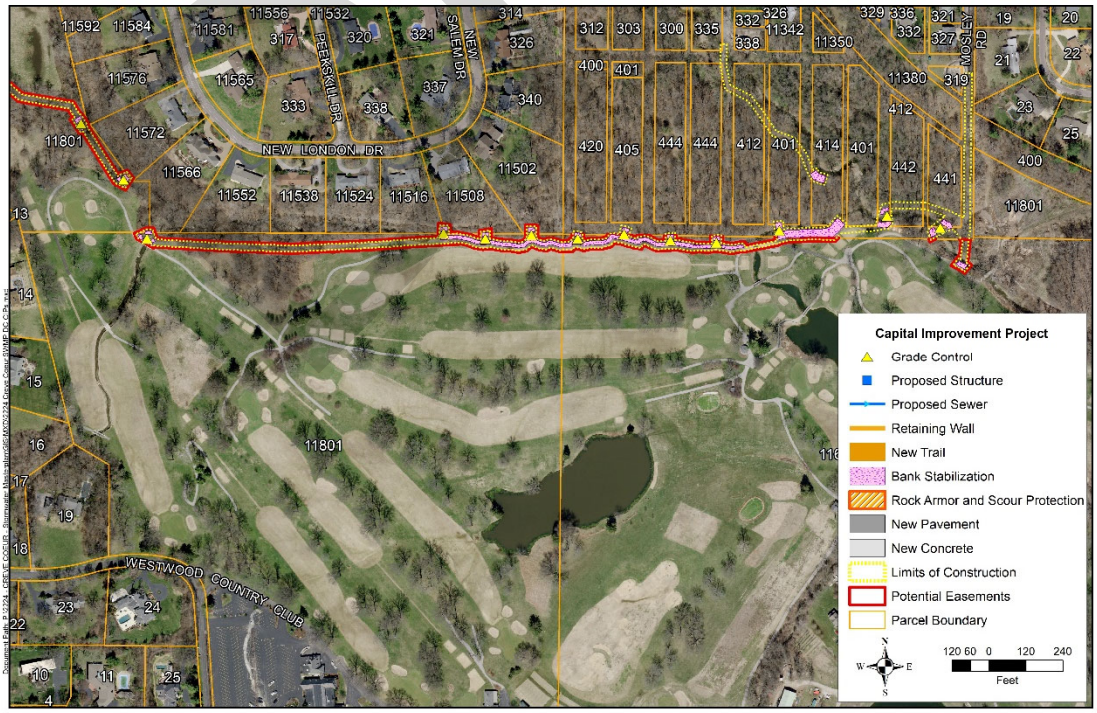
DC-C-05: Westwood Country Club



Tributary RDB erosion along north end of country club

Problem Description: In Deer Creek and the unnamed tributary along the north end of Westwood Country Club several issues were observed as follows. Bank erosion is threatening the maintenance cart path upstream of the Deer Creek bridge crossing. There is an exposed sanitary crossing causing a knickpoint in Deer Creek between South Mosley Road and the country club. Just downstream of the tributary confluence, there is bank erosion threatening a manhole at the top of bank and a knickpoint in the channel. There is bank erosion along the RDB of the unnamed tributary on the north edge of Westwood Country Club. There is bank erosion threatening the bridge abutments and a knickpoint at the northwest end of the country club. The affected parcels are private.

Recommendation: Stabilize the RDB threatening the maintenance cart path. Install a step grade control at the exposed sanitary crossing. Stabilize the RDB to protect the manhole at top of bank and install a grade control in the channel. Stabilize a portion of the RDB of the tributary between the country club pond outfall and the confluence and install a grade control at the upstream end of the stabilization. Stabilize the RDB of the tributary along the north end of the country club with grade controls every 150 feet. Install a step grade control at the northwest country club bridge and stabilize the banks to protect the bridge abutments.



Conceptual Layout of DC-C-05

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-05 Westwood Country Club

Project Description: Grade controls and bank stabilization to address bank erosion and knickpoints in Deer Creek and one of its tributaries.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	2.2	$ 12,000	$ 26,400
Prepare Easement Plat and Scripts	EACH	12	$ 1,500	$ 18,000
Contruction Staking and As-Built Surveying	ACRE	2.2	$ 5,000	$ 11,000
			Subtotal =	$ 55,400
		Contingency =	25%	$ 13,900
		TOTAL OPINION OF SURVEYING COST =		**$ 69,300**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	150	$ 20	$ 3,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 11,000
		Contingency =	25%	$ 2,800
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 13,800**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	250	$ 160	$ 40,000
ROW	HOURS	100	$ 160	$ 16,000
Permitting	HOURS	120	$ 160	$ 19,200
Final Design	HOURS	200	$ 160	$ 32,000
Develop Plans and Construction Documents	HOURS	250	$ 160	$ 40,000
Construction Support	HOURS	250	$ 160	$ 40,000
			$ -	$ -
			Subtotal =	$ 187,200
		Contingency =	25%	$ 46,800
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 234,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	2.2	$ 30,000	$ 66,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	3,210	$ 35	$ 112,400
Rock Grade Control	CY	570	$ 200	$ 114,000
Rock Stilling Basin / Outlet Scour Protection	CY	0	$ 100	$ -
Rock Toe and Slope Protection	CY	725	$ 150	$ 108,800
Bank Stabilization	SY	2,580	$ 120.00	$ 309,600
Granular Backfill	CY	110	$ 55	$ 6,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	1,304	$ 150	$ 195,700
Pavement/Sidewalk Removal & Replacement	SY	0	$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	2.2	$ 50,000	$ 110,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 102,900	$ 102,900
			Subtotal =	$ 1,132,000
		Contingency =	30%	$ 339,600
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 1,471,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$**	**1,788,700**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-05 Westwood Country Club DATE: 12/4/2023

PROJECT LOCATION: Westwood Country Club, 11801 Conway Road, St. Louis, MO 63131 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls and bank stabilization to address bank erosion and knickpoints in Deer Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	9	10		5		180

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-05 Westwood Country Club DATE: 12/4/2023

PROJECT LOCATION: Westwood Country Club, 11801 Conway Road, St. Louis, MO 63131 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls and bank stabilization to address bank erosion and knickpoints in Deer Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**180**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-05 Westwood Country Club DATE: 12/4/2023

PROJECT LOCATION: Westwood Country Club, 11801 Conway Road, St. Louis, MO 63131 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade controls and bank stabilization to address bank erosion and knickpoints in Deer Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**17**	PER 100 LF		10		170
	Riffle Pool Complex	**21.88**	PER 100 LF		10		219
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	21.88	PER 100 LF		10		219
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements				**5**		**5**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**613**
						TOTAL BENEFIT POINTS	**793**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$1,789**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.44**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

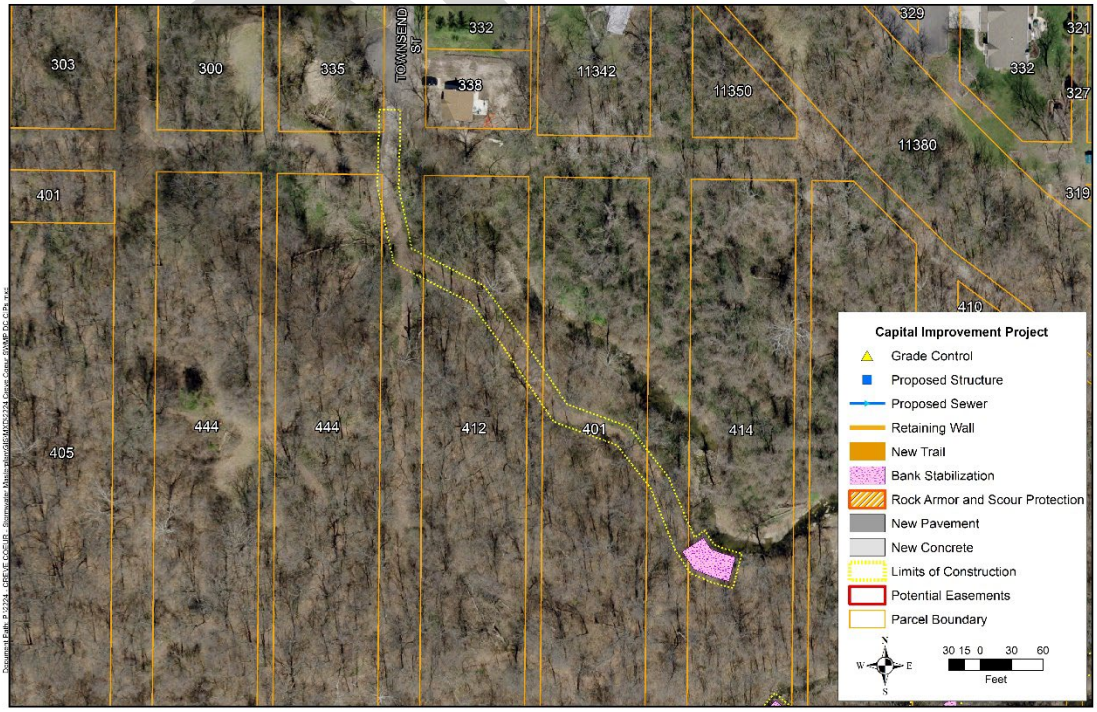
DC-C-06: Malcolm Terrace Park

Problem Description: In Malcolm Terrace Park along Deer there is erosion threatening the trail located in the southeast corner of Malcom Terrace Park. The affected parcels are public.

Recommendation: Stabilize the RDB and relocate the trail.



Bank erosion threatening trail



Conceptual Layout of DC-C-06

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-06 Malcolm Terrace Park

Project Description: Bank stabilization to address bank erosion in Deer Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.3	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	6	$ 1,500	$ 9,000
Contruction Staking and As-Built Surveying	ACRE	0.3	$ 5,000	$ 1,500
			Subtotal =	$ 14,100
		Contingency =	25%	$ 3,500
		TOTAL OPINION OF SURVEYING COST =		**$ 17,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.3	$ 30,000	$ 9,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	120	$ 35	$ 4,200
Rock Grade Control	CY	0	$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY	0	$ 100	$ -
Rock Toe and Slope Protection	CY	15	$ 150	$ 2,300
Bank Stabilization	SY	125	$ 120.00	$ 15,000
Granular Backfill	CY	2	$ 55	$ 100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	0	$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	0	$ 50	$ -
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 5,100	$ 5,100
			Subtotal =	$ 56,200
		Contingency =	30%	$ 16,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 73,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$**	**148,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-06 Malcolm Terrace Park DATE: 12/5/2023

PROJECT LOCATION: Malcolm Terrace Park, 11370 St Paul Street, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address bank erosion in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10	1	5		10

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-06 Malcolm Terrace Park DATE: 12/5/2023

PROJECT LOCATION: Malcolm Terrace Park, 11370 St Paul Street, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address bank erosion in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**10**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-06 Malcolm Terrace Park DATE: 12/5/2023

PROJECT LOCATION: Malcolm Terrace Park, 11370 St Paul Street, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address bank erosion in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	1	PER 100 LF			10				10
	Riffle Pool Complex		PER 100 LF			10				
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)	1	PER 100 LF			10				10
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements			10						10
	5.2. Recreational/Educational	Yes = 100 No = 0 pts				Yes				100
								TOTAL SOLUTION POINTS		130
								TOTAL BENEFIT POINTS		140

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$148**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.95**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-07: New Salem Drive

Problem Description: In Deer Creek within Malcolm Terrace Park issues were observed as follows. Bank erosion surrounding a pipe outfall with a rusted invert in the rear lot of 234 New Salem Drive. There is a threatened utility pole on the opposite bank. In the rear lot of 210 New Salem Drive there is a perched outfall, knickpoint, exposed sanitary manhole, and leaning utility pole. The affected parcels are private.

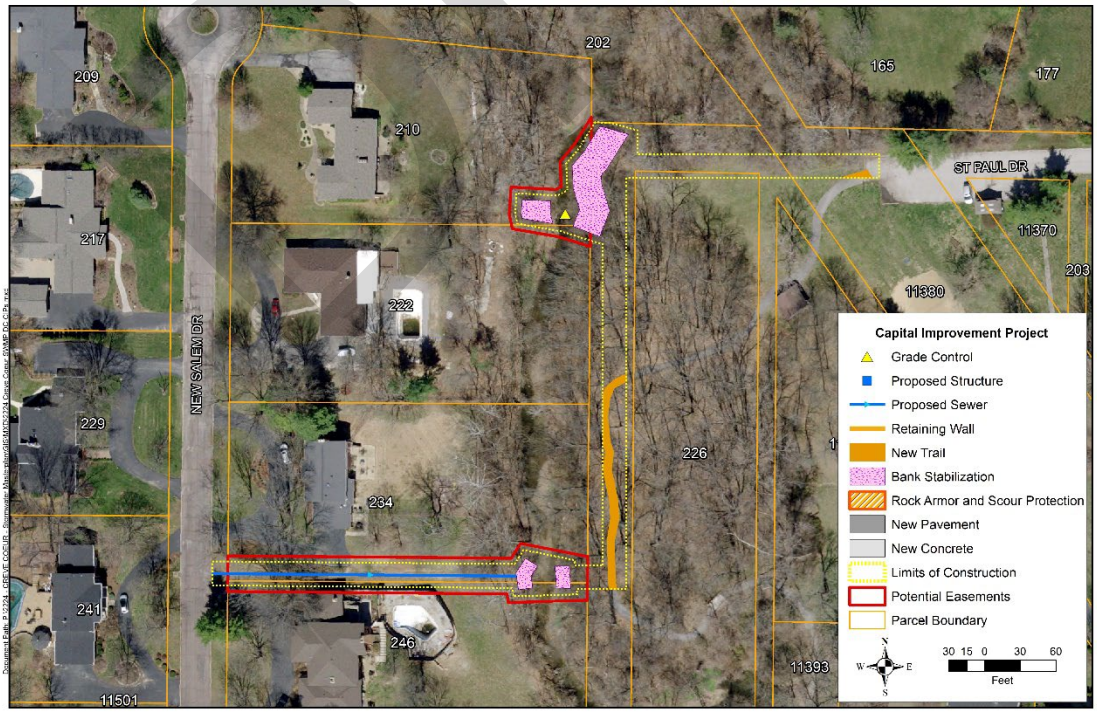


234 New Salem Drive pipe outfall

Recommendation: Stabilize both banks in the rear lot of 234 New Salem Drive and replace the pipe. Stabilize the LDB to protect the exposed sanitary manhole and replace the utility pole. Install a step grade control at the knickpoint.



Leaning utility pole



Conceptual Layout of DC-C-07

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-07 New Salem Drive

Project Description: Bank stabilization to address bank erosion in Deer Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 19,000
			Contingency = 25%	$ 4,800
			TOTAL OPINION OF SURVEYING COST =	**$ 23,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
			Contingency = 25%	$ 2,300
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
			Contingency = 25%	$ 24,400
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	590	$ 35	$ 20,700
Rock Grade Control	CY	50	$ 200	$ 10,000
Rock Stilling Basin / Outlet Scour Protection	CY	0	$ 100	$ -
Rock Toe and Slope Protection	CY	65	$ 150	$ 9,800
Bank Stabilization	SY	355	$ 120.00	$ 42,600
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	1,312	$ 150	$ 196,700
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	0	$ 50	$ -
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 32,600	$ 32,600
			Subtotal =	$ 358,500
			Contingency = 30%	$ 107,600
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 466,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 623,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-07 New Salem Drive DATE: 12/4/2023

PROJECT LOCATION: 234 New Salem Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address bank erosion in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-07 New Salem Drive DATE: 12/4/2023

PROJECT LOCATION: 234 New Salem Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address bank erosion in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**20**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-07 New Salem Drive DATE: 12/4/2023

PROJECT LOCATION: 234 New Salem Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address bank erosion in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000		
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50		
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit			
	Bioswales		PER 100 LF			10			
	Forebays		AC			200			
	Wet Ponds		AC			100			
	Wetlands		AC			50			
	Biostabilization of banks (per bank)	**2**	PER 100 LF			10			20
	Riffle Pool Complex	**2.85**	PER 100 LF			10			28
	4.2. Eliminates combined sewer (per project)		EA			100			
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10			
	4.4 Preserves natural resource areas	No. Units				Points per Unit			
	Lakes, Wetlands, etc.		AC			30			
	Natural Corridor (min. 25ft width)	**2.85**	PER 100 LF			10			28
	4.5 Conservation Easement		EA			20			
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)		
	Points for Easements			**10**					**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
							TOTAL SOLUTION POINTS		**87**
							TOTAL BENEFIT POINTS		**107**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$623**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.17**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-08: New Salem Drive and Camfield Square Drive

Problem Description: In Deer Creek between Camfield Square Drive and New Salem Drive several issues were observed as follows. In the rear lot of 202 New Salem Drive there is an exposed sanitary crossing turning flow and causing a knickpoint. Just downstream of the tributary confluence, there is a knickpoint in the channel. At the downstream end of the tributary, there is a knickpoint along with failing grouted riprap on the banks. North of 201 New Salem Drive, there is a knickpoint in the tributary and the garage is within 10 ft of the top of bank. There is erosion along the outside bend of Deer Creek behind 132 and 138 Camfield Square Drive. The affected parcels are private.

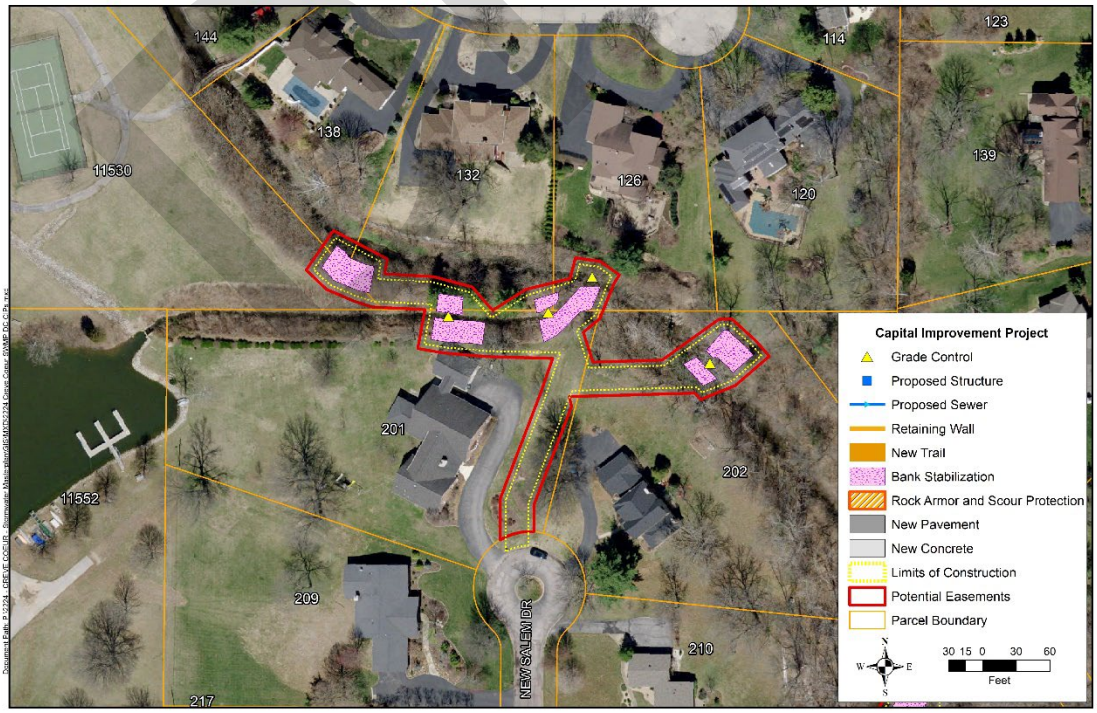


Garage at top of bank



Scour along outside bend of Deer Creek

Recommendation: Install a grade control at the exposed sanitary crossing. Install a grade control at the knickpoint downstream of the confluence. Install a step grade control at the downstream end of the tributary and replace the failing bank armament. Stabilize the banks threatening the garage and install a grade control at the knickpoint. Stabilize the outside bend behind 132 and 138 Camfield Square Drive.



Conceptual Layout of DC-C-08

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-08 New Salem Drive and Camfield Square Drive

Project Description: Bank stabilization and grade controls to address erosion threatening structures in Deer Creek and one of its tributaries.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.4	$ 12,000	$ 4,800
Prepare Easement Plat and Scripts	EACH	6	$ 1,500	$ 9,000
Contruction Staking and As-Built Surveying	ACRE	0.4	$ 5,000	$ 2,000
			Subtotal =	$ 15,800
			Contingency = 25%	$ 4,000
			TOTAL OPINION OF SURVEYING COST =	**$ 19,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	100	$ 20	$ 2,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 10,000
			Contingency = 25%	$ 2,500
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.4	$ 30,000	$ 12,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,310	$ 35	$ 45,900
Rock Grade Control	CY	120	$ 200	$ 24,000
Rock Stilling Basin / Outlet Scour Protection	CY	0	$ 100	$ -
Rock Toe and Slope Protection	CY	115	$ 150	$ 17,300
Bank Stabilization	SY	525	$ 120.00	$ 63,000
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	0	$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	21	$ 50	$ 1,100
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.4	$ 50,000	$ 20,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 19,000	$ 19,000
			Subtotal =	$ 208,900
			Contingency = 30%	$ 62,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 271,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 383,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-08 New Salem Drive and Camfield Square Drive DATE: 12/5/2023

PROJECT LOCATION: 201 New Salem Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures in Deer Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 210 New Salem Dr*	300	1	200		50		300
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 120 Camfield Square Dr pool*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5	3	15

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-08 New Salem Drive and Camfield Square Drive DATE: 12/5/2023

PROJECT LOCATION: 201 New Salem Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures in Deer Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**340**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-08 New Salem Drive and Camfield Square Drive DATE: 12/5/2023

PROJECT LOCATION: 201 New Salem Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion threatening structures in Deer Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY											
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000				
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50				
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit					
	Bioswales		PER 100 LF			10					
	Forebays		AC			200					
	Wet Ponds		AC			100					
	Wetlands		AC			50					
	Biostabilization of banks (per bank)	**8**	PER 100 LF			10					80
	Riffle Pool Complex	**8.05**	PER 100 LF			10					81
	4.2. Eliminates combined sewer (per project)		EA			100					
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10					
	4.4 Preserves natural resource areas	No. Units				Points per Unit					
	Lakes, Wetlands, etc.		AC			30					
	Natural Corridor (min. 25ft width)		PER 100 LF			10					
	4.5 Conservation Easement		EA			20					
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)				
	Points for Easements			**10**							**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts									
								TOTAL SOLUTION POINTS			**171**
								TOTAL BENEFIT POINTS			**511**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$384**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.33**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

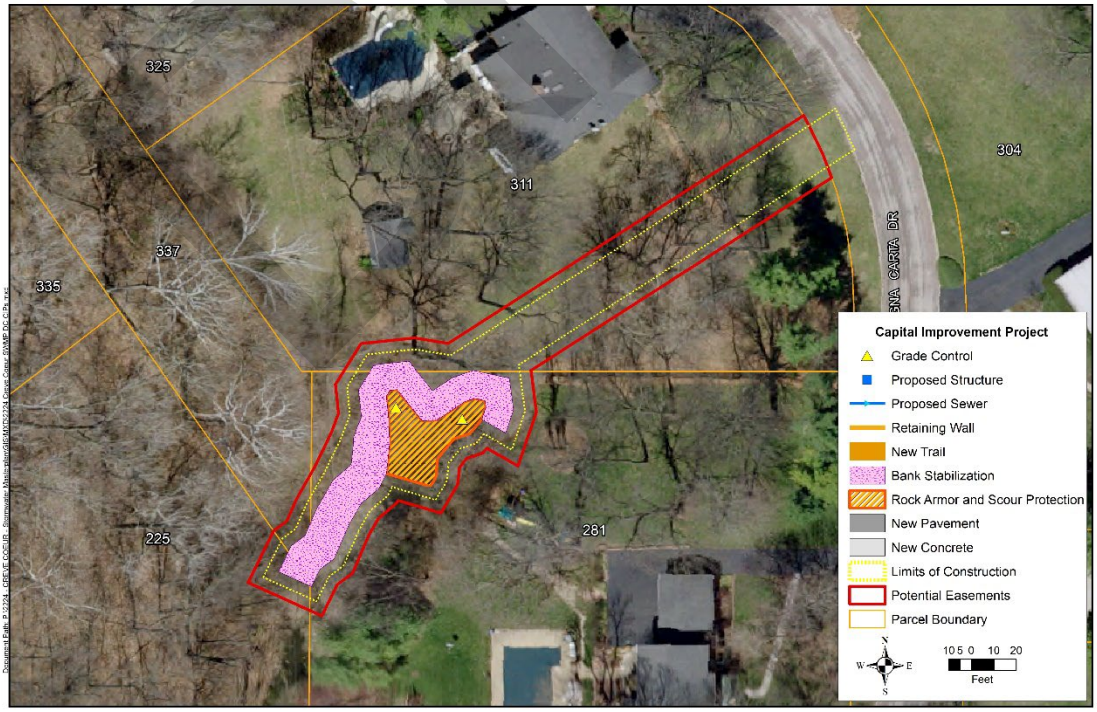
DC-C-09: 281 Magna Carta Drive

Problem Description: In the northwest portion of the 281 Magna Carta Drive along Deer Creek, there is failing grouted riprap and a scour hole forming downstream of the two perched outfalls. The gabion wall along the LDB seems to be in good condition. The affected parcels are private.

Recommendation: Install two step grade controls at each outfall with a stilling basin downstream. Stabilize the banks between the outfalls and along the RDB.



Outfall and scour hole



Conceptual Layout of DC-C-09

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-09 281 Magna Carta Drive

Project Description: Step grade control and stilling basin to protect outfall and replace failing grouted riprap structure in Deer Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
		Contingency =	25%	$ 2,400
		TOTAL OPINION OF SURVEYING COST =		**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	535	$ 35	$ 18,700
Rock Grade Control	CY	70	$ 200	$ 14,000
Rock Stilling Basin / Outlet Scour Protection	CY	150	$ 100	$ 15,000
Rock Toe and Slope Protection	CY	70	$ 150	$ 10,500
Bank Stabilization	SY	275	$ 120.00	$ 33,000
Granular Backfill	CY	25	$ 55	$ 1,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	0	$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	21	$ 50	$ 1,100
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 11,500	$ 11,500
			Subtotal =	$ 126,700
		Contingency =	30%	$ 38,000
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 164,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$**	**233,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-09 281 Magna Carta Drive DATE: 12/5/2023

PROJECT LOCATION: 281 Magna Carta Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Step grade control and stilling basin to protect outfall and replace failing grouted riprap structure in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 311 Magna Carta Dr Shed*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-09 281 Magna Carta Drive DATE: 12/5/2023

PROJECT LOCATION: 281 Magna Carta Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Step grade control and stilling basin to protect outfall and replace failing grouted riprap structure in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**25**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-09 281 Magna Carta Drive DATE: 12/5/2023

PROJECT LOCATION: 281 Magna Carta Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Step grade control and stilling basin to protect outfall and replace failing grouted riprap structure in Deer Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	3	PER 100 LF			10				30
	Riffle Pool Complex		PER 100 LF			10				
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)		PER 100 LF			10				
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		20							20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		50
								TOTAL BENEFIT POINTS		75

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$234**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.32**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-10: Villa Coublay Drive

Problem Description: There is erosion along both banks at the downstream end of Windrush Creek as well as an exposed sanitary line in the channel bed. Upstream of the Villa Coublay Drive bridge crossing, there is bank erosion along the LDB. The bridge abutments are also cracking. The affected parcels are private.



Downstream end of Windrush Creek

Recommendation: Install a series of four grade controls at the downstream end of Windrush Creek as well as 100 feet of bank stabilization to prevent further bank failures. Install bank stabilization along the LDB upstream of the Villa Coublay Drive bridge crossing. Some of the proposed work is in the City of Frontenac. The project will need an intergovernmental agreement. City Council and Stormwater Committee as well as City of Frontenac will need to agree on the project.



LDB upstream of Villa Coublay Drive



Conceptual Layout of DC-C-10

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-10 Villa Coublay Drive

Project Description: Bank stabilization and grade controls to repair erosion in Windrush Creek. Some of the proposed work is in the City of Frontenac. The project will need an intergovernmental agreement. City Council and Stormwater Committee as well as City of Frontenac will need to agree on the project.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
		Contingency =	25%	$ 2,400
		TOTAL OPINION OF SURVEYING COST =		**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	350	$ 35	$ 12,300
Rock Grade Control	CY	80	$ 200	$ 16,000
Rock Stilling Basin / Outlet Scour Protection	CY	0	$ 100	$ -
Rock Toe and Slope Protection	CY	110	$ 150	$ 16,500
Bank Stabilization	SY	345	$ 120.00	$ 41,400
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	0	$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	64	$ 50	$ 3,200
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 11,200	$ 11,200
			Subtotal =	$ 122,900
		Contingency =	30%	$ 36,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 159,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 228,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-10 Villa Coublay Drive DATE: 12/5/2023

PROJECT LOCATION: 44 Villa Coublay Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to repair erosion in Windrush Creek. Some of the proposed work is in the City of Frontenac. The project will need an intergovernmental agreement. City Council and Stormwater Committee as well as City of Frontenac will need to agree on the project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Villa Coublay Dr*	20	2	12	1	3	2	58
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-10 Villa Coublay Drive DATE: 12/5/2023

PROJECT LOCATION: 44 Villa Coublay Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to repair erosion in Windrush Creek. Some of the proposed work is in the City of Frontenac. The project will need an intergovernmental agreement. City Council and Stormwater Committee as well as City of Frontenac will need to agree on the project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		Points/pond:		5		
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		Points/lot:		20		
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		Points/lot:		10		
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						**78**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-10 Villa Coublay Drive DATE: 12/5/2023

PROJECT LOCATION: 44 Villa Coublay Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to repair erosion in Windrush Creek. Some of the proposed work is in the City of Frontenac. The project will need an intergovernmental agreement. City Council and Stormwater Committee as well as City of Frontenac will need to agree on the project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: This project is partially located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000		
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50		
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit			
	Bioswales		PER 100 LF			10			
	Forebays		AC			200			
	Wet Ponds		AC			100			
	Wetlands		AC			50			
	Biostabilization of banks (per bank)	**3**	PER 100 LF			10			30
	Riffle Pool Complex	**3.31**	PER 100 LF			10			33
	4.2. Eliminates combined sewer (per project)		EA			100			
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10			
	4.4 Preserves natural resource areas	No. Units				Points per Unit			
	Lakes, Wetlands, etc.		AC			30			
	Natural Corridor (min. 25ft width)	3.31	PER 100 LF			10			33
	4.5 Conservation Easement		EA			20			
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**						**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
								TOTAL SOLUTION POINTS	**116**
								TOTAL BENEFIT POINTS	**194**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$229**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.85**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-11: Brooktrail Court South



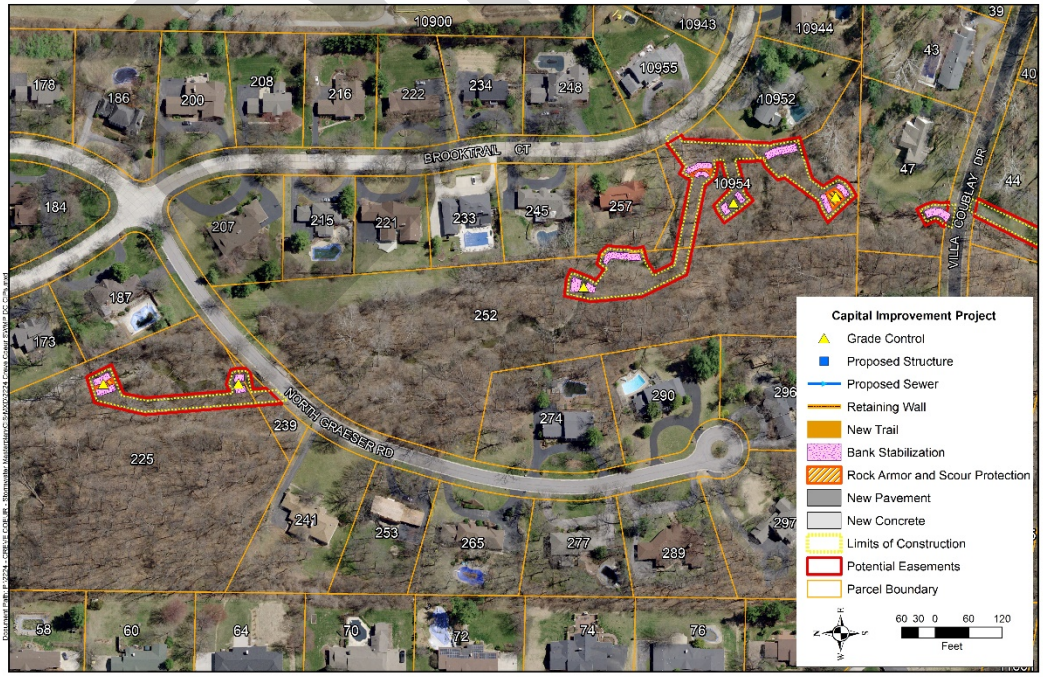
257 Brooktrail Court beaver dam



Bank erosion at 257 Brooktrail Court

Problem Description: Several knickpoints and eroded banks were observed along Windrush Creek upstream and downstream of South Graeser Road as follows. In the rear lot of 187 Brooktrail Court, the existing grouted riprap is failing and there is a 3 foot knickpoint. Immediately upstream of South Graeser Road, there is a 1 foot knickpoint. Along the rear lot of 257 Brooktrail Court, there is a beaver dam with a 2 foot knickpoint and bank erosion along the outside bend of the channel. On the 10954 Brooktrail Court property, there is bank erosion along the outside bend of the channel. In the rear lot of 10952 Brooktrail Court, there is bank erosion along the outside bend of the channel and failing grouted riprap with a 1.5 foot knickpoint. During an extreme event, water was up to back door on 257 Brooktrail Court. The affected parcels are private.

Recommendation: Install a step grade control structure and and stilling basin at 187 Brooktrail Court. Install a grade control structure upstream of South Graeser Road. Install a step grade control and stabilize the outside bend of the channel at 257 Brooktrail Court. Stabilize the outside bend of the channel, install a stilling basin, and install a step grade control structure at 10954 Brooktrail Court and 10952 Brooktrail Court respectively.



Conceptual Layout of DC-C-11

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-11 Brooktrail Court South

Project Description: Bank stabilization, grade controls, and stilling basins to address erosion threatening structures in Windrush Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.9	$ 12,000	$ 10,800
Prepare Easement Plat and Scripts	EACH	6	$ 1,500	$ 9,000
Contruction Staking and As-Built Surveying	ACRE	0.9	$ 5,000	$ 4,500
			Subtotal =	$ 24,300
		Contingency =	25%	$ 6,100
		TOTAL OPINION OF SURVEYING COST =		**$ 30,400**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,500
		Contingency =	25%	$ 2,600
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 13,100**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.9	$ 30,000	$ 27,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,095	$ 35	$ 38,300
Rock Grade Control	CY	230	$ 200	$ 46,000
Rock Stilling Basin / Outlet Scour Protection	CY	185	$ 100	$ 18,500
Rock Toe and Slope Protection	CY	200	$ 150	$ 30,000
Bank Stabilization	SY	590	$ 120.00	$ 70,800
Granular Backfill	CY	50	$ 55	$ 2,800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.9	$ 50,000	$ 45,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 28,600	$ 28,600
			Subtotal =	$ 314,500
		Contingency =	30%	$ 94,400
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 408,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 574,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-11 Brooktrail Court South DATE: 12/5/2023

PROJECT LOCATION: 257 Brooktrail Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion threatening structures in Windrush Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 10952 Brooktrail Ct*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 10952 Brooktrail Ct pool*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	6	10		5		120

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-11 Brooktrail Court South DATE: 12/5/2023

PROJECT LOCATION: 257 Brooktrail Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion threatening structures in Windrush Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**205**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-11 Brooktrail Court South DATE: 12/5/2023

PROJECT LOCATION: 257 Brooktrail Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion threatening structures in Windrush Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**4.52**	PER 100 LF		10		45
	Riffle Pool Complex	**15.25**	PER 100 LF		10		152
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	15.25	PER 100 LF		10		152
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**360**
						TOTAL BENEFIT POINTS	**565**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$574**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.98**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-12: Brooktrail Court North

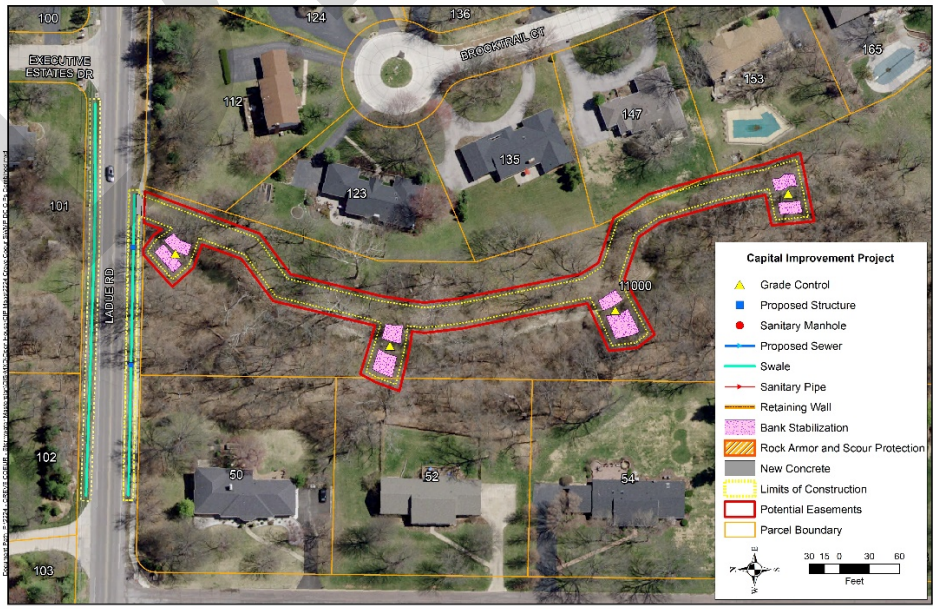


Downstream end of Ladue Road crossing

Problem Description: In Windrush Creek downstream of Ladue Road, multiple knickpoints were observed as follows. There is a 2 foot knickpoint and scour pool forming at the Ladue Road crossing outfall. In the rear lot of 123 Brooktrail Court, there is failing grouted riprap with a 2 foot knickpoint. In the rear lot of 147 Brooktrail Court, there is a 1 foot knickpoint and failing grouted riprap. In the rear lot of 153 Brooktrail Court, there is a 1 foot knickpoint and failing grouted riprap. Flooding of Ladue Road. Mainly due to water not being able to run off of the pavement due to build up of road debris and turf at the pavement edge. The affected parcels are private.

Recommendation: Install a step grade control structure at the Ladue Rd crossing outfall. Install step grade control structures with associated bank stabilization to address knickpoints and failing grouted riprap in the rear lots of 123 and 153 Brooktrail Court. Install a grade control structure with associated bank stabilization to address knickpoint and failing grouted riprap in the rear lot of 147 Brooktrail Court. On the north side of Ladue Road construct a shoulder and swale from Hunters Grove Drive to Executive Estates Drive. On the south side of Ladue Road construct a swale between the road and the sidewalk from Hunters Grove Drive to 112 Brooktail Court with an inlet constructed over the existing storm sewer and one constructed over the existing culvert.

Special Considerations: There is evidence from debris on the fence on the downstream side of the culvert that the road may be overtopped due to culvert capacity issues. The culvert is 6 feet tall x 10 feet wide with an approximate slope of 0.63% which results in a full flow culvert capacity of approximately 900 cubic feet per second. The watershed is approximately 466 acres and 30% impervious, the estimated MSD 15-year flow is 1000 cubic feet per second. Additional hydraulic analysis is needed to confirm the actual culvert hydraulic capacity and freeboard. Current MSD regulations would be 2 feet of freeboard for the 100-yr event or approximately 1360 cubic feet per second.



Conceptual Layout of DC-C-12

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-12 Brooktrail Court North

Project Description: Bank stabilization and grade controls to address erosion in Windrush Creek as well as swales to address overland flow issues.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.7	$ 12,000	$ 8,400
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.7	$ 5,000	$ 3,500
			Subtotal =	$ 16,400
		Contingency =	25%	$ 4,100
		TOTAL OPINION OF SURVEYING COST =		**$ 20,500**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	100	$ 20	$ 2,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 10,000
		Contingency =	25%	$ 2,500
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
		Contingency =	25%	$ 16,000
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.7	$ 30,000	$ 21,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	530	$ 35	$ 18,600
Rock Grade Control	CY	125	$ 200	$ 25,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	85	$ 150	$ 12,800
Bank Stabilization	SY	305	$ 120.00	$ 36,600
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA	1	$ 3,130	$ 3,100
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	690	$ 15	$ 10,400
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	690	$ 50	$ 34,500
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.7	$ 50,000	$ 35,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 20,400	$ 20,400
			Subtotal =	$ 224,000
		Contingency =	30%	$ 67,200
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 291,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 404,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-12 Brooktrail Court North DATE: 12/5/2023

PROJECT LOCATION: 123 Brooktrail Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion in Windrush Creek as well as swales to address overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5	5	0		25
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25	1	4		25
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Undermined culvert*	20	2	12		3		40
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	3	10		5		60

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-12 Brooktrail Court North DATE: 12/5/2023

PROJECT LOCATION: 123 Brooktrail Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion in Windrush Creek as well as swales to address overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		2	Points/pond:		5	10
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**190**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-12 Brooktrail Court North DATE: 12/5/2023

PROJECT LOCATION: 123 Brooktrail Court, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and grade controls to address erosion in Windrush Creek as well as swales to address overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND: The majority of this project is located on common ground.

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.79**	PER 100 LF		10		18
	Riffle Pool Complex	**7.46**	PER 100 LF		10		75
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	7.46	PER 100 LF		10		75
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**187**
						TOTAL BENEFIT POINTS	**377**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$404**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.93**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-13: Executive Estates Drive

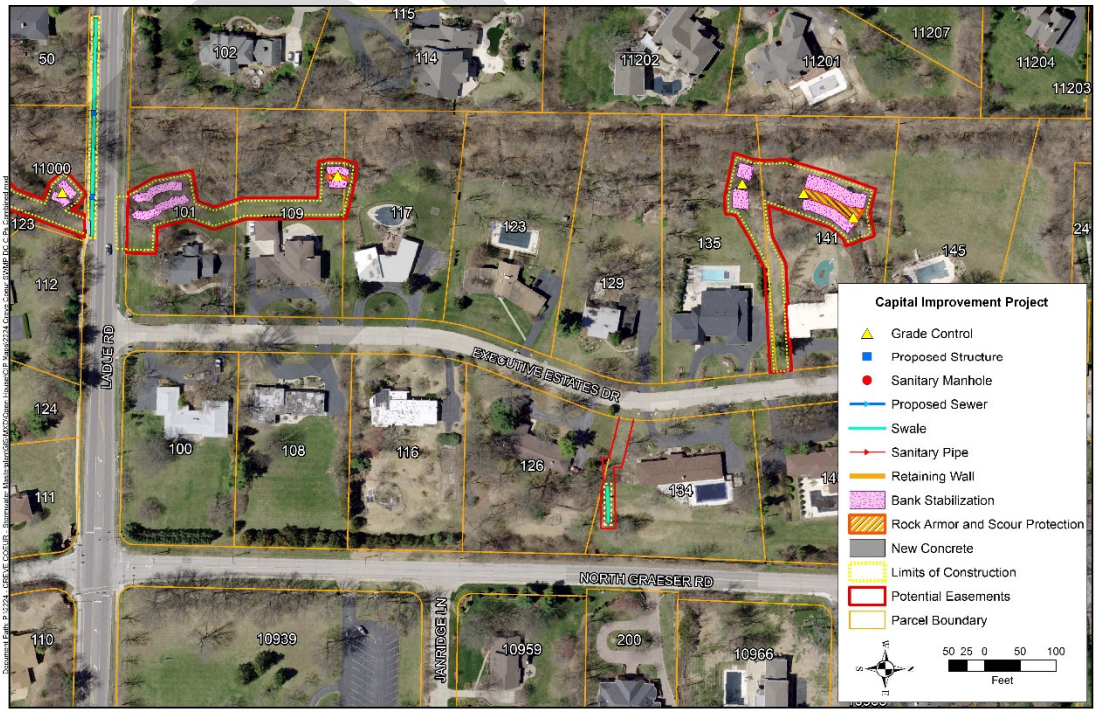


Upstream of Ladue Road crossing

Problem Description: The following issues were observed along Windrush Creek north of the Ladue Road crossing. The upstream side of the Ladue Road crossing needs to be reshaped. There is a 2 foot knickpoint in the rear lot of 109 Executive Estates Drive. There is a 1 foot knickpoint in the rear lot of 135 Executive Estates Drive. There is a 1.5 foot knickpoint and scour hole at the outfall in the rear lot of 141 Executive Estates Drive as well as a perched grouted riprap tributary. Groundwater seepage onto the street at 126 Executive Estates Drive and excessive flows from Graeser Road. The affected parcels are private.

Recommendation: Reshape and stabilize the banks upstream of the Ladue Road crossing. Install a stilling basin and step grade control structure at 109 Executive Estates Drive. Install a series of step grade control structures from 141 to 135 Executive Estates Drive along with a stilling basin. Install a toe wall at the end of the grouted riprap tributary. Cut notch in berm that runs behind the homes on the east side of Executive Estates Drive between 126 and 134 and protect new swale with Instaturf ShearForce.

Special Considerations: Street panel in front of 126 was just replaced and may have resolved the issue, to be monitored. Owners at 134 installed drainage sytsem in 2023, which may have resolved the issue and should be monitored.



Conceptual Layout of DC-C-13

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-13 Executive Estates Drive

Project Description: Bank stabilization, grade controls, and stilling basins to address erosion in Windrush Creek as well as a swale to address overland flow issues.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.8	$ 12,000	$ 9,600
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	0.8	$ 5,000	$ 4,000
			Subtotal =	$ 24,100
		Contingency =	25%	$ 6,000
		TOTAL OPINION OF SURVEYING COST =		**$ 30,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
		Contingency =	25%	$ 2,500
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.8	$ 30,000	$ 24,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	1,160	$ 35	$ 40,600
Rock Grade Control	CY	180	$ 200	$ 36,000
Rock Stilling Basin / Outlet Scour Protection	CY	230	$ 100	$ 23,000
Rock Toe and Slope Protection	CY	185	$ 150	$ 27,800
Bank Stabilization	SY	715	$ 120.00	$ 85,800
Granular Backfill	CY	50	$ 55	$ 2,800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	50	$ 15	$ 800
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	95	$ 50	$ 4,800
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.8	$ 50,000	$ 40,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 29,100	$ 29,100
			Subtotal =	$ 320,200
		Contingency =	30%	$ 96,100
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 416,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 580,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-13 Executive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 109 Executive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion in Windrush Creek as well as a swale to address overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address: Undermined/failing wing wall*	35	2	25		6		70
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-13 Executive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 109 Executive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion in Windrush Creek as well as a swale to address overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**120**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-13 Executive Estates Drive DATE: 12/5/2023

PROJECT LOCATION: 109 Executive Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade controls, and stilling basins to address erosion in Windrush Creek as well as a swale to address overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)	**4.34**	PER 100 LF		10				43
	Riffle Pool Complex	**5.18**	PER 100 LF		10				52
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)	5.18	PER 100 LF		10				52
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements			**10**					**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
						TOTAL SOLUTION POINTS			**157**
						TOTAL BENEFIT POINTS			**277**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$581**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.48**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-01: Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive

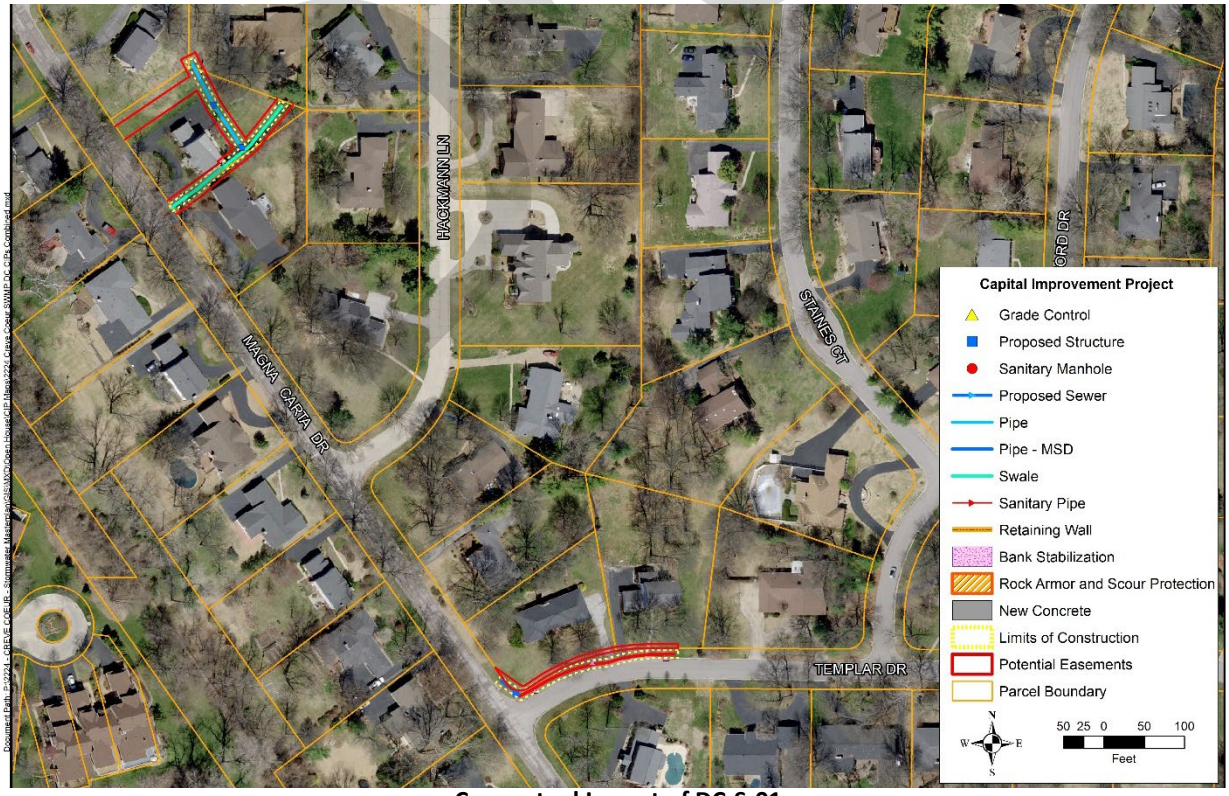


Magna Carta Drive at Runnymede Dr

Problem description: Water ponds along the curb at the southwest corner of the intersection of Runnymede Drive and Magna Carta Drive and along the north curb of Templar Drive east of Magna Carta Drive. Yard ponding and erosion at 424 and 432 Magna Carta Drive.

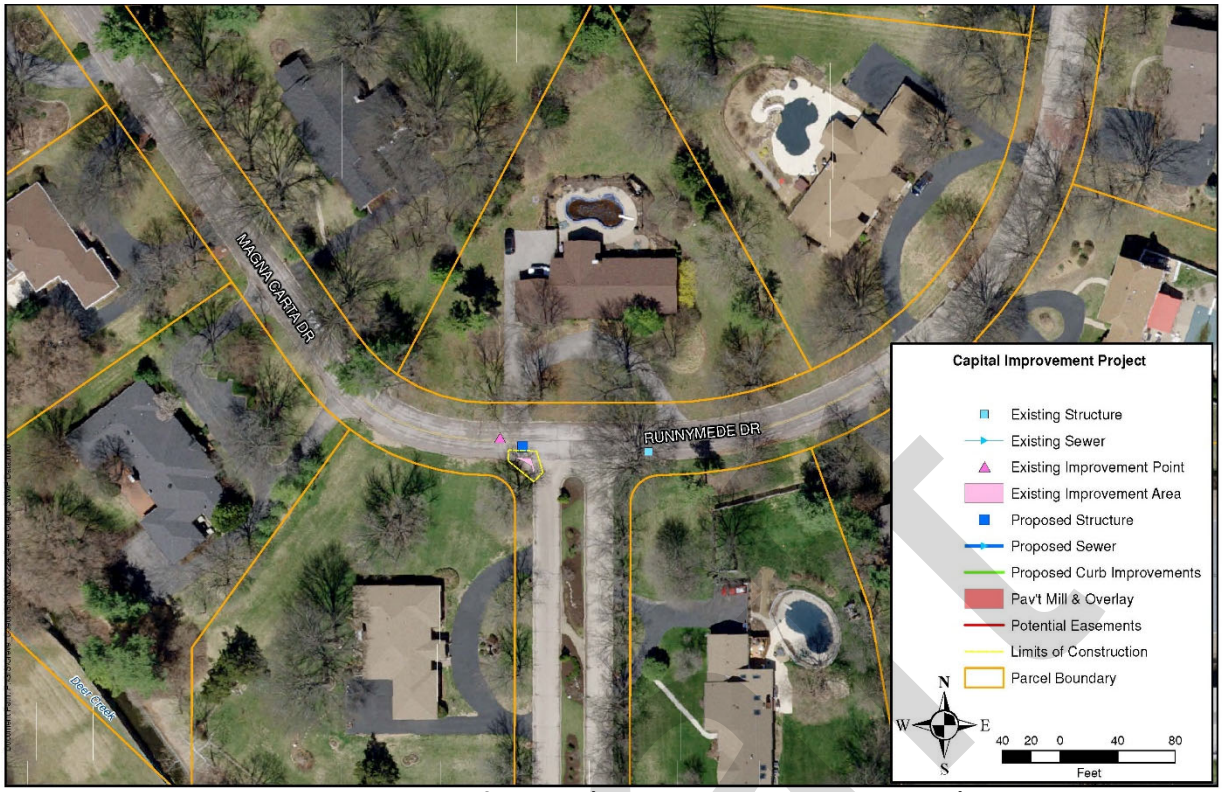
Recommendation: Install new MSD two grate inlet with side intake (2GIw/SI) at Runnymede Drive. intersection over existing 48" storm sewer, replace corner panel of street and warp to inlet. Mill and overlay curb pavement at Templar Drive to remove low/high spots. Replace non-MSD inlet at intersection with new MSD 2GIw/SI and outgoing pipe with a new 12" storm sewer dedicated to MSD. Build swale with Instaturf ShearForce from the street to the back property corner between the two houses at #424 and #432. Add two yard drains at #432 and connect to existing inlet 18O2-010D. Grade #424 yard to drain to new swale.

Special Considerations: At the Runnymede Drive intersection other utilities will need to be located to identify the location of the inlet. The inlet may need to be offset from the 48” pipe or moved away from the curb with no side intake. A potential alternative to the yard drains is a swale graded to the existing inlet if the topography does not result in steep sideslope on the swale.



Conceptual Layout of DC-S-01

Draft



Conceptual Layout of DC-S-01 (Intersection with Runnymede Dr)

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-01 Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive

Project Description: New inlets and regrading pavement to address ponding issues along Magna Carta Drive.

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.45	$ 12,000	$ 5,400
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.45	$ 5,000	$ 2,300
			Subtotal =	$ 15,200
			Contingency = 25%	$ 3,800
			TOTAL OPINION OF SURVEYING COST =	**$ 19,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 8,000
			Contingency = 25%	$ 2,000
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 10,000**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	3.00	$ 55	$ 200
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	4.00	$ 3,500	$ 14,000
Sewer Pipe Small	LF	152	$ 140	$ 21,300
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	187	$ 15	$ 2,800
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	210	$ 50	$ 10,500
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 6,600	$ 6,600
			Subtotal =	$ 72,800
			Contingency = 30%	$ 21,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 94,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 169,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-01 Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive

DATE: 12/5/2023

PROJECT LOCATION: 11577 Templar Drive, Creve Coeur, MO 63141

PROJECT TYPE: 3

PROJECT DESCRIPTION: New inlets and regrading pavement to address ponding issues along Magna Carta Drive.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
		Basement (1 lot per structure) *Address:*	200		100		15		
		Attached Garage (1 lot per structure) *Address:*	100		50		8		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
		Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1. Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
		Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
		Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
		Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2. No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3. Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
		Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
		Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
		Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4. Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
			20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-01 Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive — DATE: 12/5/2023

PROJECT LOCATION: 11577 Templar Drive, Creve Coeur, MO 63141 — PROJECT TYPE: 3

PROJECT DESCRIPTION: New inlets and regrading pavement to address ponding issues along Magna Carta Drive.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		3	Points/pond:		5	15
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		2	Points/lot:		10	20
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**85**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-01 Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive

DATE: 12/5/2023

PROJECT LOCATION: 11577 Templar Drive, Creve Coeur, MO 63141

PROJECT TYPE: 3

PROJECT DESCRIPTION: New inlets and regrading pavement to address ponding issues along Magna Carta Drive.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**105**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$170**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.62**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-02: 18 Sackston Woods Lane

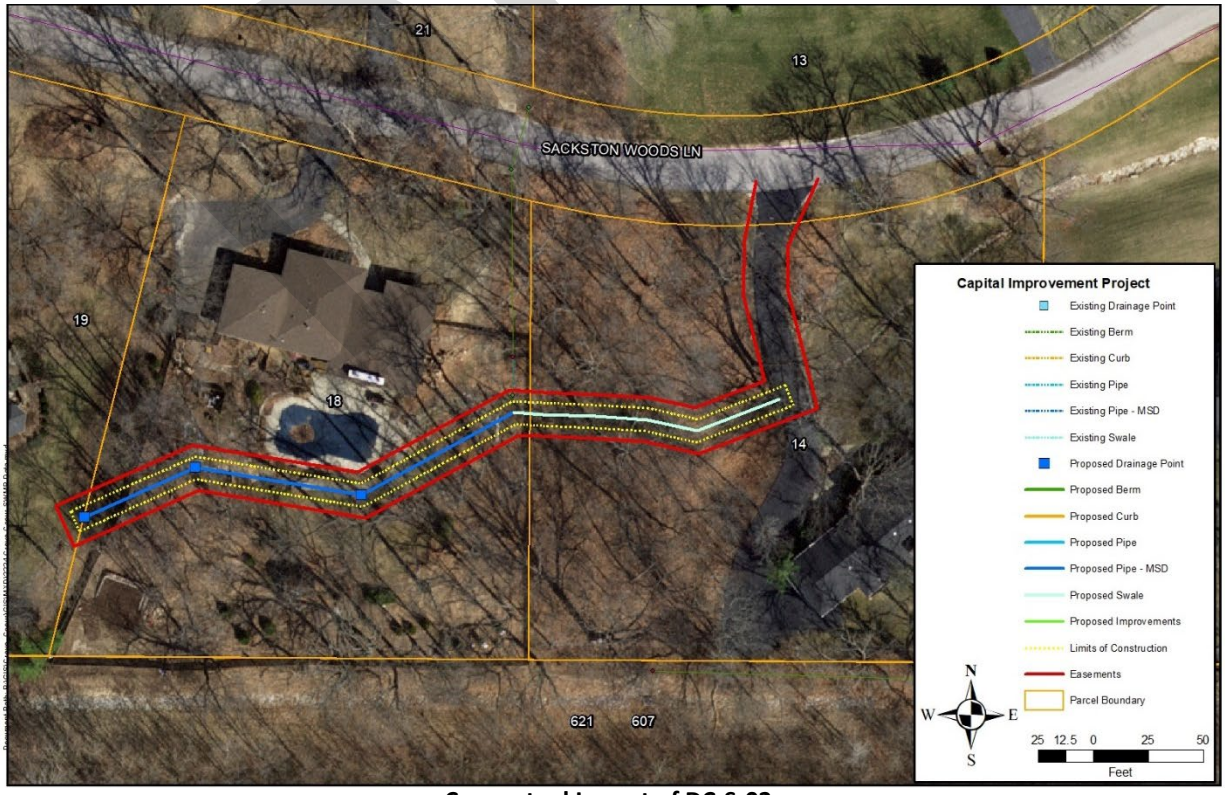
Problem description: Yard flooding with overflow into the pool.



West side of fence

Recommendation: Construct storm sewer across property with two 2 grate inlets w/ side intake in the yard to route pipe around the pool and an area inlet with a berm at the west property line on the west side of the fence. Construct rock swale from discharge at east property line to driveway culvert at #14.

Special Considerations: Sewer will need to be constructed adjacent to the pool and minimize disruption to trees. Storm sewer from street also discharges at east property line.



Conceptual Layout of DC-S-02

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-02 18 Sackston Woods Lane

Project Description: Storm sewer, inlets, and rock swale to address yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.20	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.20	$ 5,000	$ 1,000
			Subtotal =	$ 7,900
			Contingency = 25%	$ 2,000
			TOTAL OPINION OF SURVEYING COST =	**$ 9,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	3	$ 3,500	$ 10,500
Sewer Pipe Small	LF	310	$ 140	$ 43,400
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	124	$ 15	$ 1,900
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 71,800
			Contingency = 30%	$ 21,500
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 93,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 158,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-02: 18 Sackston Woods Lane DATE: 11/14/2023

PROJECT LOCATION: 18 Sackston Woods Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer, inlets, and rock swale to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-02: 18 Sackston Woods Lane DATE: 11/14/2023

PROJECT LOCATION: 18 Sackston Woods Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer, inlets, and rock swale to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250	1	65		250
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50	1	35		12		50
		Yard Flooding (1 per lot) *Address:*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**310**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-02: 18 Sackston Woods Lane DATE: 11/14/2023

PROJECT LOCATION: 18 Sackston Woods Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer, inlets, and rock swale to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**330**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$159**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **2.08**

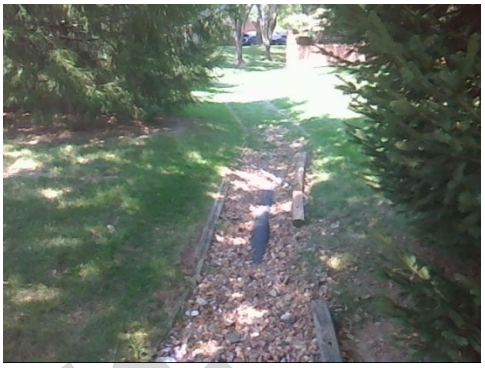
Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-03: Woodbridge Manor Rd

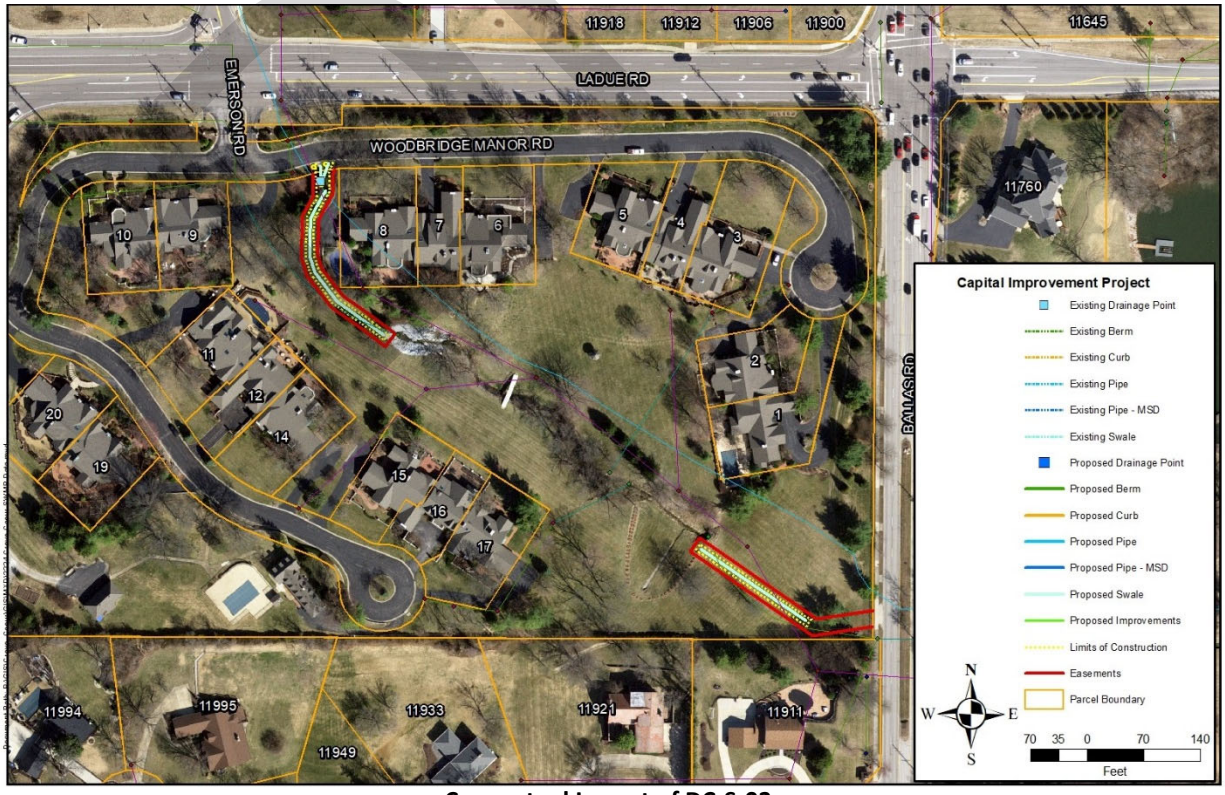
Problem description: Street and structural flooding at 8 Woodbridge Manor Road.



Overflow path near #8

Recommendation: Provide 100-yr overland flow path off of street and around the west side of the driveway for #8 and from the detention area to South New Ballas Road.

Special Considerations: Hydraulic analysis of the storm system and detention area between Ladue Road and South New Ballas Road is needed to confirm adequate system capacity. The drainage area is approximately 170 acres at Woodbridge Manor Road with an estimated 380 cubic feet per second for the 15-year 20 minute storm. The overland flow path over South New Ballas Road should also be evaluated.



Conceptual Layout of DC-S-03

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-03 Woodbridge Manor Road

Project Description: Swales and inlet modifications to address street and structural flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.25	$ 12,000	$ 3,000
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.25	$ 5,000	$ 1,300
			Subtotal =	$ 5,800
		Contingency =	25%	$ 1,500
		TOTAL OPINION OF SURVEYING COST =		**$ 7,300**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 500
		Contingency =	25%	$ 100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	424	$ 15	$ 6,400
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE		$ 50,000	$ -
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 6,400
		Contingency =	30%	$ 1,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 8,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$**	**62,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-03: Woodbridge Manor Road DATE: 11/14/2023

PROJECT LOCATION: 8 Woodbridge Manor Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swales and inlet modifications to address street and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-03: Woodbridge Manor Road DATE: 11/14/2023

PROJECT LOCATION: 8 Woodbridge Manor Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swales and inlet modifications to address street and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200	1	50		200
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y	50	50
		Attached Garage (1 lot per structure) *Address:*	100		75	1	25		75
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35	1	12		35
		Yard Flooding (1 per lot) *Address:*	10		6	4	0		**24**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6	1	1		6
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**405**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-03: Woodbridge Manor Road DATE: 11/14/2023

PROJECT LOCATION: 8 Woodbridge Manor Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swales and inlet modifications to address street and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**425**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$62**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **6.83**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-04: 561 Sarah Lane

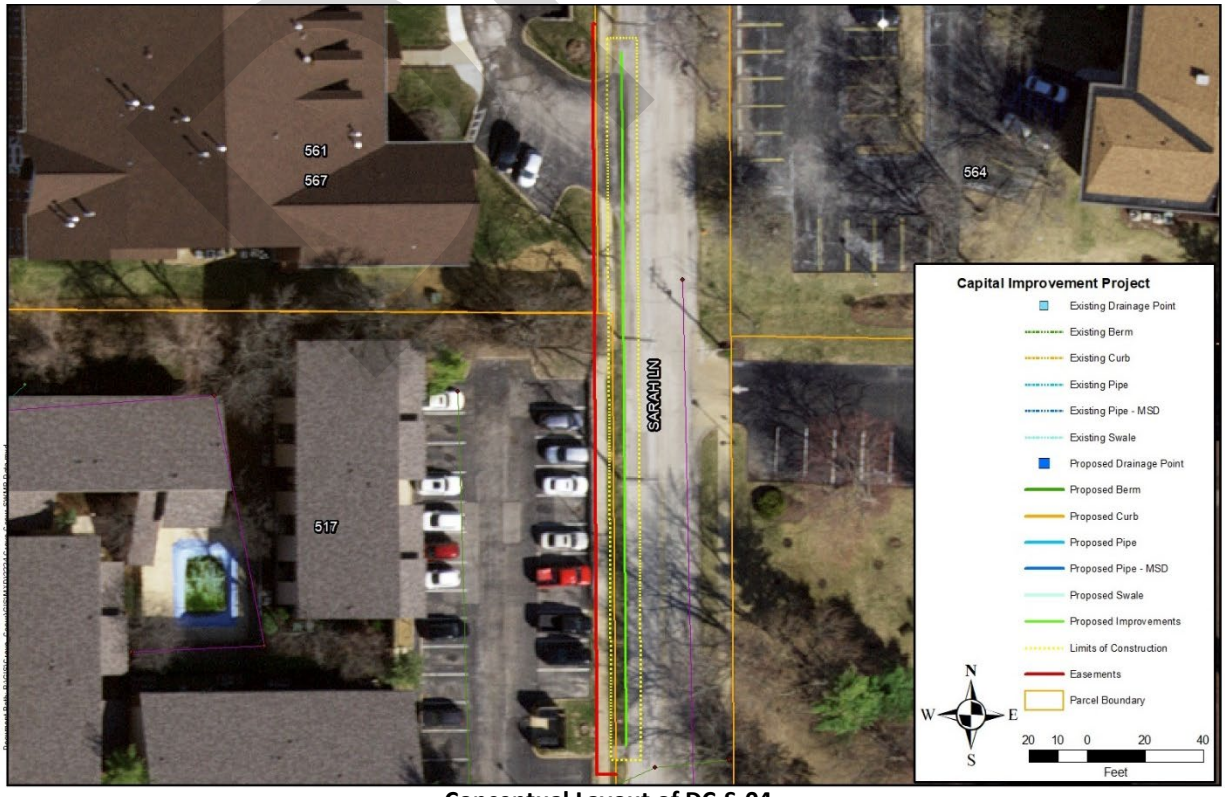
Problem description: Street ponding.

Recommendation: Profile and mill asphalt across south driveway to existing inlet 17O3-097D.

Special Considerations: Maintain bump across the driveway.



Inlet 17O3-097D



Conceptual Layout of DC-S-04

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-04 561 Sarah Lane

Project Description: Profile and mill asphalt to address street ponding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.05	$ 12,000	$ 600
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.05	$ 5,000	$ 300
			Subtotal =	$ 3,900
		Contingency =	25%	$ 1,000
		TOTAL OPINION OF SURVEYING COST =		**$ 4,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
		Contingency =	25%	$ -
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	11.10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	53.3	$ 100	$ 5,300
Curb - Concrete Rem & Rep	LF	240	$ 50	$ 12,000
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
Construction Cost Reduction			$ -	$ (11,400)
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 11,500
		Contingency =	30%	$ 3,400
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 14,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 65,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-04: 561 Sarah Lane DATE: 11/14/2023

PROJECT LOCATION: 561 Sarah Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Profile and mill asphalt to address street ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-04: 561 Sarah Lane DATE: 11/14/2023

PROJECT LOCATION: 561 Sarah Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Profile and mill asphalt to address street ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		1	Points/pond:		5	5
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**5**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-04: 561 Sarah Lane DATE: 11/14/2023

PROJECT LOCATION: 561 Sarah Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Profile and mill asphalt to address street ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**25**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$66**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.38**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

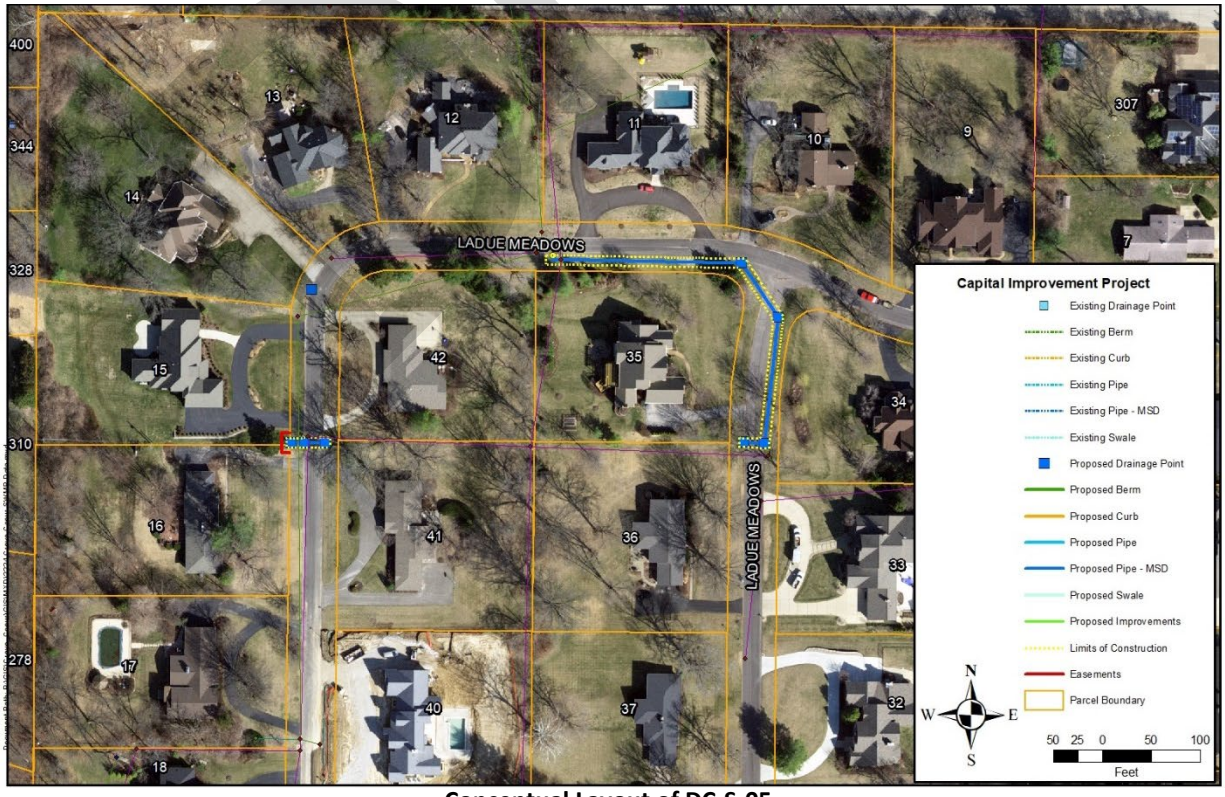
DC-S-05: Ladue Meadows

Problem description: Yard flooding at 16 and 42 Ladue Meadows.



Debris from flooding at #16

Recommendation: Construct street inlets at the low spot on both sides of Ladue Meadows between #15, #16, #41 and #42 and connect to the exising 36" pipe that runs west of the street with a setover manhole. The inlet on the east side of the street will be an area inlet open on the street side and the east side to accept flow from the swale between #41 and #42. Construct a 2 grate inlet w/ side intake over the exist storm sewer in front of #14. Construct a new storm sewer from 18N1-135D east to the intersection and then south to #36.



Conceptual Layout of DC-S-05

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-05 Ladue Meadows

Project Description: Inlets and storm sewers to address yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.01	$ 12,000	$ 100
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.01	$ 5,000	$ 100
			Subtotal =	$ 3,200
			Contingency = 25%	$ 800
			TOTAL OPINION OF SURVEYING COST =	**$ 4,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	152.30	$ 55	$ 8,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	8	$ 3,500	$ 28,000
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	250	$ 50	$ 12,500
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 56,300
			Contingency = 30%	$ 16,900
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 73,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 132,600**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-05: Ladue Meadows DATE: 11/14/2023

PROJECT LOCATION: 16 Ladue Meadows, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewers to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
		Basement (1 lot per structure) *Address:*	200		100		15		
		Attached Garage (1 lot per structure) *Address:*	100		50		8		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
		Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1. Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
		Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
		Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
		Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2. No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3. Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
		Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
		Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
		Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4. Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
			20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-05: Ladue Meadows DATE: 11/14/2023

PROJECT LOCATION: 16 Ladue Meadows, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewers to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25	1	25
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		3	Points/pond:		5	15
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**75**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-05: Ladue Meadows DATE: 11/14/2023

PROJECT LOCATION: 16 Ladue Meadows, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewers to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**95**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$133**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.72**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-06: Fairways Circle



Pipe outfall

Problem Description: Erosion surrounding the pipe outfall next to the Creve Coeur Golf Course maintenance shed was observed. Houses on the west side of Fairways Circle sit lower than the golf course to the west. #541 reports yard flooding and wet yard days after rainfall. The affected parcels are public and private.

Recommendation: Stabilize the banks surrounding the outfall. Extend storm sewer from existing inlet 17N4-047D across #601 to new inlet on golf course, extend pipe to existing yard drains to the north to be replaced with an MSD inlet. Construct berm and swale along east property line of golf course to intercept and direct flow to inlets. Construct swale to intercept and direct flow to existing area inlet not on MSD facilities map near the service drive behind #549. Construct swale with underdrain across #541 and #533 and tie into swale on golf course.

Special Considerations: Storm system on the golf course needs to be identified and could be incorporated into the solution and possibly eliminate the storm sewer from the golf course to Fairways Circle.



Conceptual Layout of DC-S-06

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-06 Fairways Circle

Project Description: Storm sewer, inlets, berm, and swales to address yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.72	$ 12,000	$ 8,600
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.72	$ 5,000	$ 3,600
			Subtotal =	$ 19,700
			Contingency = 25%	$ 4,900
			TOTAL OPINION OF SURVEYING COST =	**$ 24,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.4	$ 30,000	$ 11,100
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	150	$ 35	$ 5,300
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	30	$ 150	$ 4,500
Bank Stabilization	SY	115	$ 120.00	$ 13,800
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	2	$ 3,500	$ 7,000
Sewer Pipe Small	LF	355	$ 140	$ 49,700
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	906	$ 15	$ 13,600
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.65	$ 50,000	$ 32,500
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 140,200
			Contingency = 30%	$ 42,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 182,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 262,300**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-06: Fairways Circle DATE: 11/14/2023

PROJECT LOCATION: 541 Fairways Circle, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer, inlets, berm, and swales to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Golf course maintenance shed*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-06: Fairways Circle DATE: 11/14/2023

PROJECT LOCATION: 541 Fairways Circle, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer, inlets, berm, and swales to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**4**	6		0		**40**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**95**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-06: Fairways Circle DATE: 11/14/2023

PROJECT LOCATION: 541 Fairways Circle, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer, inlets, berm, and swales to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.04**	PER 100 LF		10		10
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**30**
						TOTAL BENEFIT POINTS	**125**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$262**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.48**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-07: East Ladue Estates Drive

Problem description: Yard ponding and wet yards in rear yards of house on west side of East Ladue Estates Drive.



Yard drain at #57

Recommendation: At #57 construct a swale and berm along the west property line and tie into existing berm on property to the north and install underdrain field and tie into existing yard drains.

Special Considerations: SocialPinPoint report at #65 however, resident said they did not have an issue. Further investigation revealed that the report came from the neighboring property at #38 and confirmed that the issue is on #65.



Conceptual Layout of DC-S-07

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-07 East Ladue Estates Drive

Project Description: Swale, berm, and underdrain field to address yard ponding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.20	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.20	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
			Contingency = 25%	$ 2,400
			TOTAL OPINION OF SURVEYING COST =	**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
			Contingency = 25%	$ -
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	183	$ 15	$ 2,700
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 15,700
			Contingency = 30%	$ 4,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 20,400**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 78,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-07: East Ladue Estates Drive DATE: 11/14/2023

PROJECT LOCATION: 57 East Ladue Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, berm, and underdrain field to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-07: East Ladue Estates Drive DATE: 11/14/2023

PROJECT LOCATION: 57 East Ladue Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, berm, and underdrain field to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		Points/pond:		5		
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		Points/lot:		20		
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		Points/lot:		10		
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**20**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-07: East Ladue Estates Drive DATE: 11/14/2023

PROJECT LOCATION: 57 East Ladue Estates Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, berm, and underdrain field to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**40**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$78**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.51**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-08: 121 Mystic Meadows Lane

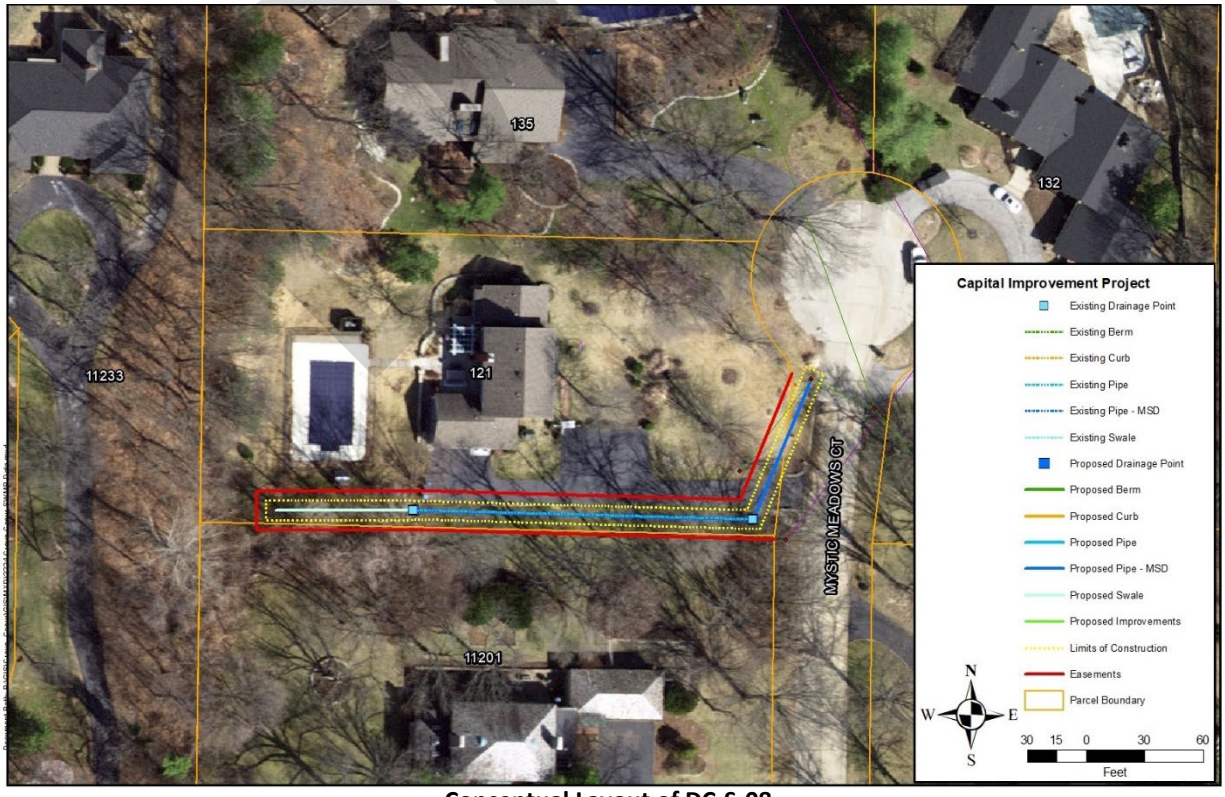
Problem description: Erosion on south side of property.

Recommendation: Extend a storm sewer from existing inlet 18N1-007D across the driveway to a curb inlet with the opening facing west. Continue new system to the west end of the driveway to an area inlet with swale along driveway. Construct a berm and swale to the west.

Special Considerations: Due to being in shaded area consider Instaturf ShearForce. An alternate private solution is to construct swales and replace existing rip rap rock with Instaturf ShearForce.



Existing inlet at west end of driveway



Conceptual Layout of DC-S-08

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-08 121 Mystic Meadows Lane

Project Description: Storm sewer extension and inlet to address overland flow erosion.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.15	$ 12,000	$ 1,800
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.15	$ 5,000	$ 800
			Subtotal =	$ 4,100
		Contingency =	25%	$ 1,000
		TOTAL OPINION OF SURVEYING COST =		**$ 5,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
		Contingency =	25%	$ 1,900
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	5.70	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	4	$ 3,500	$ 14,000
Sewer Pipe Small	LF	250	$ 140	$ 35,000
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	70	$ 15	$ 1,100
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	13.2	$ 100	$ 1,300
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 59,100
		Contingency =	30%	$ 17,700
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 76,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 137,300**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-08: 121 Mystic Meadows Lane DATE: 11/14/2023

PROJECT LOCATION: 121 Mystic Meadows Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer extension and inlet to address overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-08: 121 Mystic Meadows Lane DATE: 11/14/2023

PROJECT LOCATION: 121 Mystic Meadows Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer extension and inlet to address overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding: Points per Category	Chronic (<=2-Yr) Flooding: No. Lots Affected	Frequent (>2<=15-Yr) Flooding: Points per Category	Frequent (>2<=15-Yr) Flooding: No. Lots Affected	Infrequent (>15-Yr) Flooding: Points per Category	Infrequent (>15-Yr) Flooding: No. Lots Affected	Total Points
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		1	Points/lot:		10	10
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						25

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-08: 121 Mystic Meadows Lane DATE: 11/14/2023

PROJECT LOCATION: 121 Mystic Meadows Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Storm sewer extension and inlet to address overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**45**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$137**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.33**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-09: Pine Manor Drive

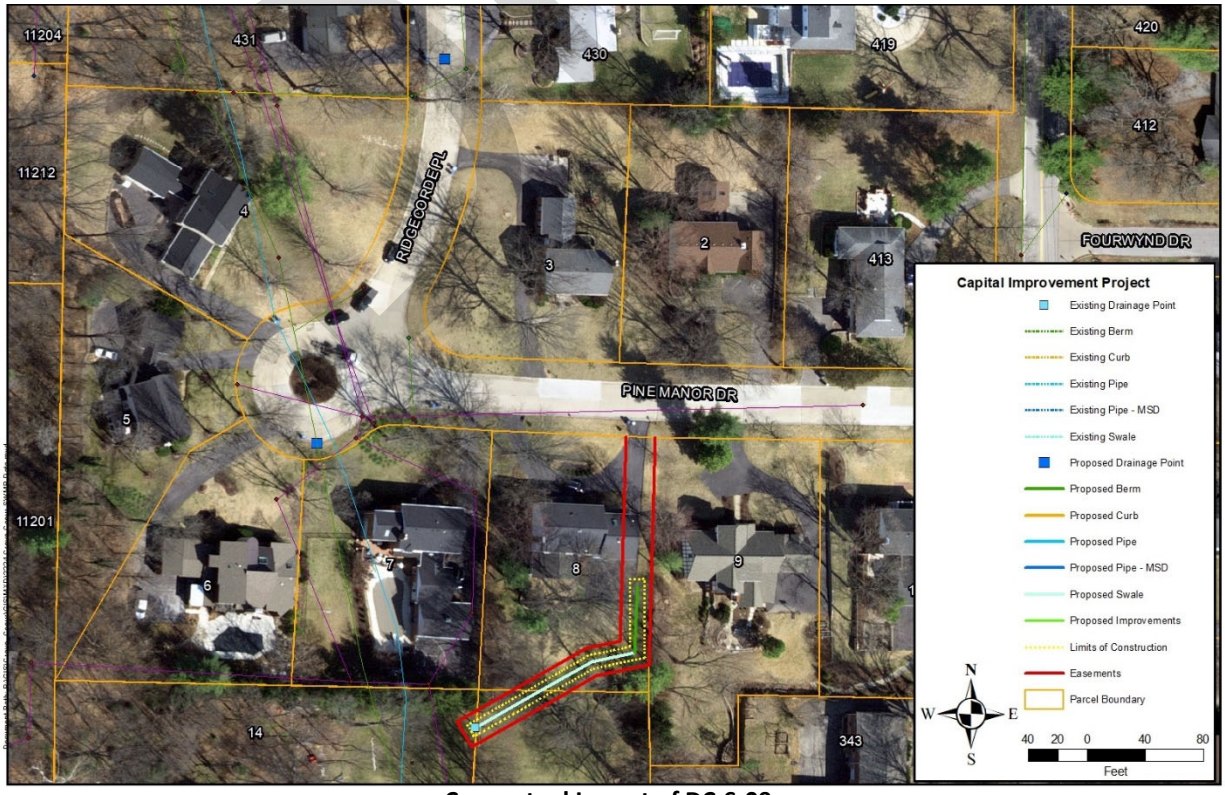
Problem description: Street flooding at cul-de-sac and yard flooding at 7 and 8 Pine Manor Drive.



Existing yard drain on west property line of #8

Recommendation: Construct trench drain across Ridgecore Place between inlets 18N2-107D and 18N2-178D. Construct double curb inlet over existing pipe on south side of cul-de-sac. Modify other inlets as needed to minimize bypass and increase inlet capacity. Swap out solid cover for slotted cover at manhole 18N2-060D at the south property line of #7. Construct berm and swale along east property line of #8 from end of driveway to natural low point and then construct swale across the yard to an existing yard drain on the west property line.

Special Considerations: Hydraulic analysis of storm sewer system is needed that accounts for potential bypass at inlets and inlet capacity on the street. Initial analyis shows adequate capacity of 84" pipe at #7. The 100-year overland flow path needs to be verified across #7.



Conceptual Layout of DC-S-09

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-09 Pine Manor Drive

Project Description: Trench drain, inlets, inlet modifications, berm, and swales to address street and yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.15	$ 12,000	$ 1,800
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.15	$ 5,000	$ 800
			Subtotal =	$ 7,100
			Contingency = 25%	$ 1,800
			TOTAL OPINION OF SURVEYING COST =	**$ 8,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	1.20	$ 55	$ 100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	167	$ 15	$ 2,500
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	11.1	$ 100	$ 1,100
Curb - Concrete Rem & Rep	LF	10	$ 50	$ 500
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 12,200
			Contingency = 30%	$ 3,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 15,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 80,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-09: Pine Manor Drive DATE: 11/14/2023

PROJECT LOCATION: 8 Pine Manor Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Trench drain, inlets, inlet modifications, berm, and swales to address street and yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-09: Pine Manor Drive DATE: 11/14/2023

PROJECT LOCATION: 8 Pine Manor Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Trench drain, inlets, inlet modifications, berm, and swales to address street and yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12	1	12
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6	2	1		12
		Ponding (per ponding area) *Address:*	No. Ponds:		1	Points/pond:		5	5
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**64**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-09: Pine Manor Drive DATE: 11/14/2023

PROJECT LOCATION: 8 Pine Manor Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Trench drain, inlets, inlet modifications, berm, and swales to address street and yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**84**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$80**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.05**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-11: 554 North Mosley Road

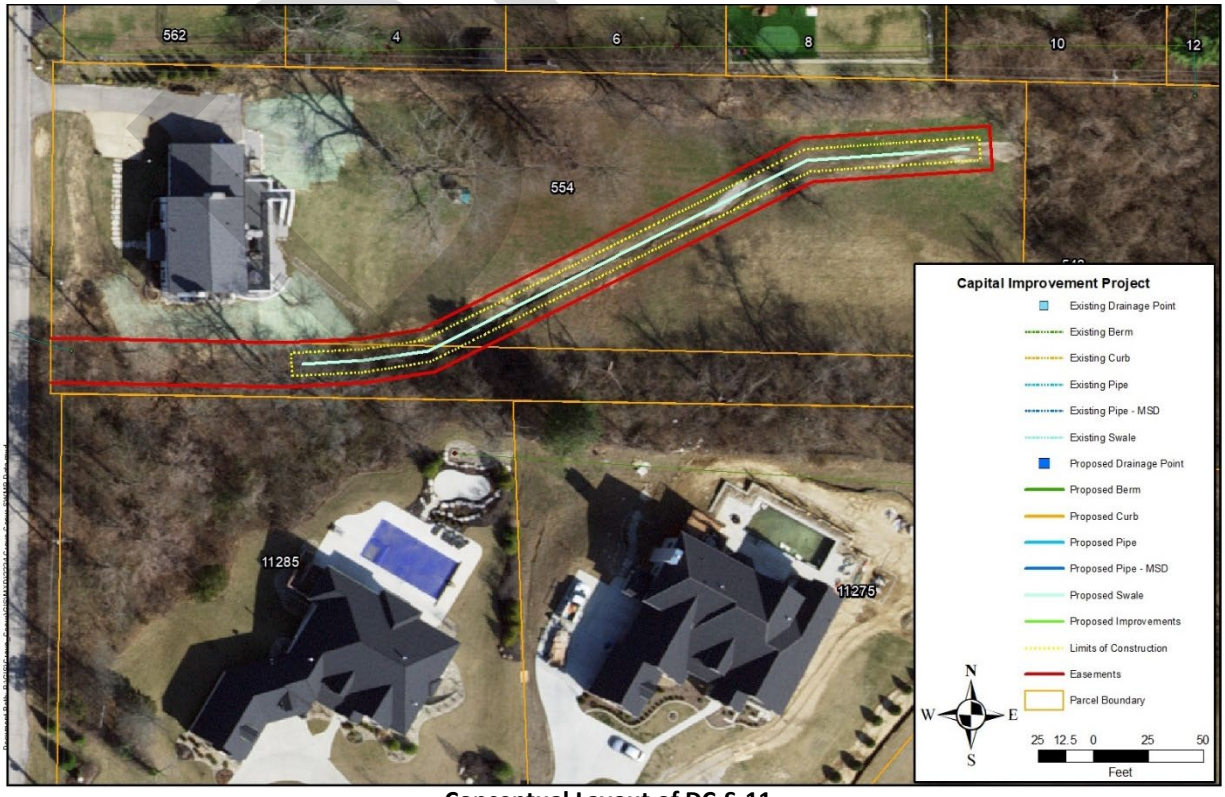
Problem description: Gully formation across the property with associated deposition causing drainage issues.



Gully erosion

Recommendation: Construct swale with Instaturf ShearForce across the property.

Special Considerations: Property to the south and west is a flag lot and is about 25 feet wide off of North Mosley Road in which storm sewer on the road discharges onto. Extending the storm sewer should be considered as an alternative.



Conceptual Layout of DC-S-11

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-11 554 North Mosley Road

Project Description: Swale to address yard gully and drainage issues.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.20	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.20	$ 5,000	$ 1,000
			Subtotal =	$ 6,400
			Contingency = 25%	$ 1,600
			TOTAL OPINION OF SURVEYING COST =	**$ 8,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
			Contingency = 25%	$ -
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	323	$ 15	$ 4,800
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 14,800
			Contingency = 30%	$ 4,400
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 19,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 73,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-11: 554 North Mosley Road DATE: 11/14/2023

PROJECT LOCATION: 554 North Mosley Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale to address yard gully and drainage issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-11: 554 North Mosley Road DATE: 11/14/2023

PROJECT LOCATION: 554 North Mosley Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale to address yard gully and drainage issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		1	Points/lot:		20	20
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		2	Points/lot:		10	20
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**40**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-11: 554 North Mosley Road DATE: 11/14/2023

PROJECT LOCATION: 554 North Mosley Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale to address yard gully and drainage issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**60**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$73**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.82**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-13: Morwood Lane

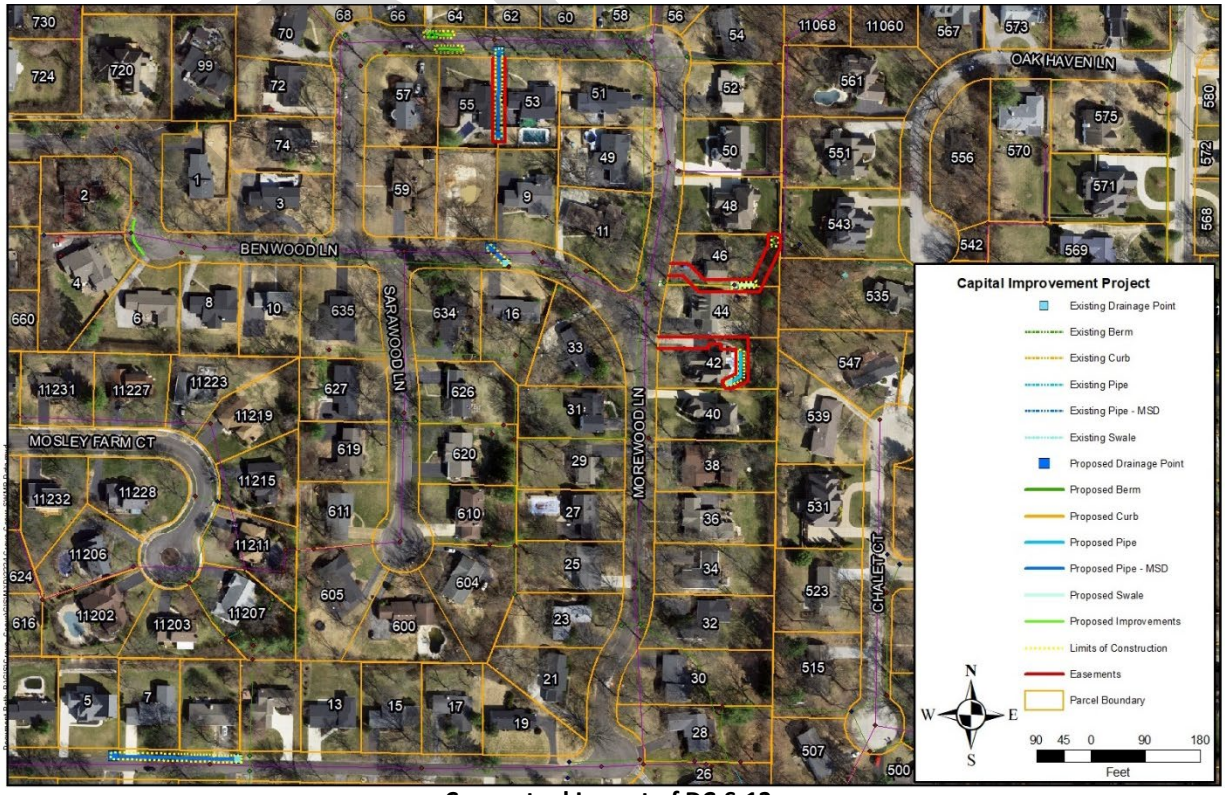
Problem description: Seepage water at 6, 55 and 64 Morwood Lane and 7 Benwood Lane and yard flooding at 42 and 53 Morwood Lane.



Seep water at #55

Recommendation: For seep water at #55 and #64 mill the asphalt along the curb. At #7 construct 2 grate inlet w/ side intake and connect pipe to existing inlet (17N4-016D) across the street. At #6 construct 2 grate inlet w/ side intake and connect pipe to existing inlet (17N4-024D) at #11. Improvements to address issue at #42, connect downspounts on rear of house at #42 and connect to existing yard drain and construct berm around inlet 17N3-025D at #46 and swap the cover of manhole 17N3-034D with a slotted cover and constuct a swale to the east to intercept the flow path. Construct a 2 grate inlet w/ side intake in the rear yard of #55 along with some grading and pipe to new manhole over the existing storm sewer along the street.

Special Considerations: #55 recently added yard drains but has not had a significant rainfall to determine the effectiveness of their system. Yard flooding had also been reported at #25 and #29, however there are existing inlets at the rear of those yards that were recently cleaned by MSD. This area should be monitored.



Conceptual Layout of DC-S-13

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-13 Morwood Lane

Project Description: Mill asphalt, inlets, berm, manhole, and grading to address seepage and yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.30	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.30	$ 5,000	$ 1,500
			Subtotal =	$ 12,600
		Contingency =	25%	$ 3,200
		TOTAL OPINION OF SURVEYING COST =		**$ 15,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
		Contingency =	25%	$ 1,900
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	3	$ 3,500	$ 10,500
Sewer Pipe Small	LF	176	$ 140	$ 24,600
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	38	$ 15	$ 600
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	27.8	$ 100	$ 2,800
Curb - Concrete Rem & Rep	LF	76	$ 50	$ 3,800
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 59,700
		Contingency =	30%	$ 17,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 77,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 148,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-13: Morwood Lane DATE: 11/14/2023

PROJECT LOCATION: 53 Morwood Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Mill asphalt, inlets, berm, manhole, and grading to address seepage and yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-13: Morwood Lane DATE: 11/14/2023

PROJECT LOCATION: 53 Morwood Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Mill asphalt, inlets, berm, manhole, and grading to address seepage and yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50	1	35		12		50
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		4	Points/pond:		5	20
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**120**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-13: Morwood Lane DATE: 11/14/2023

PROJECT LOCATION: 53 Morwood Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Mill asphalt, inlets, berm, manhole, and grading to address seepage and yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**					**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**20**
							TOTAL BENEFIT POINTS	**140**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$149**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.94**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

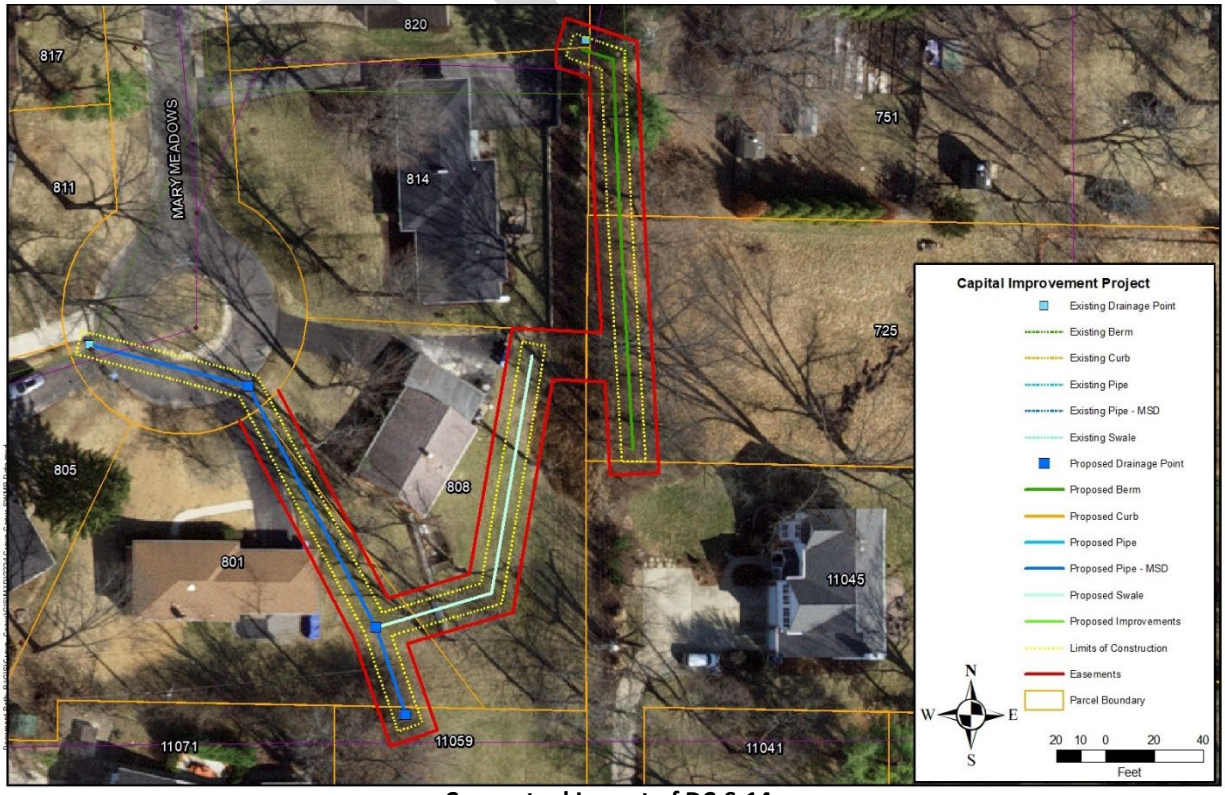
DC-S-14: Mary Meadows Lane

Problem description: Flooding and erosion at #801 and #808 from uphill properties especially redeveloped properties on Graeser Road.



Inlet 17N2-077D

Recommendation: Berm and swale across the back property line of #725 and #751 Graeser Road to existing inlet 17N2-077D. Swale around back side of house at #808 with Instaturf ShearForce on steep slope. Area inlet in flow path with a berm at rear of #11059 Graeser Lane that is piped down the slope to a manhole with slotted cover or 2 grate inlet w/ side intake to take flow from the swale across #808. Pipe to a 2 grate inlet w/ side intake at the curb and pipe to existing inlet 17N2-036D.



Conceptual Layout of DC-S-14

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-14 Mary Meadows Lane

Project Description: Berm, swales, inlets, and storm sewer to address flooding and overland flow erosion.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.25	$ 12,000	$ 3,000
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	0.25	$ 5,000	$ 1,300
			Subtotal =	$ 14,800
			Contingency = 25%	$ 3,700
			TOTAL OPINION OF SURVEYING COST =	**$ 18,500**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	25.70	$ 55	$ 1,400
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	3.00	$ 3,500	$ 10,500
Sewer Pipe Small	LF	216	$ 140	$ 30,200
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	319	$ 15	$ 4,800
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	51.7	$ 100	$ 5,200
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.25	$ 50,000	$ 12,500
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 71,000
			Contingency = 30%	$ 21,300
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 92,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 166,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-14: Mary Meadows Lane DATE: 11/14/2023

PROJECT LOCATION: 808 Mary Meadows Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, inlets, and storm sewer to address flooding and overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-14: Mary Meadows Lane DATE: 11/14/2023

PROJECT LOCATION: 808 Mary Meadows Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, inlets, and storm sewer to address flooding and overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		2	Points/lot:		10	20
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**70**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-14: Mary Meadows Lane DATE: 11/14/2023

PROJECT LOCATION: 808 Mary Meadows Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, inlets, and storm sewer to address flooding and overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements			10				10
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	10
							TOTAL BENEFIT POINTS	80

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$166**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.48**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

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East Deer Creek Watershed

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East Deer Creek Watershed

PP Number	Project Name
DC-C-02	Beaver Drive Crossing
DC-C-14	East Windrush Creek
DC-C-15	Chaminade Drive
DC-C-16	Ladue and South Spoede Road
DC-C-17	10675 Ladue Road
DC-C-18	Alden Lane
DC-C-19	Middlebrook Lane
DC-C-20	Sherwyn Lane
DC-C-21	10694 Country View Drive
DC-C-22	Denny Creek
DC-C-23	10620 Country View Drive
DC-C-24	Sunswept Drive
DC-C-26	Lindbergh Boulevard
DC-C-27	22 South Tealbrook Drive
DC-C-28	Tealwood Drive
DC-C-29	The Knolls Lane
DC-S-15	Fourwynd Drive
DC-S-16	Wedgewood Lane
DC-S-17	Sona Lane
DC-S-18	3 Oak Park Court
DC-S-19	308 South Spoede Road
DC-S-21	Chilton Lane
DC-S-22	North Spoede Road & Mission Hills Court
DC-S-23	6 Spoede Ridge Lane
DC-S-24	7 Quailways Drive
DC-S-25	Haven View Drive
DC-S-26	Warington Square

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DC-C-02: Beaver Drive Crossing

Problem Description: The downstream end of the Pebble Creek culvert under Beaver Drive has rusted out and the culvert is undermined. The road above the culvert is cracking and there is a limited amount of cover over the pipe. A portion of the gabion walls along the left descending bank downstream of the culvert have rusted out and are failing.



Downstream end of culvert

In the project vicinity, there is structural flooding at 27 Beaver Drive and yard erosion at 1 Beaver Drive. Although the street is private, it has been maintained by the City. Along the south property line of 16 Tealwood Drive, there is an active incision knickpoint moving up the previously stabilized tributary and undermining the grade control. There is also gully erosion along the stabilized bank. Additionally, along the west edge of 48 Beaver Drive, toe erosion on the outside of bend of the channel is beginning to undermine the grouted riprap slope and culvert entrance.



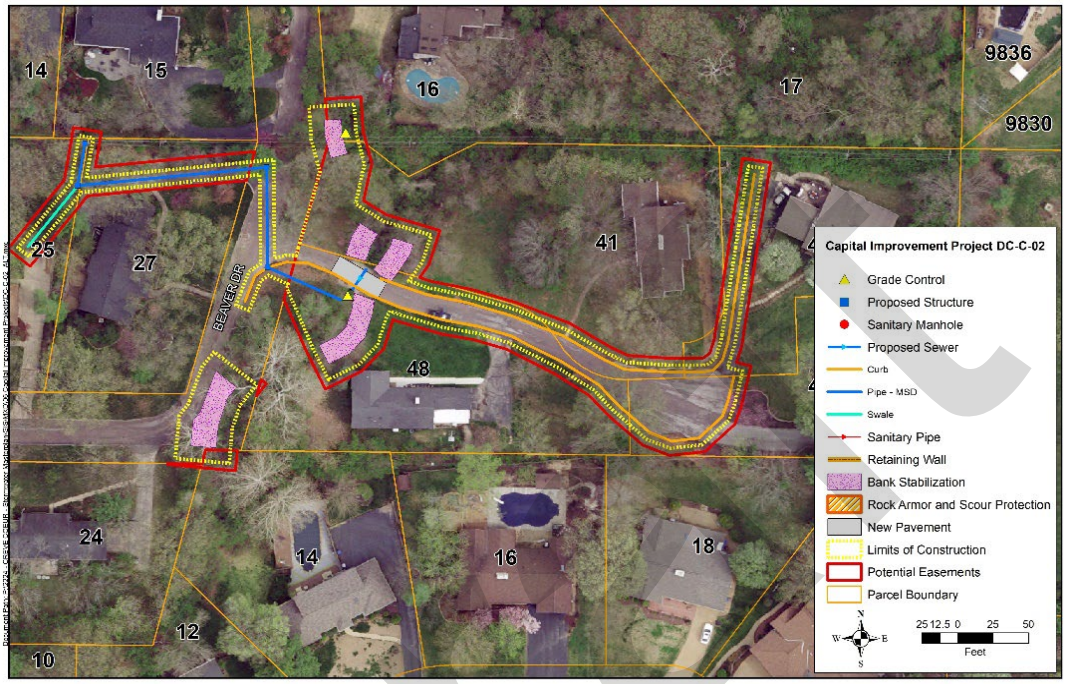
Incision at Grade Control

Recommendation: Remove and replace the culvert with a two stage culvert to maintain sediment continuity. Raise the road section to provide additional cover over the pipes. Install a grade control structure downstream of the culvert. Remove the gabion walls and stabilize the bank using biostabilized slope techniques and layback the bank. Combine this project with the adjacent grouted riprap stabilization (downstream) and tributary stabilization (upstream) projects to minimize mobilization and disturbance. For the downstream grouted riprap stabilization, place rock toe protection from the existing retaining wall to the culvert entrance. Due to bedrock in the area, consider using a poured concrete toe below the grouted riprap slope. At the tributary stabilization, construct a new step grade control downstream of the existing grade control. Reshape the bank and stabilize the gully erosion. Ensure overland drainage is directed into the tributary.

At 27 Beaver Drive, construct an MSD area inlet to replace the existing inlet in the northwest corner of the parcel and pipe to a new inlet at the low point above the wall at the west end of the driveway. Construct a swale with a berm from the end of the driveway at 5 Beaver Drive to the new inlet and wrap the berm around the inlet. Pipe down the driveway to a 2 grate inlet or manhole at the east end of the driveway, then continue down Beaver Drive to a 2 grate inlet w/ side intake at the southeast corner of the intersection, and then pipe to the channel on the downstream end of the culvert. Extend the curb near this inlet along the south side of the street to the end of the cul-de-sac. Also, construct a curb on the north side of the street from the culvert to the driveway at 45 Beaver Drive and continue the curb along the west side of the driveway.

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Water Quality Alternative Recommendations: A berm instead of a curb along the driveway at 45 Beaver Drive may be a viable alternative. This work should be considered to occur with the replacement of the culvert at 45 Beaver Drive.



Conceptual Layout of DC-C-02

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-02 Beaver Drive Crossing Alternative

Project Description: Culvert replacement with associated grade control, bank stabilization, and a retaining wall downstream. #27 Beaver Dr. Structural Flooding and #41 Beaver Dr. erosion issues. Include upstream tributary stabilization and downstream stabilization of undermined grouted riprap.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.8	$ 12,000	$ 9,000
Prepare Easement Plat and Scripts	EACH	12	$ 1,500	$ 18,000
Contruction Staking and As-Built Surveying	ACRE	0.8	$ 5,000	$ 3,800
			Subtotal =	$ 30,800
		Contingency =	25%	$ 7,700
		TOTAL OPINION OF SURVEYING COST =		**$ 38,500**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	125	$ 20	$ 2,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 10,500
		Contingency =	25%	$ 2,600
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 13,100**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.4	$ 30,000	$ 10,500
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	350	$ 35	$ 12,300
Rock Grade Control	CY	50	$ 200	$ 10,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	80	$ 150	$ 12,000
Bank Stabilization	SY	310	$ 120.00	$ 37,200
Granular Backfill	CY	50	$ 55	$ 2,800
Reinforced Concrete Box Culvert	LF	20	$ 880.0	$ 17,600
Manhole	LF		$ 625	$ -
Inlet	EA	4.00	$ 3,500	$ 14,000
Sewer Pipe Small	LF	294	$ 140	$ 41,200
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	56	$ 15	$ 800
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	116	$ 100	$ 11,600
Curb - Concrete Rem & Rep	LF	813	$ 50	$ 40,700
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	0.4	$ 50,000	$ 17,500
			$ -	$ -
Mobilization and Bond	10%	1	$ 24,100	$ 24,100
			Subtotal =	$ 265,300
		Contingency =	30%	$ 79,600
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 344,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 518,500**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME:	DC-C-02: Beaver Drive Crossing	DATE:	11/2/2023
PROJECT LOCATION:	48 Beaver Drive, Creve Coeur, MO 63141	PROJECT TYPE:	1
PROJECT DESCRIPTION:	Culvert replacement with associated grade control and bank stabilization combined with bank stabilization sites upstream and downstream. Plus address nearby issues.		
ENVIRONMENTAL CONSIDERATIONS:			
COMMON GROUND:			

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 48 Beaver Drive*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Beaver Drive*	20	8	12		3		160
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-02: Beaver Drive Crossing DATE: 11/2/2023

PROJECT LOCATION: 48 Beaver Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Culvert replacement with associated grade control and bank stabilization combined with bank stabilization sites upstream and downstream. Plus address nearby issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Total Points
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*		350		250		65		
		Basement (1 lot per structure)* *Address:*		250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*		300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.		Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*		100	1	75		25		100
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*		50		35		12		
		Yard Flooding (1 per lot) *Address:*		10	**3**	6		0		**30**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*		200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*		50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*		25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*		10	8	6		1		80
		Ponding (per ponding area) *Address:*		No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*		No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*		No. Lots:		1	Points/lot:		10	10
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)		Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition		30						30
				TOTAL PROBLEM POINTS						**470**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-02: Beaver Drive Crossing DATE: 11/2/2023

PROJECT LOCATION: 48 Beaver Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Culvert replacement with associated grade control and bank stabilization combined with bank stabilization sites upstream and downstream. Plus address nearby issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:		4	Points per Add'l Proj.:	50			200
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)	3	PER 100 LF		10				30
	Riffle Pool Complex	1	PER 100 LF		10				10
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)		PER 100 LF		10				
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		20						20
	5.2. Recreational/Educational	Yes = 100 No = 0 pts							
								TOTAL SOLUTION POINTS	260
								TOTAL BENEFIT POINTS	730

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$519**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.41**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

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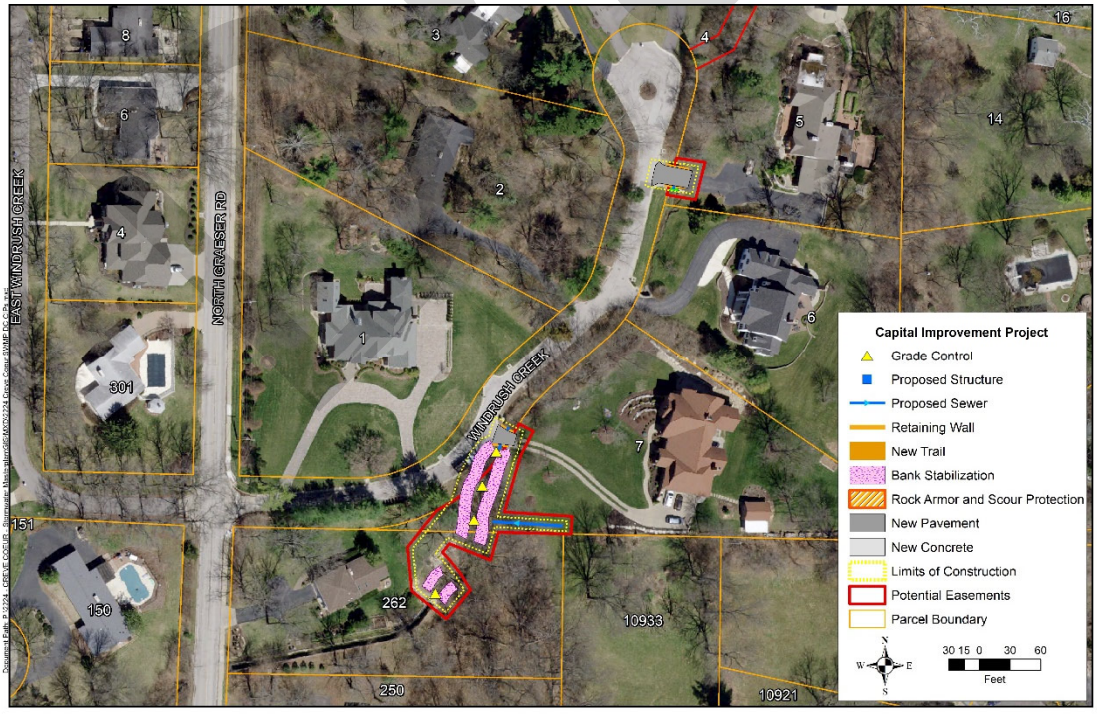
DC-C-14: East Windrush Creek

Problem Description: The following issues were observed along a tributary to Windrush Creek. The 5 East Windrush Creek driveway is failing at the channel crossing. Downstream of the 7 East Windrush Creek driveway crossing, there is erosion and a 4 foot knickpoint. There is also a failing CMP on the LDB of the channel. Failing grouted riprap is present on the upstream side of the concrete channel in the rear lot of 262 North Graeser Road. The affected parcels are private.



7 East Windrush Creek erosion

Recommendation: Replace the culvert and driveway at 5 East Windrush Creek. Stabilize both banks downstream of the driveway at 7 East Windrush Creek and install a series of three step grade controls. Replace the failing CMP. Replace the failing grouted riprap at 262 North Graeser Road with a grade control structure and bank stabilization.



Conceptual Layout of DC-C-14

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-14 East Windrush Creek

Project Description: Bank stabilization, grade controls, and a culvert replacement to address erosion threatening structures in a tributary to Windrush Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.4	$ 12,000	$ 4,800
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.4	$ 5,000	$ 2,000
			Subtotal =	$ 11,300
		Contingency =	25%	$ 2,800
		TOTAL OPINION OF SURVEYING COST =		**$ 14,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
		Contingency =	25%	$ 16,000
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.4	$ 30,000	$ 12,000
Removal of Existing Structures	LUMP	2	$ 2,000	$ 4,000
Excavation and Embankment in Place	CY	475	$ 35	$ 16,600
Rock Grade Control	CY	90	$ 200	$ 18,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	100	$ 150	$ 15,000
Bank Stabilization	SY	305	$ 120.00	$ 36,600
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF	45	$ 500.0	$ 22,500
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF	70	$ 140	$ 9,800
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	450	$ 50	$ 22,500
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	110	$ 150	$ 16,500
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.4	$ 50,000	$ 20,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 20,200	$ 20,200
			Subtotal =	$ 222,000
		Contingency =	30%	$ 66,600
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 288,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 394,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-14 East Windrush Creek DATE: 12/5/2023

PROJECT LOCATION: 1 East Windrush Creek, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a culvert replacement to address erosion threatening structures in a tributary to Windrush Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: E Windrush Creek*	20	5	12		3		100
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-14 East Windrush Creek DATE: 12/5/2023

PROJECT LOCATION: 1 East Windrush Creek, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a culvert replacement to address erosion threatening structures in a tributary to Windrush Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-14 East Windrush Creek DATE: 12/5/2023

PROJECT LOCATION: 1 East Windrush Creek, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a culvert replacement to address erosion threatening structures in a tributary to Windrush Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)	**2.47**	PER 100 LF			10				25
	Riffle Pool Complex		PER 100 LF			10				
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)		PER 100 LF			10				
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**							**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		**45**
								TOTAL BENEFIT POINTS		**145**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$394**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.37**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-15: Chaminade Drive



Collapsed retaining wall

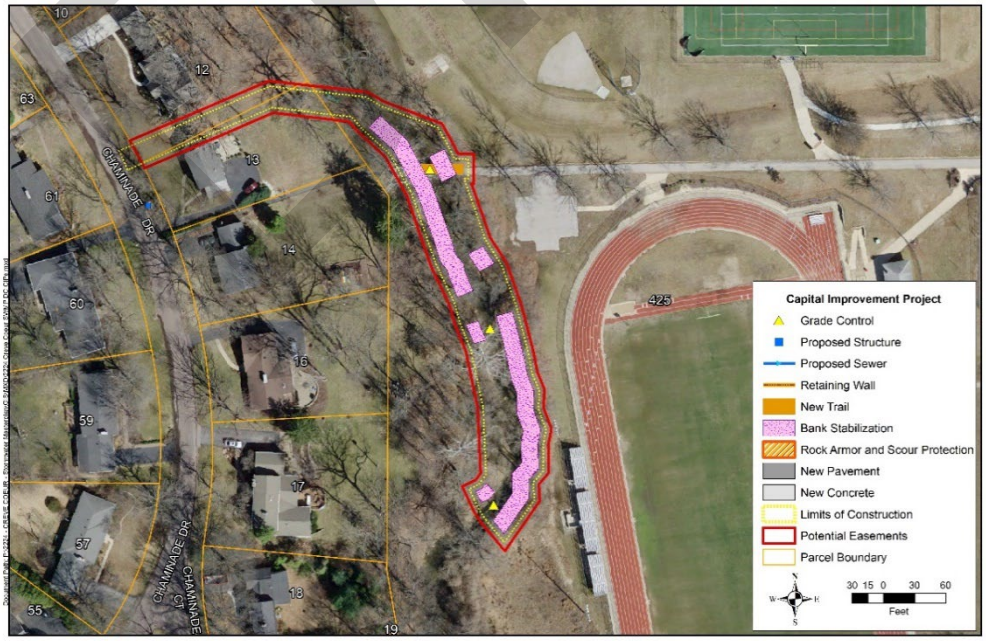
Problem Description: In Monsanto-Sunswept Creek west of Chaminade College Preparatory School several issues were observed as follows. Along the bank behind 13 and 14 Chaminade Drive, the existing retaining wall is failing. The pedestrian bridge located to the northwest of the school field has failing piers and needs replacement. Perched outfalls were also observed on either bank behind 14 and 16 Chaminade Drive. There are knickpoints and bank erosion in several locations along the school field. Erosion from street runoff reported at #16 Chaminade Drive. Evidence of erosion was not observed. The affected parcels are private.



Failing bridge piers

Recommendation: Install bank stabilization to replace the collapsed retaining wall. Stabilize the banks surrounding the perched outfalls. Replace the pedestrian bridge and install a step grade control structure below the new bridge. Install bank stabilization along the field with grade control structures at the upstream and downstream limits of stabilization. Review inlet capacity of existing single curb inlet 18M4-060D and replace with double curb inlet if warranted. The pedestrian bridge is a private structure. The City will evaluate a public/private partnership for this project.

Special Considerations: Review potential for bypass of adjacent inlets on Chaminade Drive.



Conceptual Layout of DC-C-15

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-15 Chaminade Drive

Project Description: Bank stabilization, grade controls, and a pedestrian bridge replacement to address erosion along Monsanto-Sunswept Creek as well as an inlet capacity review to address overland flow issues. The pedestrian bridge is a private structure. The City will evaluate a public/private partnership for this project.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.6	$ 12,000	$ 7,200
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.6	$ 5,000	$ 3,000
			Subtotal =	$ 14,700
		Contingency =	25%	$ 3,700
		TOTAL OPINION OF SURVEYING COST =		**$ 18,400**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.6	$ 30,000	$ 18,000
Removal of Existing Structures	LUMP	2	$ 2,000	$ 4,000
Excavation and Embankment in Place	CY	1,440	$ 35	$ 50,400
Rock Grade Control	CY	125	$ 200	$ 25,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	220	$ 150	$ 33,000
Bank Stabilization	SY	860	$ 120.00	$ 103,200
Granular Backfill	CY	30	$ 55	$ 1,700
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	515	$ 150	$ 77,300
Pavement/Sidewalk Removal & Replacement	SY	10	$ 100	$ 1,000
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.6	$ 50,000	$ 30,000
Pedestrian Bridge	LF	60	$ 1,500	$ 90,000
Mobilization and Bond	10%	1	$ 44,000	$ 44,000
			Subtotal =	$ 484,100
		Contingency =	30%	$ 145,200
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 629,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 781,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-15 Chaminade Drive DATE: 12/5/2023

PROJECT LOCATION: 14 Chaminade Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a pedestrian bridge replacement to address erosion along Monsanto-Sunswept Creek as well as an inlet capacity review to address overland flow issues. The pedestrian bridge is a private structure. The City will evaluate a public/private partnership for this project.

ENVIRONMENTAL CONSIDERATIONS: The retaining wall and pedestrian bridge are in the regulatory floodway.

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Failing wall and pedestrian bridge*	150	2	100		25		300
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5		20

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-15 Chaminade Drive DATE: 12/5/2023

PROJECT LOCATION: 14 Chaminade Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a pedestrian bridge replacement to address erosion along Monsanto-Sunswept Creek as well as an inlet capacity review to address overland flow issues. The pedestrian bridge is a private structure. The City will evaluate a public/private partnership for this project.

ENVIRONMENTAL CONSIDERATIONS: The retaining wall and pedestrian bridge are in the regulatory floodway.

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		1	Points/lot:		10	10
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**360**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-15 Chaminade Drive DATE: 12/5/2023

PROJECT LOCATION: 14 Chaminade Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a pedestrian bridge replacement to address erosion along Monsanto-Sunswept Creek as well as an inlet capacity review to address overland flow issues. The pedestrian bridge is a private structure. The City will evaluate a public/private partnership for this project.

ENVIRONMENTAL CONSIDERATIONS: The retaining wall and pedestrian bridge are in the regulatory floodway.

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit				
	Bioswales		PER 100 LF		10				
	Forebays		AC		200				
	Wet Ponds		AC		100				
	Wetlands		AC		50				
	Biostabilization of banks (per bank)	**4.96**	PER 100 LF		10				50
	Riffle Pool Complex	**3.4**	PER 100 LF		10				34
	4.2. Eliminates combined sewer (per project)		EA		100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10				
	4.4 Preserves natural resource areas	No. Units			Points per Unit				
	Lakes, Wetlands, etc.		AC		30				
	Natural Corridor (min. 25ft width)	3.40	PER 100 LF		10				34
	4.5 Conservation Easement		EA		20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**						**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**				**100**
						TOTAL SOLUTION POINTS			**238**
						TOTAL BENEFIT POINTS			**598**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$781**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.77**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-16: Ladue and South Spoede Road

Problem Description: The culvert located at the Monsanto Creek and Ladue Road crossing is failing with visible wall bulging, cracking and seepage on the interior. Downstream of the culvert, there is bank erosion. In the rear of lot 10677 Spoede View Court, there is an exposed sanitary crossing causing a 1 foot knickpoint. The affected parcels are private.

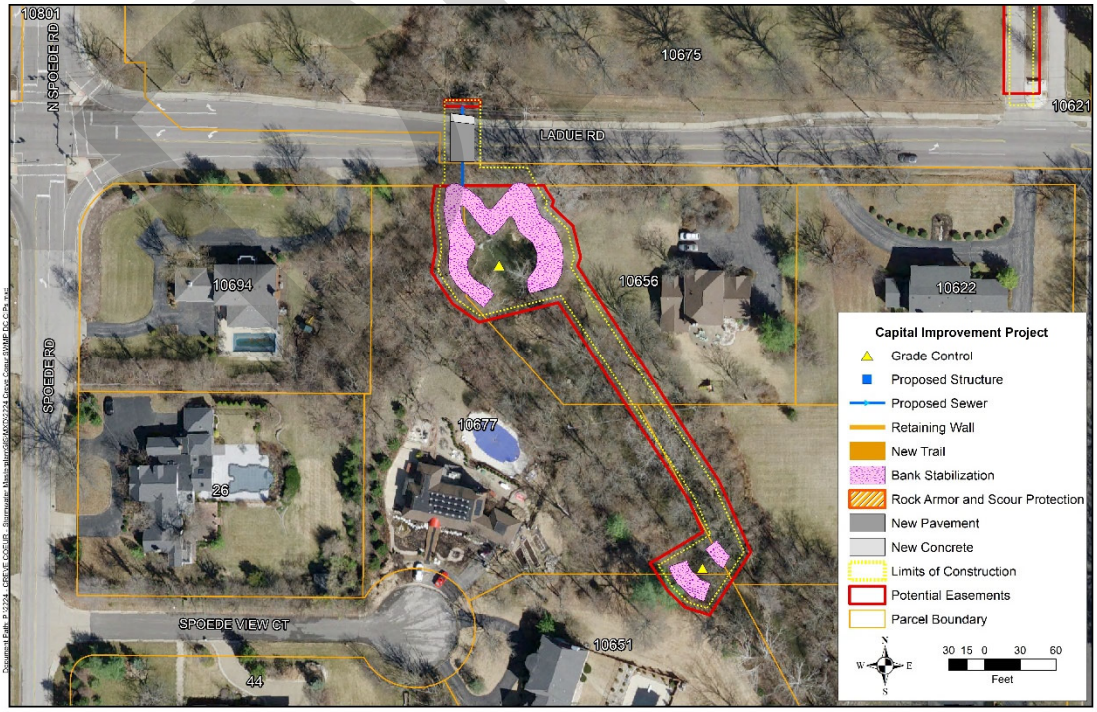
Recommendation: Replace the Ladue Road culvert. Install a step grade control structure with associated bank stabilization downstream of the Ladue Road crossing. Install a step grade control structure and bank stabilization at the sanitary crossing.



Ladue Road culvert cracking and seepage



Downstream of Ladue Road crossing



Conceptual Layout of DC-C-16

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-16 Ladue and South Spoede Road

Project Description: Bank stabilization, grade controls, and a culvert replacement to address erosion in Monsanto-Sunswept Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.5	$ 12,000	$ 6,000
Prepare Easement Plat and Scripts	EACH	6	$ 1,500	$ 9,000
Contruction Staking and As-Built Surveying	ACRE	0.5	$ 5,000	$ 2,500
			Subtotal =	$ 17,500
		Contingency =	25%	$ 4,400
		TOTAL OPINION OF SURVEYING COST =		**$ 21,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
		Contingency =	25%	$ 16,000
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.5	$ 30,000	$ 15,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	1,485	$ 35	$ 52,000
Rock Grade Control	CY	230	$ 200	$ 46,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	125	$ 150	$ 18,800
Bank Stabilization	SY	615	$ 120.00	$ 73,800
Granular Backfill	CY	30	$ 55	$ 1,700
New Culvert	LF	80	$ 500.0	$ 40,000
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	70	$ 150	$ 10,500
Pavement/Sidewalk Removal & Replacement	SY	15	$ 100	$ 1,500
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.5	$ 50,000	$ 25,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 29,400	$ 29,400
			Subtotal =	$ 323,200
		Contingency =	30%	$ 97,000
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 420,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 533,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-16 Ladue and South Spoede Road DATE: 12/5/2023

PROJECT LOCATION: 10656 Ladue Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a culvert replacement to address erosion in Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address: Ladue Rd*	75	4	50		12		300
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25	2	6		50
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	2	10		5		40

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-16 Ladue and South Spoede Road DATE: 12/5/2023

PROJECT LOCATION: 10656 Ladue Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a culvert replacement to address erosion in Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**405**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-16 Ladue and South Spoede Road DATE: 12/5/2023

PROJECT LOCATION: 10656 Ladue Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a culvert replacement to address erosion in Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**3.57**	PER 100 LF		10		36
	Riffle Pool Complex	**3.66**	PER 100 LF		10		37
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	3.66	PER 100 LF		10		37
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**119**
						TOTAL BENEFIT POINTS	**524**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$533**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.98**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-17: 10675 Ladue Road

Problem Description: In Monsanto-Sunswept Creek within the Congregation Temple Israel property (10675 Ladue Road) several issues were observed as follows. A perched pipe and bank cutting at the end of Brodsky Circle, a failing gabion wall between the buildings, bank erosion threatening the fence surrounding the pool, bank erosion at the north end of the property threatening a utility pole with two knickpoints, and utility poles in poor, rotting conditions at the north end of the property. The affected parcel is private.

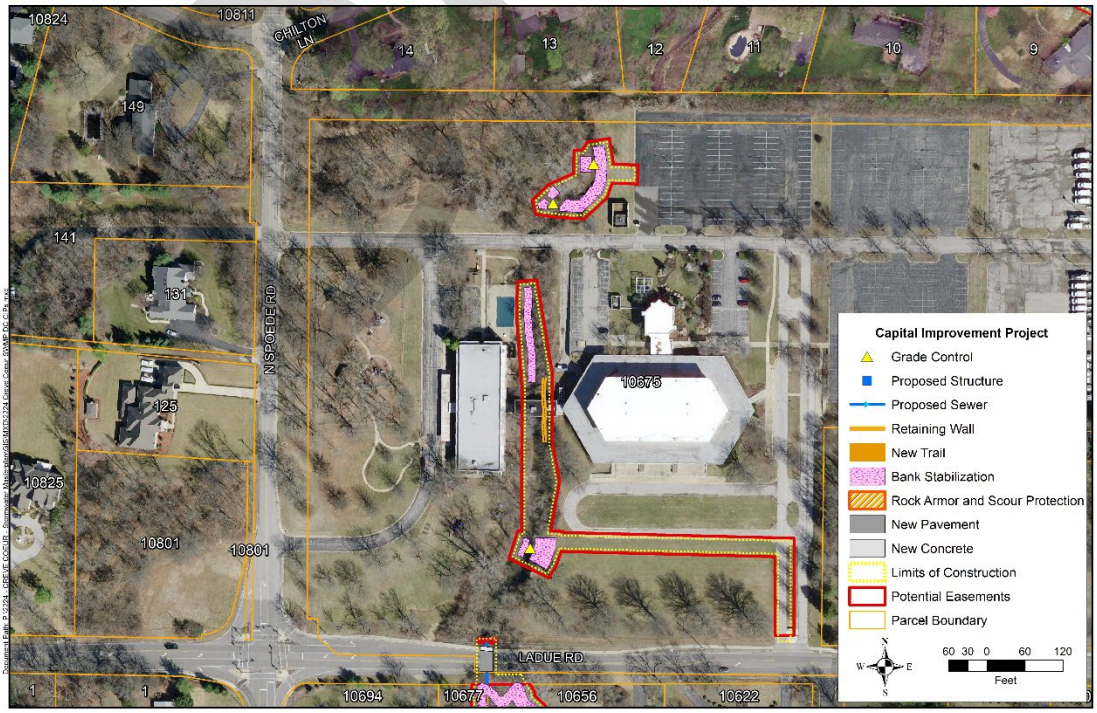


Perched pipe

Recommendation: Install bank stabilization to address the perched pipe and bank cutting and install a grade control structure. Replace the failing gabion wall. Install bank stabilization to protect the threatened fence. Stabilize the bank to protect the threatened utility pole and install step grade controls at the knickpoints.



Bank erosion threatening utility pole



Conceptual Layout of DC-C-17

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-17 10675 Ladue Road

Project Description: Bank stabilization, grade controls, and a gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.8	$ 12,000	$ 9,600
Prepare Easement Plat and Scripts	EACH	1	$ 1,500	$ 1,500
Contruction Staking and As-Built Surveying	ACRE	0.8	$ 5,000	$ 4,000
			Subtotal =	$ 15,100
		Contingency =	25%	$ 3,800
		TOTAL OPINION OF SURVEYING COST =		**$ 18,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,500
		Contingency =	25%	$ 2,600
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 13,100**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	120	$ 160	$ 19,200
ROW	HOURS	60	$ 160	$ 9,600
Permitting	HOURS	60	$ 160	$ 9,600
Final Design	HOURS	100	$ 160	$ 16,000
Develop Plans and Construction Documents	HOURS	150	$ 160	$ 24,000
Construction Support	HOURS	120	$ 160	$ 19,200
			$ -	$ -
			Subtotal =	$ 97,600
		Contingency =	25%	$ 24,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 122,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.8	$ 30,000	$ 24,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	1,495	$ 35	$ 52,300
Rock Grade Control	CY	105	$ 200	$ 21,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	235	$ 150	$ 35,300
Bank Stabilization	SY	765	$ 120.00	$ 91,800
Granular Backfill	CY	30	$ 55	$ 1,700
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	1,030	$ 50	$ 51,500
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.8	$ 50,000	$ 40,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 32,700	$ 32,700
			Subtotal =	$ 359,800
		Contingency =	30%	$ 107,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 467,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 621,700**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-17 10675 Ladue Road DATE: 12/5/2023

PROJECT LOCATION: 10675 Ladue Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS: The retaining wall is in the regulatory floodway.

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Retaining wall, parking lot*	150	1	100	1	25		250
			Industrial, office, commercial and warehouse (1 lot per structure) *Address: Temple Israel Religious School and Congregation Temple Israel*	300		200		50	2	100
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	1	lots	10 points per lot				10
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	1	10		5	3	35

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-17 10675 Ladue Road DATE: 12/5/2023

PROJECT LOCATION: 10675 Ladue Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS: The retaining wall is in the regulatory floodway.

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**395**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-17 10675 Ladue Road DATE: 12/5/2023

PROJECT LOCATION: 10675 Ladue Road, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS: The retaining wall is in the regulatory floodway.

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**4.16**	PER 100 LF		10		42
	Riffle Pool Complex	**9.16**	PER 100 LF		10		92
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	1.92	PER 100 LF		10		19
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**		**100**
						TOTAL SOLUTION POINTS	**272**
						TOTAL BENEFIT POINTS	**667**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$622**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.07**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-18: Alden Lane

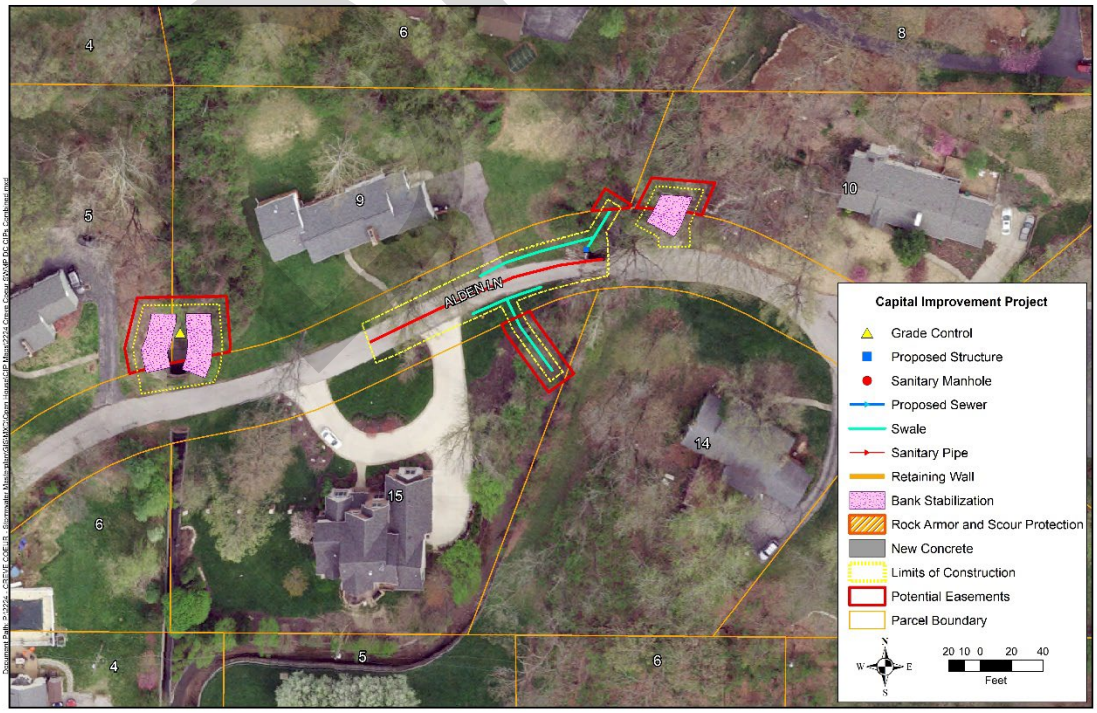
Problem Description: In Monsanto-Sunswept Creek upstream of the Alden Lane crossing there is a failing railroad tie wall on the LDB. In the unnamed tributary to Monsanto-Sunswept Creek upstream of the Alden Lane crossing there is a failing grouted riprap structure. Flow on the east end of the street bypasses the channel at the culvert causing street flooding west of the culvert. The affected parcels are private.



Failing grouted riprap

Recommendation: Replace the failing railroad tie wall with bank stabilization. Install a grade control structure with to replace the failing grouted riprap. Construct a curb chute off the street into a concrete swale along the west wing wall. Construct a grass swale along the north side of the street to drain to the concrete swale. Repave the apron to create a swale across the driveway at 9 Alden Lane. Construct a grass swale along the south side of the street with a swale across 15 Alden Lane to the channel that is grass in the turf area and rock in the landscape area. Repave and crown Alden Lane.

Special Considerations: A second chute or inlet over the culvert maybe needed to adequately direct flow from the street into the channel. An alternative solution would be to construct an inlet on each side of the street and pipe to the channel.



Conceptual Layout of DC-C-18

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-18 Alden Lane

Project Description: Bank stabilization, grade control, and swaled to address erosion threatening structures in Monsanto Sunswept Creek and one of its tributaries as well as overland flow issues.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 9,200
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF SURVEYING COST =		**$ 11,500**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,500
		Contingency =	25%	$ 2,400
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,900**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	405	$ 35	$ 14,200
Rock Grade Control	CY	35	$ 200	$ 7,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	40	$ 150	$ 6,000
Bank Stabilization	SY	185	$ 120.00	$ 22,200
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	190	$ 15	$ 2,900
Asphaltic Concrete Pavement	SY	10	$ 150	$ 1,500
Pavement/Sidewalk Removal & Replacement	SY	320	$ 100	$ 32,000
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 10,000	$ 10,000
			Subtotal =	$ 109,900
		Contingency =	30%	$ 33,000
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 142,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 212,300**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-18 Alden Lane DATE: 12/5/2023

PROJECT LOCATION: 9 Alden Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade control, and swaled to address erosion threatening structures in Monsanto Sunswept Creek and one of its tributaries as well as overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 5 Alden Ln*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Failing retaining wall*	150		100	1	25		100
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10	1	5		10

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-18 Alden Lane DATE: 12/5/2023

PROJECT LOCATION: 9 Alden Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade control, and swaled to address erosion threatening structures in Monsanto Sunswept Creek and one of its tributaries as well as overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:		2	Points/pond:		5	10
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**220**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-18 Alden Lane DATE: 12/5/2023

PROJECT LOCATION: 9 Alden Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade control, and swaled to address erosion threatening structures in Monsanto Sunswept Creek and one of its tributaries as well as overland flow issues.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)	**1.09**	PER 100 LF			10		11
	Riffle Pool Complex	**3.08**	PER 100 LF			10		31
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)	3.08	PER 100 LF			10		31
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**					**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**93**
							TOTAL BENEFIT POINTS	**313**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$212**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.47**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-19: Middlebrook Lane

Problem Description: Bank erosion threatening a fence and utility pole was observed along a tributary to Monsanto-Sunswept Creek in the rear lot of 8 Sherwyn Lane. Where Monsanto-Sunswept Creek crosses the 8 Middlebrook Lane driveway, the RDB abutment and the bridge are failing. The affected parcels are private.

Recommendation: Install bank stabilization in the rear of lot 3 Middlebrook Lane to protect the existing fence and utility pole. Install bank stabilization both upstream and downstream of the unnammed tributary crossing of Middlebrook Lane. Replace the failing bridge abutment located at the Monsanto Creek crossing of Middlebrook Lane.



Bank erosion threatening fence and utility pole



Failing abutment and bridge



Conceptual Layout of DC-C-19

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-19 Middlebrook Lane

Project Description: Bank stabilization and bridge abutment replacement to address erosion in Monsanto-Sunswept Creek and one of its tributaries.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	4	$ 1,500	$ 6,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 9,400
		Contingency =	25%	$ 2,400
		TOTAL OPINION OF SURVEYING COST =		**$ 11,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	210	$ 35	$ 7,400
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	25	$ 150	$ 3,800
Bank Stabilization	SY	115	$ 120.00	$ 13,800
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	180	$ 50	$ 9,000
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	95	$ 150	$ 14,300
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 7,400	$ 7,400
			Subtotal =	$ 81,500
		Contingency =	30%	$ 24,500
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 106,000**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 174,400**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-19 Middlebrook Lane DATE: 12/5/2023

PROJECT LOCATION: 5 Middlebrook Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization and bridge abutment replacement to address erosion in Monsanto-Sunswept Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: 8 Middlebrook Ln driveway*	20	2	12		3		40
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-19 Middlebrook Lane DATE: 12/5/2023

PROJECT LOCATION: 5 Middlebrook Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization and bridge abutment replacement to address erosion in Monsanto-Sunswept Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*		350		250		65		
		Basement (1 lot per structure)* *Address:*		250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*		300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.		Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*		100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*		50		35		12		
		Yard Flooding (1 per lot) *Address:*		10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*		200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*		50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*		25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*		10		6		1		
		Ponding (per ponding area) *Address:*		No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*		No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*		No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)		Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition								0
				TOTAL PROBLEM POINTS						**40**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-19 Middlebrook Lane DATE: 12/5/2023

PROJECT LOCATION: 5 Middlebrook Lane, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization and bridge abutment replacement to address erosion in Monsanto-Sunswept Creek and one of its tributaries.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**0.47**	PER 100 LF		10		5
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**25**
						TOTAL BENEFIT POINTS	**65**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$174**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.37**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

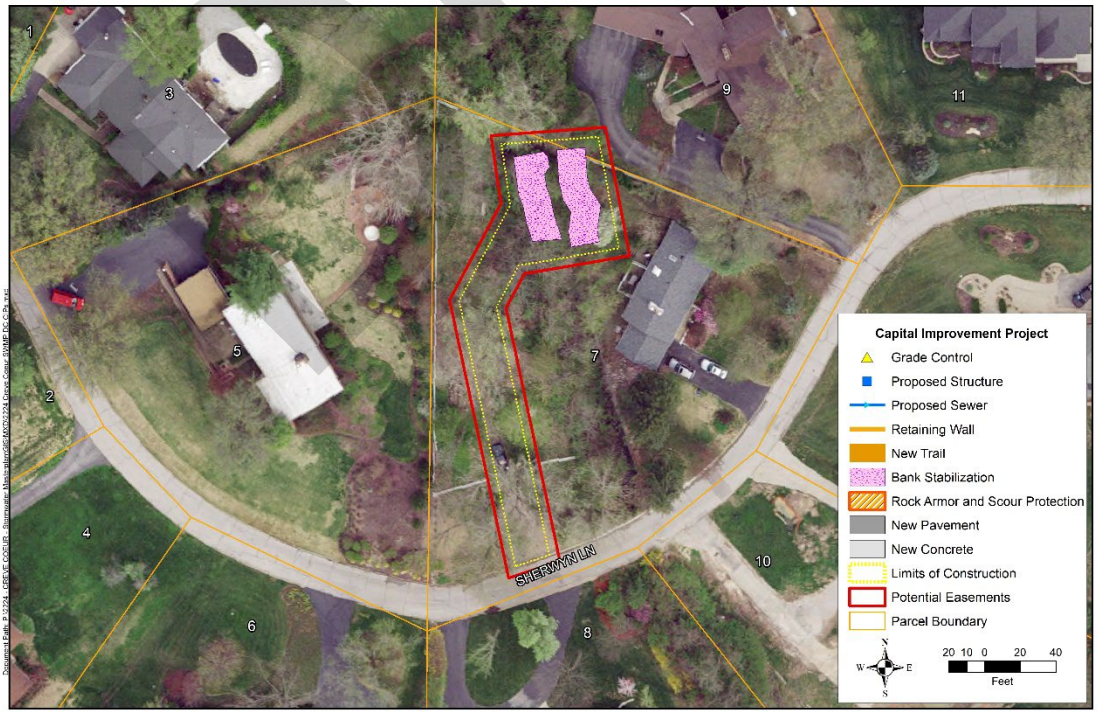
DC-C-20: Sherwyn Lane

Problem Description: In a tributary to Monsanto-Sunswept Creek, bank erosion was observed threatening the driveway of 9 Sherwyn Lane and the rear lot of 7 Sherwyn Lane. The affected parcels are private.

Recommendation: Install bank stabilization on both banks in the rear lot of 7 Sherwyn Lane.



Bank erosion



Conceptual Layout of DC-C-20

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-20 Sherwyn Lane

Project Description: Bank stabilization to address erosion threatening structures in a tributary to Monsanto-Sunswept Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 6,400
		Contingency =	25%	$ 1,600
		TOTAL OPINION OF SURVEYING COST =		**$ 8,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	265	$ 35	$ 9,300
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	50	$ 150	$ 7,500
Bank Stabilization	SY	190	$ 120.00	$ 22,800
Granular Backfill	CY	5	$ 55	$ 300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 6,200	$ 6,200
			Subtotal =	$ 68,600
		Contingency =	30%	$ 20,600
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 89,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 153,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-20 Sherwyn Lane DATE: 12/5/2023

PROJECT LOCATION: 7 Sherwyn Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion threatening structures in a tributary to Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 7 Sherwyn Ln*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-20 Sherwyn Lane DATE: 12/5/2023

PROJECT LOCATION: 7 Sherwyn Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion threatening structures in a tributary to Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**50**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-20 Sherwyn Lane DATE: 12/5/2023

PROJECT LOCATION: 7 Sherwyn Lane, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization to address erosion threatening structures in a tributary to Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.04**	PER 100 LF		10		10
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**30**
						TOTAL BENEFIT POINTS	**80**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$154**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.52**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-21: 10694 Country View Drive

Problem Description: In Monsanto-Sunswept Creek downstream of the culvert crossing Country View Drive, failing grouted riprap and bank erosion threatening the fence along the property line of 10694 Country View Drive was observed. The affected parcels are private.

Recommendation: Install a step grade control structure to replace the failing grouted riprap. Stabilize the banks on either side of the channel.



Failing grouted riprap



Bank erosion threatening fence



Conceptual Layout of DC-C-21

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-21 10694 Country View Drive

Project Description: Grade control with associated bank stabilization to address erosion along Monsanto-Sunswept Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.1	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.1	$ 5,000	$ 500
			Subtotal =	$ 4,700
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	500	$ 35	$ 17,500
Rock Grade Control	CY	65	$ 200	$ 13,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	35	$ 150	$ 5,300
Bank Stabilization	SY	175	$ 120.00	$ 21,000
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	65	$ 50	$ 3,300
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 7,400	$ 7,400
			Subtotal =	$ 81,600
		Contingency =	30%	$ 24,500
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 106,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 168,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-21 10694 Country View Drive DATE: 12/5/2023

PROJECT LOCATION: 10694 Country View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control with associated bank stabilization to address erosion along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Country View Dr*	20	3	12		3		60
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-21 10694 Country View Drive DATE: 12/5/2023

PROJECT LOCATION: 10694 Country View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control with associated bank stabilization to address erosion along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**60**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-21 10694 Country View Drive DATE: 12/5/2023

PROJECT LOCATION: 10694 Country View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Grade control with associated bank stabilization to address erosion along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.26**	PER 100 LF		10		13
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**33**
						TOTAL BENEFIT POINTS	**93**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$169**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.55**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

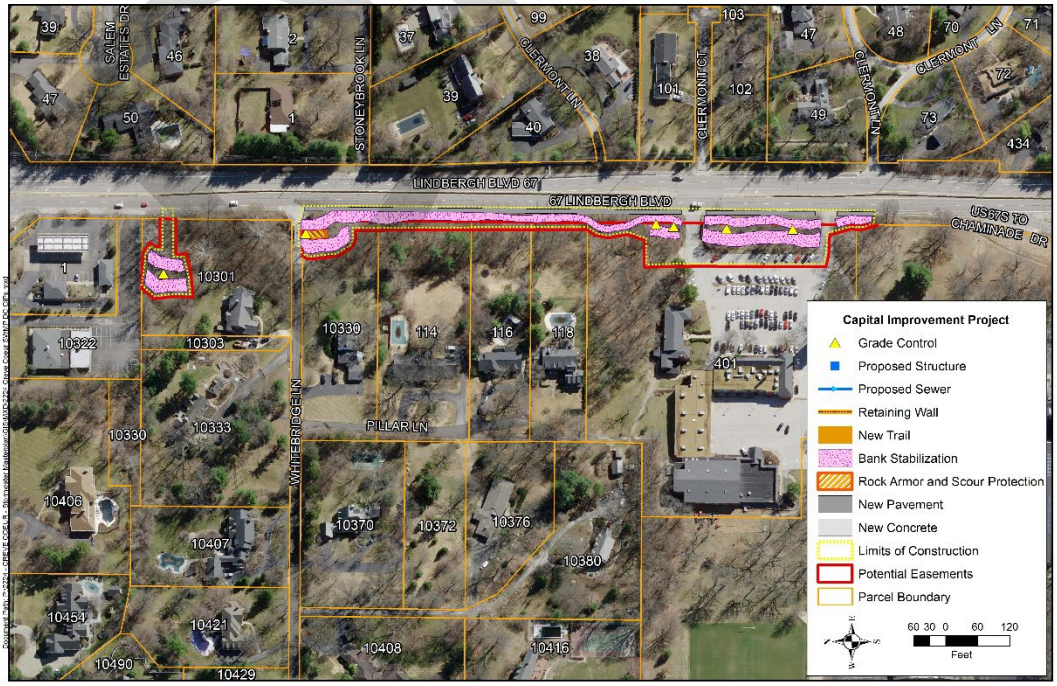
DC-C-22: Denny Creek



LDB erosion between church entrances

Problem Description: In Denny Creek along Lindbergh Boulevard multiple issues were observed as follows. Upstream of the Lindbergh Boulevard crossing, erosion was observed along the roadway and LDB wingwall. Between the entrances to Our Lady of the Pillar Church, erosion was observed along both banks. There was a knickpoint upstream of the southern entrance and downstream of the northern entrance. Perched pipes were also observed towards the upstream end of the reach on the RDB. Between the northern entrance and Whitebridge Lane, erosion was observed along the LDB throughout the entire reach threatening the roadway and two utility poles. Tension cracks were seen forming near the sidewalk and along the top of bank. Two knickpoints were observed upstream of the northern entrance. Downstream of Whitebridge Lane, a knickpoint and scour hole was observed along with erosion threatening the wingwalls and roadway. At the upstream end of Denny Creek, a perched outfall and knickpoint were observed. The affected parcels are private.

Recommendation: Stabilize the LDB upstream of the Lindbergh Boulevard crossing. Stabilize both banks between the church entrances and install grade controls at the knickpoints. Stabilize the LDB between the northern church entrance and Whitebridge Lane. Stabilize the RDB upstream of the northern entrance and install two step grade controls. Stabilize the RDB downstream of Whitebridge Lane and install a step grade control and stilling basin. Stabilize both banks at the upstream end of Denny Creek and install a step grade control.



Conceptual Layout of DC-C-22

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-22 Denny Creek

Project Description: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Denny Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	1.7	$ 12,000	$ 20,400
Prepare Easement Plat and Scripts	EACH	7	$ 1,500	$ 10,500
Contruction Staking and As-Built Surveying	ACRE	1.7	$ 5,000	$ 8,500
			Subtotal =	$ 39,400
		Contingency =	25%	$ 9,900
		TOTAL OPINION OF SURVEYING COST =		**$ 49,300**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,500
		Contingency =	25%	$ 2,600
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 13,100**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	180	$ 160	$ 28,800
ROW	HOURS	80	$ 160	$ 12,800
Permitting	HOURS	80	$ 160	$ 12,800
Final Design	HOURS	120	$ 160	$ 19,200
Develop Plans and Construction Documents	HOURS	200	$ 160	$ 32,000
Construction Support	HOURS	200	$ 160	$ 32,000
			$ -	$ -
			Subtotal =	$ 137,600
		Contingency =	25%	$ 34,400
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 172,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	1.7	$ 30,000	$ 51,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	5,525	$ 35	$ 193,400
Rock Grade Control	CY	225	$ 200	$ 45,000
Rock Stilling Basin / Outlet Scour Protection	CY	115	$ 100	$ 11,500
Rock Toe and Slope Protection	CY	690	$ 150	$ 103,500
Bank Stabilization	SY	3,130	$ 120.00	$ 375,600
Granular Backfill	CY	85	$ 55	$ 4,700
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	880	$ 150	$ 132,000
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	1,090	$ 50	$ 54,500
Utility Relocation	LUMP	1	$ 11,000	$ 11,000
Site Restoration	ACRE	1.7	$ 50,000	$ 85,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 106,700	$ 106,700
			Subtotal =	$ 1,173,900
		Contingency =	30%	$ 352,200
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 1,526,100**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 1,760,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-22 Denny Creek DATE: 12/5/2023

PROJECT LOCATION: 403 South Lindbergh Boulevard, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Denny Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address: Lindbergh Blvd*	75	11	50		12		825
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Whitebridge Ln*	20	7	12		3		140
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20	3	10	1	5		70

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-22 Denny Creek DATE: 12/5/2023

PROJECT LOCATION: 403 South Lindbergh Boulevard, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Denny Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**1035**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-22 Denny Creek DATE: 12/5/2023

PROJECT LOCATION: 403 South Lindbergh Boulevard, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Denny Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**28.36**	PER 100 LF		10		284
	Riffle Pool Complex	**10.09**	PER 100 LF		10		101
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	10.09	PER 100 LF		10		101
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**495**
						TOTAL BENEFIT POINTS	**1530**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$1,761**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.87**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-23: 10620 Country View Drive

Problem Description: Within Dr. Phillip Venable Memorial Park multiple issues were observed along Monsanto-Sunswept Creek as follows. Behind 433 Shadybrook Drive there is a 3 foot knickpoint, failing gabions, and a failing retaining wall. Immediately downstream of the pedestrian bridge crossing behind 450 Foxbrook Drive, the grouted riprap structure protecting the pipe outfall is failing. The affected parcels are private and public.

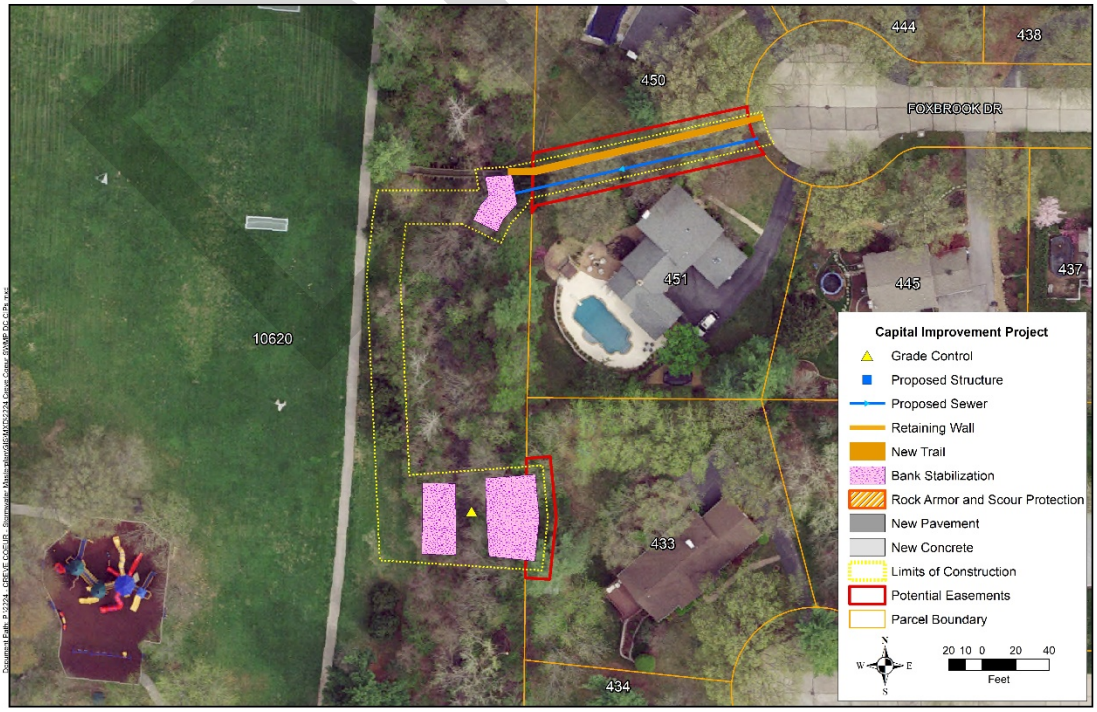


Failing gabions and retaining wall

Recommendation: Install a step grade control structure and bank stabilization to replace the failing gabions and retaining wall. Replace the failing pipe and replace the grouted riprap with bank stabilization. Bridge work will be combined with the planned Venerable Park project.



Failing grouted riprap



Conceptual Layout of DC-C-23

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-23 10620 Country View Drive

Project Description: Bank stabilization, grade control, and pipe replacement to address erosion threatening structures along Monsanto-Sunswept Creek in Dr. Phillip Venable Memorial Park. Bridge work will be combined with the planned Venerable Park project.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.3	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.3	$ 5,000	$ 1,500
			Subtotal =	$ 9,600
		Contingency =	25%	$ 2,400
		TOTAL OPINION OF SURVEYING COST =		**$ 12,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.3	$ 30,000	$ 9,000
Removal of Existing Structures	LUMP	2	$ 2,000	$ 4,000
Excavation and Embankment in Place	CY	295	$ 35	$ 10,300
Rock Grade Control	CY	55	$ 200	$ 11,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	55	$ 150	$ 8,300
Bank Stabilization	SY	320	$ 120.00	$ 38,400
Granular Backfill	CY	10	$ 55	$ 600
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF	165	$ 140	$ 23,100
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	65	$ 150	$ 9,800
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 13,600	$ 13,600
			Subtotal =	$ 149,600
		Contingency =	30%	$ 44,900
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 194,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 263,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-23 10620 Country View Drive DATE: 12/5/2023

PROJECT LOCATION: 10620 Country View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, and pipe replacement to address erosion threatening structures along Monsanto-Sunswept Creek in Dr. Phillip Venable Memorial Park. Bridge work will be combined with the planned Venerable Park project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 433 Shadybrook Dr*	300		200		50	1	50
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Gabion and retaining wall*	150		100		25	2	50
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10	1	5		10

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-23 10620 Country View Drive DATE: 12/5/2023

PROJECT LOCATION: 10620 Country View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, and pipe replacement to address erosion threatening structures along Monsanto-Sunswept Creek in Dr. Phillip Venable Memorial Park. Bridge work will be combined with the planned Venerable Park project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition			15				15
			TOTAL PROBLEM POINTS						**125**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-23 10620 Country View Drive DATE: 12/5/2023

PROJECT LOCATION: 10620 Country View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, and pipe replacement to address erosion threatening structures along Monsanto-Sunswept Creek in Dr. Phillip Venable Memorial Park. Bridge work will be combined with the planned Venerable Park project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**1.33**	PER 100 LF		10		13
	Riffle Pool Complex	**2.04**	PER 100 LF		10		20
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)	2.04	PER 100 LF		10		20
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts			**Yes**		**100**
						TOTAL SOLUTION POINTS	**174**
						TOTAL BENEFIT POINTS	**299**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$264**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.13**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-24: Sunswept Drive

Problem Description: Along Sunswept Drive multiple issues were observed along Monsanto-Sunswept Creek as follows. Along the driveway of 14 Sunswept Drive there is a failing gabion wall. Where the creek crosses 15 Sunswept Drive, there is erosion along the outside bend nearing the road and failing grouted riprap and gabion baskets upstream of the Sunswept Drive crossing. In the Sunswept Drive culvert, there is a hole in the concrete below a pipe outfall. Downstream of the Sunswept Drive crossing the LDB gabion wall is failing. The affected parcels are private.

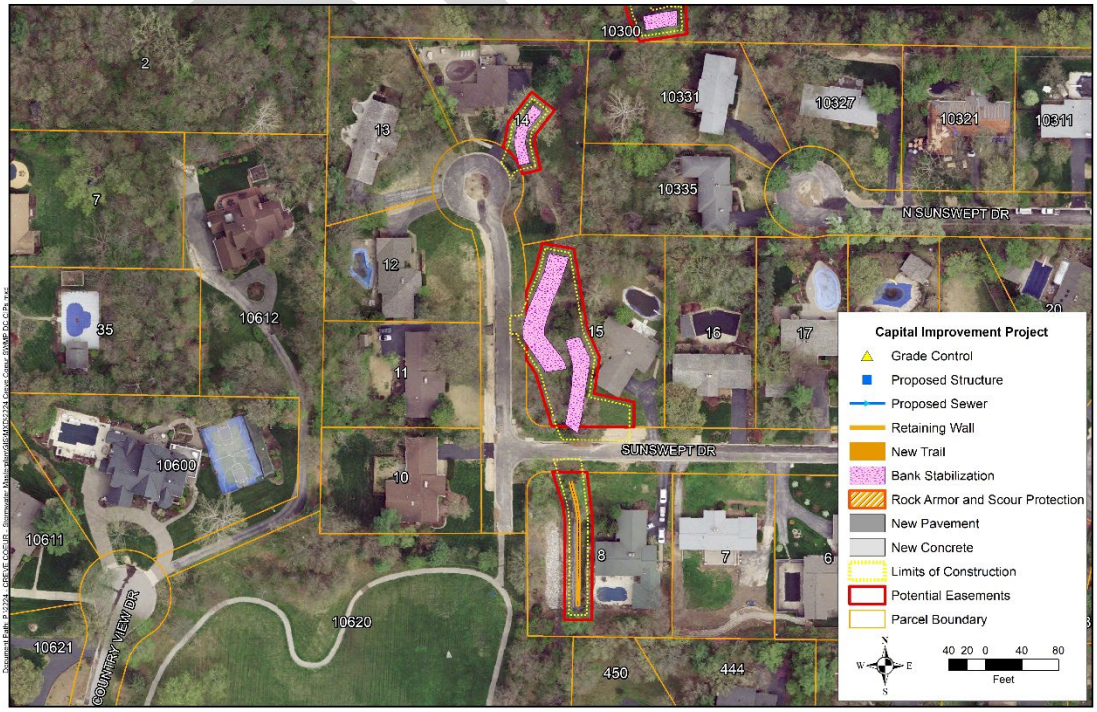
Recommendation: Install bank stabilization along the driveway of 14 Sunswept Drive to replace the failing gabion wall. Install bank stabilization along the creek at 15 Sunswept Drive to address the bank erosion, failing grouted riprap, and gabion baskets. Patch the concrete below the pipe outfall in the culvert. Replace the gabion wall along 8 Sunswept Drive.



14 Sunswept Drive gabion wall



15 Sunswept Drive erosion



Conceptual Layout of DC-C-24

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-24 Sunswept Drive

Project Description: Bank stabilization and gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.4	$ 12,000	$ 4,800
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.4	$ 5,000	$ 2,000
			Subtotal =	$ 11,300
		Contingency =	25%	$ 2,800
		TOTAL OPINION OF SURVEYING COST =		**$ 14,100**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	2	$ 1,000	$ 2,000
			Subtotal =	$ 10,000
		Contingency =	25%	$ 2,500
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 12,500**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
		Contingency =	25%	$ 16,000
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.4	$ 30,000	$ 12,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	745	$ 35	$ 26,100
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	190	$ 150	$ 28,500
Bank Stabilization	SY	615	$ 120.00	$ 73,800
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	1,680	$ 50	$ 84,000
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	135	$ 50	$ 6,800
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.4	$ 50,000	$ 20,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 26,000	$ 26,000
			Subtotal =	$ 285,500
		Contingency =	30%	$ 85,700
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 371,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 477,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-24 Sunswept Drive DATE: 12/5/2023

PROJECT LOCATION: 15 Sunswept Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 8, 14, and 15 Sunswept Dr*	300		200	2	50	1	450
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: Gabion wall, 8 Sunswept Dr pool*	150	1	100	1	25		250
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend	2	lots	10 points per lot				20
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Sunswept Dr*	20		12	2	3		24
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-24 Sunswept Drive DATE: 12/5/2023

PROJECT LOCATION: 15 Sunswept Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**744**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-24 Sunswept Drive DATE: 12/5/2023

PROJECT LOCATION: 15 Sunswept Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization and gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)	**3.25**	PER 100 LF			10		33
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)		>15 (0 pts)	
	Points for Easements		**20**					**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**53**
							TOTAL BENEFIT POINTS	**797**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$478**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.67**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-26: Lindbergh Boulevard

Problem Description: In the unnamed tributary along the Lindbergh Boulevard ROW, an asphalt swale conveying drainage from the roadway is failing and being bypassed causing bank erosion. At the downstream end of the tributary, a knickpoint and scour hole have formed. These issues are contained within Lindbergh Boulevard ROW.

Recommendation: Replace the asphalt swale and stabilize the banks. Install a stilling basin and step grade control structure at the downstream end of the tributary.



Failing asphalt swale



Knickpoint and scour hole



Conceptual Layout of DC-C-26

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-26 Lindbergh Boulevard

Project Description: Bank stabilization, grade control, rock armoring, and a stilling basin to address erosion in an unnamed tributary along Lindbergh Blvd.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.3	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	0	$ 1,500	$ -
Contruction Staking and As-Built Surveying	ACRE	0.3	$ 5,000	$ 1,500
			Subtotal =	$ 5,100
		Contingency =	25%	$ 1,300
		TOTAL OPINION OF SURVEYING COST =		**$ 6,400**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	50	$ 20	$ 1,000
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,000
		Contingency =	25%	$ 2,300
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,300**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
		Contingency =	25%	$ 16,000
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.3	$ 30,000	$ 9,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	1,300	$ 35	$ 45,500
Rock Grade Control	CY	35	$ 200	$ 7,000
Rock Stilling Basin / Outlet Scour Protection	CY	45	$ 100	$ 4,500
Rock Toe and Slope Protection	CY	85	$ 150	$ 12,800
Bank Stabilization	SY	475	$ 120.00	$ 57,000
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 16,000	$ 16,000
			Subtotal =	$ 176,100
		Contingency =	30%	$ 52,800
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 228,900**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 326,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-26 Lindbergh Boulevard DATE: 12/5/2023

PROJECT LOCATION: 8 Millstone Campus Drive, St. Louis, MO 63146 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, rock armoring, and a stilling basin to address erosion in an unnamed tributary along Lindbergh Blvd.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 21 and 22 Tealbrook Dr*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address: Lindbergh Blvd*	75	3	50		12		225
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-26 Lindbergh Boulevard DATE: 12/5/2023

PROJECT LOCATION: 8 Millstone Campus Drive, St. Louis, MO 63146 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, rock armoring, and a stilling basin to address erosion in an unnamed tributary along Lindbergh Blvd.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**225**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-26 Lindbergh Boulevard DATE: 12/5/2023

PROJECT LOCATION: 8 Millstone Campus Drive, St. Louis, MO 63146 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, rock armoring, and a stilling basin to address erosion in an unnamed tributary along Lindbergh Blvd.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.13**	PER 100 LF		10		21
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements	**50**					**50**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**71**
						TOTAL BENEFIT POINTS	**296**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$327**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.91**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-27: 22 South Tealbrook Drive

Problem Description: In Pebble Creek there is bank erosion present at the outfall and along the rear lot of 22 South Tealbrook Drive. The affected parcels are private.

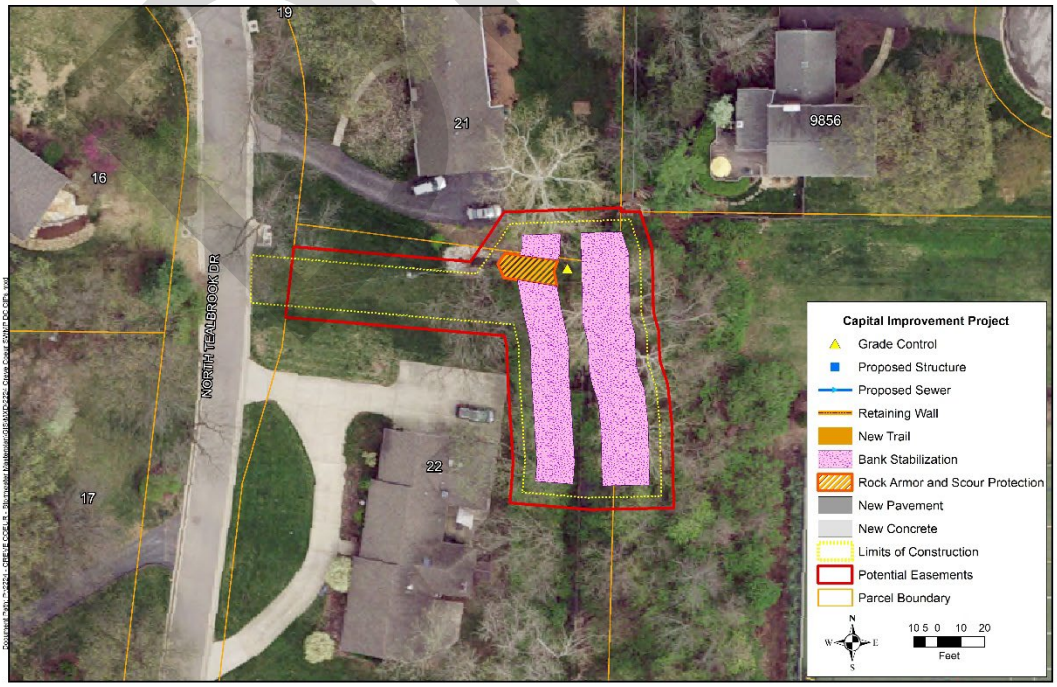
Recommendation: Install a step grade control structure, stabilize both banks, and armor the drainage swale. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.



Outfall



Bank erosion along rear lot of 22 South Tealbrook Drive



Conceptual Layout of DC-C-27

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-27 22 South Tealbrook Drive

Project Description: Bank stabilization, grade control, and rock armoring to address erosion threatening structures in Pebble Creek. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.2	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.2	$ 5,000	$ 1,000
			Subtotal =	$ 7,900
		Contingency =	25%	$ 2,000
		TOTAL OPINION OF SURVEYING COST =		**$ 9,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 8,500
		Contingency =	25%	$ 2,100
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 10,600**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY	825	$ 35	$ 28,900
Rock Grade Control	CY	35	$ 200	$ 7,000
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY	135	$ 150	$ 20,300
Bank Stabilization	SY	405	$ 120.00	$ 48,600
Granular Backfill	CY	15	$ 55	$ 800
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	20	$ 50	$ 1,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 12,800	$ 12,800
			Subtotal =	$ 140,900
		Contingency =	30%	$ 42,300
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 183,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 249,700**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-27 22 South Tealbrook Drive DATE: 12/5/2023

PROJECT LOCATION: 22 South Tealbrook Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, and rock armoring to address erosion threatening structures in Pebble Creek. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address: 21 and 22 Tealbrook Dr*	300		200		50	2	100
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: Driveway culvert*	20	2	12		3		40
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-27 22 South Tealbrook Drive DATE: 12/5/2023

PROJECT LOCATION: 22 South Tealbrook Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, and rock armoring to address erosion threatening structures in Pebble Creek. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**140**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-27 22 South Tealbrook Drive DATE: 12/5/2023

PROJECT LOCATION: 22 South Tealbrook Drive, Creve Coeur, MO 63141 PROJECT TYPE: 2

PROJECT DESCRIPTION: Bank stabilization, grade control, and rock armoring to address erosion threatening structures in Pebble Creek. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.03**	PER 100 LF		10		20
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**40**
						TOTAL BENEFIT POINTS	**180**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$250**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.72**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-C-28: Tealwood Drive

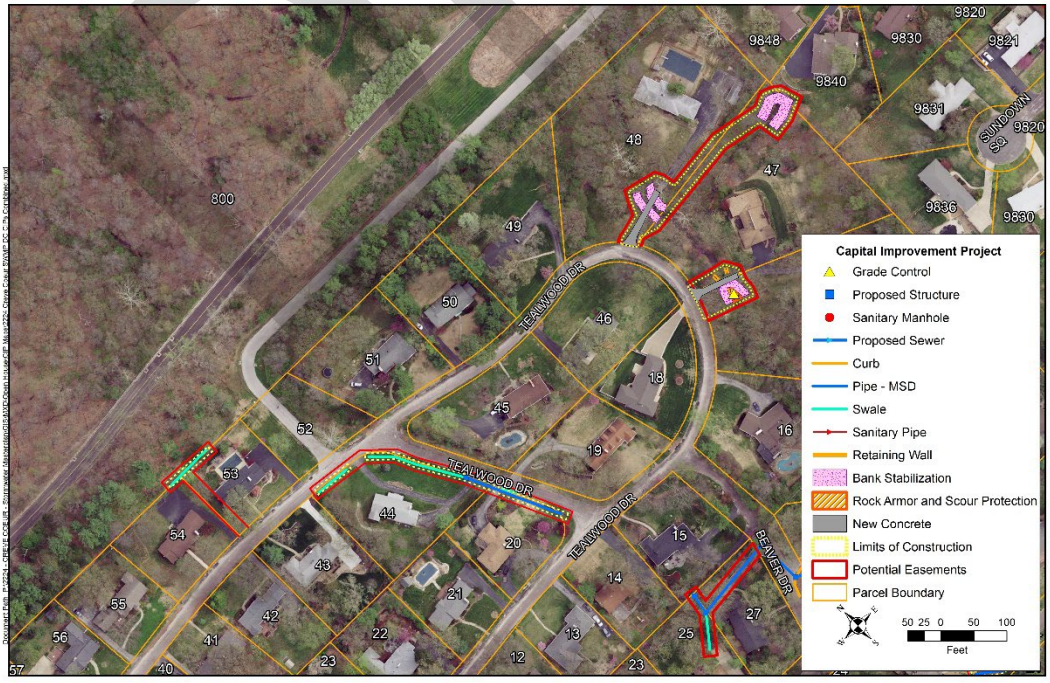
Problem Description: In Pebble Creek along Tealwood Drive multiple issues were observed as follows. At the upstream end of the tributary along 47 Tealwood Drive there are failing gabion walls. At the 48 Tealwood Drive driveway crossing, there is erosion threatening the bridge abutments. The wingwalls and culvert walls are failing at the shared driveway of 17 and 47 Tealwood Drive and sinkholes are forming near the driveway. Yard and structural flooding and yard erosion. The affected parcels are private.



Failing culvert

Recommendation: Install bank stabilization to replace the failing gabion walls. Install bank stabilization upstream and downstream of the 48 Tealwood Drive driveway to protect the bridge abutments. Replace the 17/47 Tealwood Drive driveway culvert and wingwalls and install a stilling basin and step grade control structure downstream. Construct swale on the Bayer campus along the north property line of 53 & 54 to capture the flow off of the driveway at 54 Tealwood Drive. Construct a swale along the street at 44 to better intercept water at an existing inlet and driveway culvert. Contruct new inlet at south driveway entrance at 44 and pipe to existing inlet 17M4-165D. Grade a swale to drain the north driveway at 20 into the existing swale.

Special Considerations: Evaluate modification of detention area on the Bayer campus just north of their entrance in Tealwood. Review hydraulics of the culvert across Tealwood Drive at 51, the pipes at 19 and the culvert across Beaver Drive to determine if they need to be upsized.



Conceptual Layout of DC-C-28

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-28 Tealwood Drive

Project Description: Bank stabilization, grade controls, stilling basin, new culvert, wing wall replacement, overland swales, and a new inlet to address erosion and overland flow issues in Pebble Creek and along Tealwood Dr.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.8	$ 12,000	$ 9,600
Prepare Easement Plat and Scripts	EACH	6	$ 1,500	$ 9,000
Contruction Staking and As-Built Surveying	ACRE	0.8	$ 5,000	$ 4,000
			Subtotal =	$ 22,600
		Contingency =	25%	$ 5,700
		TOTAL OPINION OF SURVEYING COST =		**$ 28,300**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	75	$ 20	$ 1,500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	1	$ 1,000	$ 1,000
			Subtotal =	$ 9,500
		Contingency =	25%	$ 2,400
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 11,900**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
		Contingency =	25%	$ 16,000
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.8	$ 30,000	$ 24,000
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY	680	$ 35	$ 23,800
Rock Grade Control	CY	40	$ 200	$ 8,000
Rock Stilling Basin / Outlet Scour Protection	CY	40	$ 100	$ 4,000
Rock Toe and Slope Protection	CY	95	$ 150	$ 14,300
Bank Stabilization	SY	380	$ 120.00	$ 45,600
Granular Backfill	CY	20	$ 55	$ 1,100
New Culvert	LF	15	$ 500.0	$ 7,500
Manhole	LF		$ 625	$ -
Inlet	EA	1	$ 3,500	$ 3,500
Sewer Pipe Small	LF	155	$ 140	$ 21,700
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF	160	$ 50	$ 8,000
Berm/Swale	LF	205	$ 15	$ 3,100
Asphaltic Concrete Pavement	SY	205	$ 150	$ 30,800
Pavement/Sidewalk Removal & Replacement	SY	25	$ 100	$ 2,500
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE	0.8	$ 50,000	$ 40,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 24,700	$ 24,700
			Subtotal =	$ 272,100
		Contingency =	30%	$ 81,600
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 353,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 473,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-28 Tealwood Drive DATE: 12/5/2023

PROJECT LOCATION: 47 Tealwood Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basin, new culvert, wing wall replacement, overland swales, and a new inlet to address erosion and overland flow issues in Pebble Creek and along Tealwood Dr.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1. Structure Flooding								
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address: 48 Tealwood Dr garage*	150		100		25	1	25
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address: 17/47 Tealwood Dr driveway with failing culvert*	20	2	12		3	2	46
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-28 Tealwood Drive DATE: 12/5/2023

PROJECT LOCATION: 47 Tealwood Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basin, new culvert, wing wall replacement, overland swales, and a new inlet to address erosion and overland flow issues in Pebble Creek and along Tealwood Dr.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200	1	50		200
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y	50	50
		Attached Garage (1 lot per structure) *Address:*	100		75	2	25		150
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35	1	12		35
		Yard Flooding (1 per lot) *Address:*	10	**3**	6		0		**30**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		3	Points/lot:		10	30
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**596**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-28 Tealwood Drive DATE: 12/5/2023

PROJECT LOCATION: 47 Tealwood Drive, Creve Coeur, MO 63141 PROJECT TYPE: 1

PROJECT DESCRIPTION: Bank stabilization, grade controls, stilling basin, new culvert, wing wall replacement, overland swales, and a new inlet to address erosion and overland flow issues in Pebble Creek and along Tealwood Dr.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)	**2.77**	PER 100 LF		10		28
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements			**10**			**10**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**38**
						TOTAL BENEFIT POINTS	**634**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$474**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.34**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

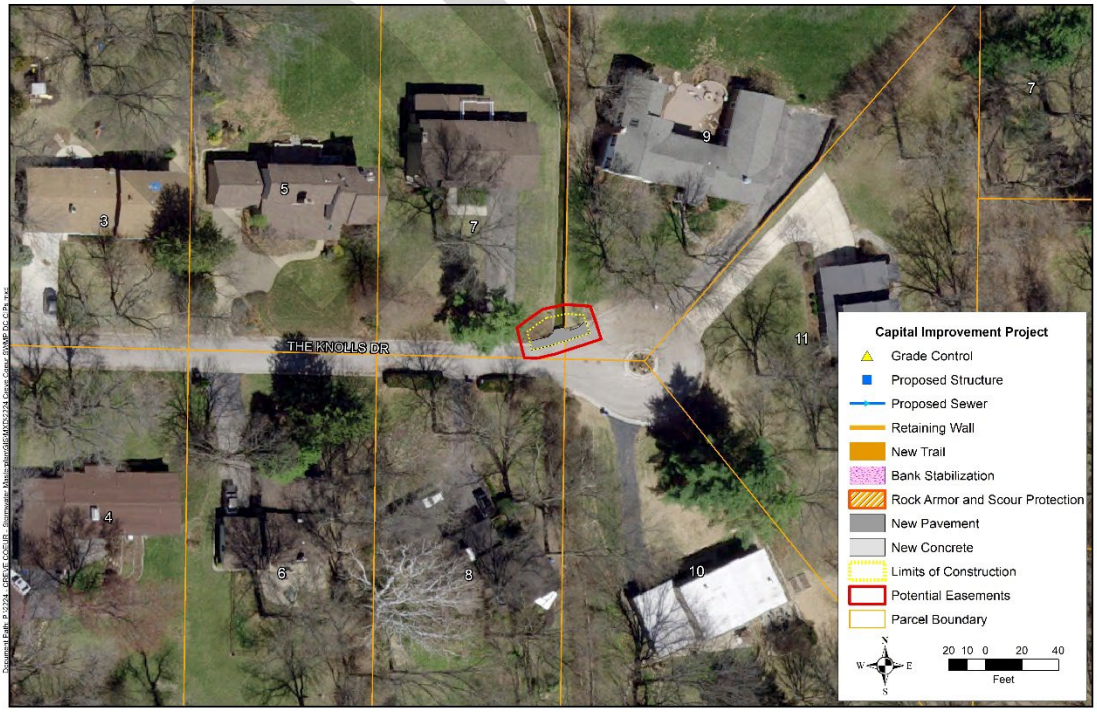
DC-C-29: The Knolls Lane

Problem Description: The curb/drainageway on the northside of The Knolls Lane is broken. The affected parcels are private.

Recommendation: Install a new curb and drainage way.



Broken curb where drainage enters channel



Conceptual Layout of DC-C-29

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-C-29 The Knolls Lane

Project Description: Broken curb/drainageway replacement.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.01	$ 12,000	$ 100
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.01	$ 5,000	$ 100
			Subtotal =	$ 3,200
		Contingency =	25%	$ 800
		TOTAL OPINION OF SURVEYING COST =		**$ 4,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	0	$ 20	$ -
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH	0	$ 1,000	$ -
			Subtotal =	$ 7,000
		Contingency =	25%	$ 1,800
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 8,800**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP	1	$ 2,000	$ 2,000
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	20	$ 100	$ 2,000
Curb - Concrete Rem & Rep	LF	30	$ 50	$ 1,500
Utility Relocation	LUMP	1	$ 5,500	$ 5,500
Site Restoration	ACRE		$ 50,000	$ -
			$ -	$ -
Mobilization and Bond	10%	1	$ 1,100	$ 1,100
			Subtotal =	$ 12,100
		Contingency =	30%	$ 3,600
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 15,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 74,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-29 The Knolls Lane DATE: 12/5/2023

PROJECT LOCATION: 7 The Knolls Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Broken curb/drainageway replacement.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.) (1 lot per 250' of stream)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-29 The Knolls Lane DATE: 12/5/2023

PROJECT LOCATION: 7 The Knolls Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Broken curb/drainageway replacement.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6	1	1		6
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		1	Points/lot:		20	20
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**26**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-C-29 The Knolls Lane DATE: 12/5/2023

PROJECT LOCATION: 7 The Knolls Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Broken curb/drainageway replacement.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**46**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$75**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.62**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-15: Fourwynd Drive

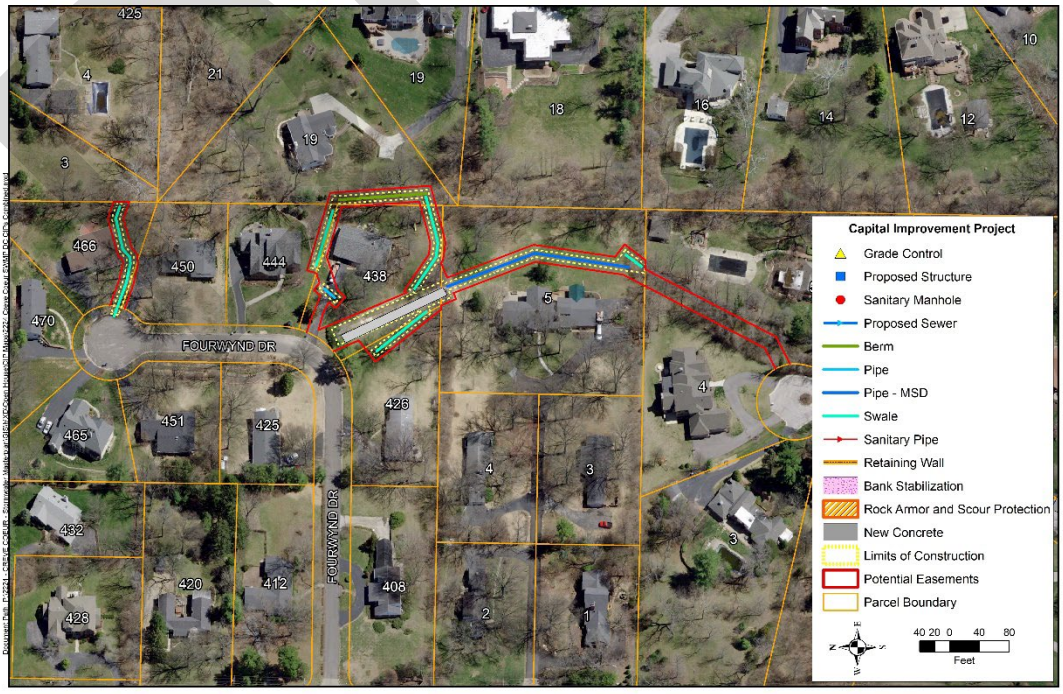
Problem Description: The following issues were observed along a tributary to Windrush Creek. The concrete channel near 438 Fourwynd Drive is starting to fail. Yard flooding and erosion at 438, 444 and 466 Fourwynd Drive. Failing 42" CMP across 5 Wyndtop Lane. The affected parcels are private.



Cracking concrete slabs at 438 Fourwynd Drive

Recommendation: Remove and replace the concrete channel at 438 Fourwynd Drive. Construct a berm and swale along the east property line of #438 and swale to an existing inlet on the east side of the concrete channel. Construct a swale along the west property line of #438 to improve drainage to the existing inlet on the west side of the concrete channel. Replace the dual 18" pipe culvert across the driveway at #438 with a 36"x18" box culvert. Construct a swale on #444 from the southeast property corner along the property line to the concrete swale with an underdrain. Construct a swale with Instaturf ShearForce at #466 from the east property line to the street on the south side of the house. Replace 5 Wyndtop Lane pipe with new pipe and construct short swale with Instaturf ShearForce to convey overland flow to channel at south end of pipe.

Special Considerations: Concrete channel is in fair condition and reviewed for replacing or enclosing. Pipe across 5 Wyndtop Lane is not straight and has a bend in the middle of the yard there may or may not be a buried structure.



Conceptual Layout of DC-S-15

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-15 Fourwynd Drive

Project Description: Berm, swales, and a culvert replacement to address yard flooding and overland flow erosion.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.65	$ 12,000	$ 7,800
Prepare Easement Plat and Scripts	EACH	8	$ 1,500	$ 12,000
Contruction Staking and As-Built Surveying	ACRE	0.65	$ 5,000	$ 3,300
			Subtotal =	$ 23,100
			Contingency = 25%	$ 5,800
			TOTAL OPINION OF SURVEYING COST =	**$ 28,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.2	$ 30,000	$ 6,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF	252	$ 140	$ 35,300
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF	36	$ 360	$ 13,000
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA	1	$ 2,580	$ 2,600
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	593	$ 15	$ 8,900
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	14.4	$ 100	$ 1,400
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.7	$ 50,000	$ 32,500
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 99,700
			Contingency = 30%	$ 29,900
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 129,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 213,900**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-15: Fourwynd Drive DATE: 11/14/2023

PROJECT LOCATION: 438 Fourwynd Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, and a culvert replacement to address yard flooding and overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-15: Fourwynd Drive DATE: 11/14/2023

PROJECT LOCATION: 438 Fourwynd Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, and a culvert replacement to address yard flooding and overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**4**	6		0		**40**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		5	Points/lot:		10	50
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**120**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-15: Fourwynd Drive DATE: 11/14/2023

PROJECT LOCATION: 438 Fourwynd Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, and a culvert replacement to address yard flooding and overland flow erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements			10				10
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	10
							TOTAL BENEFIT POINTS	130

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$214**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.61**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-16: Wedgewood Lane

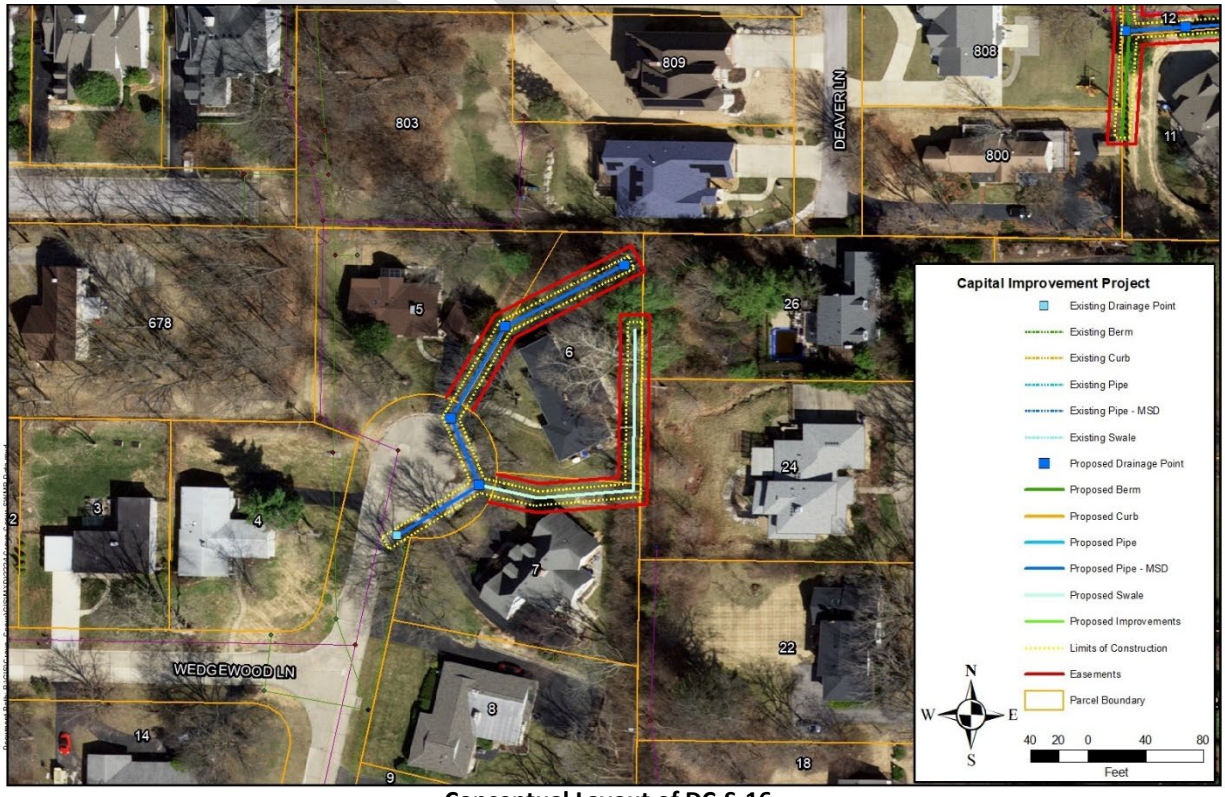
Problem description: Storm flows from Deaver Lane and Colonial Hills Parkway along with poor grading causing yard ponding at 6 Wedgewood Lane.



Looking south behind #6

Recommendation: Construct area inlet in near east corner of #6 to intercept flow from Deaver Lane and pipe to existing inlet 17N2054D with curb inlets between #6 & #7 and between #5 & #6 and a 2 grate inlet w/ side intake or manhole with slotted cover along the property line about even with the front of the house. Construct a swale parallel to the east property line of #6 to #7 the out to the street, yard drains may be needed in the back yard if adequate slope is not available and the steeper reaches reinforced with Instaturf ShearForce.

Special Considerations: The rear yards of #7 and # 8 may also experience the same issue.



Conceptual Layout of DC-S-16

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-16 Wedgewood Lane

Project Description: Inlets, storm sewer, and swale to address yard ponding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.20	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.20	$ 5,000	$ 1,000
			Subtotal =	$ 10,900
			Contingency = 25%	$ 2,700
			TOTAL OPINION OF SURVEYING COST =	**$ 13,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	39.00	$ 55	$ 2,100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	4	$ 3,500	$ 14,000
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	220	$ 15	$ 3,300
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	77.8	$ 100	$ 7,800
Curb - Concrete Rem & Rep	LF	10	$ 50	$ 500
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 32,700
			Contingency = 30%	$ 9,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 42,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 111,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-16: Wedgewood Lane DATE: 11/14/2023

PROJECT LOCATION: 6 Wedgewood Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets, storm sewer, and swale to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-16: Wedgewood Lane DATE: 11/14/2023

PROJECT LOCATION: 6 Wedgewood Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets, storm sewer, and swale to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**2**	6		0		**20**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**50**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-16: Wedgewood Lane DATE: 11/14/2023

PROJECT LOCATION: 6 Wedgewood Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets, storm sewer, and swale to address yard ponding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**70**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$112**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.63**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

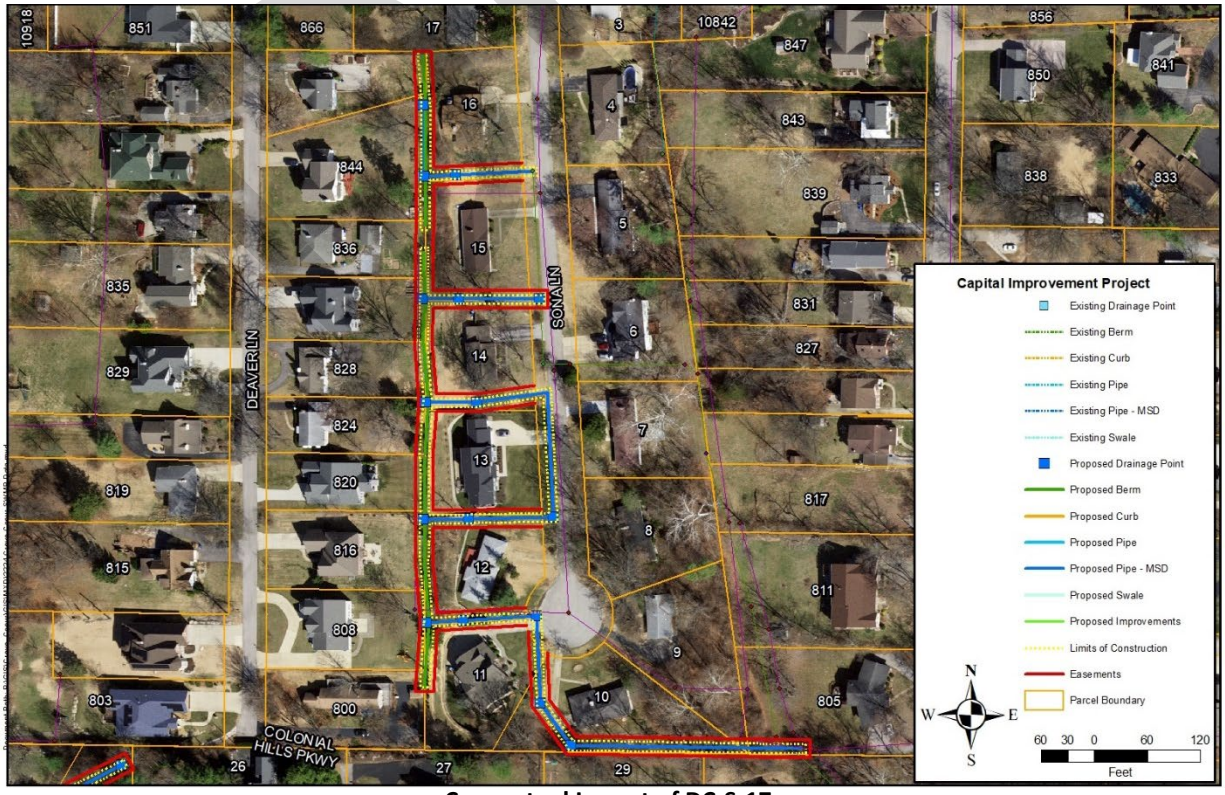
DC-S-17: Sona Lane

Problem description: Structural flooding and yard erosion of homes on the east side of Sona Lane due to runoff from properties on west side of Deaver Lane.

Recommendation: Construct berm with swale along top of the slope along the rear property line with inlets at the side property line of each lot on Sona Lane pipe to Sona Lane a manhole at the base of the hill will be necessary to accommodate the grade change.

Special Considerations: 12 Sona Lane reports that they did not have an issue until new houses on Deaver Lane were constructed and said they could handle the water that falls on the hill side. An alternate solution woud be to pipe all the downspouts of each home on the east side Deaver Lane to a storm system on Deaver Lane and require any new homes to do the same.

Draft



Conceptual Layout of DC-S-17

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-17 Sona Lane

Project Description: Berm, swale, inlets, and storm sewer to address structural flooding and yard erosion.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.80	$ 12,000	$ 9,600
Prepare Easement Plat and Scripts	EACH	19	$ 1,500	$ 28,500
Contruction Staking and As-Built Surveying	ACRE	0.80	$ 5,000	$ 4,000
			Subtotal =	$ 42,100
			Contingency = 25%	$ 10,500
			TOTAL OPINION OF SURVEYING COST =	**$ 52,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.3	$ 30,000	$ 9,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	60.00	$ 55	$ 3,300
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	16	$ 3,500	$ 56,000
Sewer Pipe Small	LF	1,310	$ 140	$ 183,400
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	2	$ 2,365	$ 4,700
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA	1	$ 2,580	$ 2,600
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	680	$ 15	$ 10,200
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	144.4	$ 100	$ 14,400
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.8	$ 50,000	$ 40,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 323,600
			Contingency = 30%	$ 97,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 420,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 562,700**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-17: Sona Lane DATE: 11/14/2023

PROJECT LOCATION: 14 Sona Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swale, inlets, and storm sewer to address structural flooding and yard erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-17: Sona Lane DATE: 11/14/2023

PROJECT LOCATION: 14 Sona Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swale, inlets, and storm sewer to address structural flooding and yard erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250	2	65	3	695
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y	50	50
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50	5	35		12		250
		Yard Flooding (1 per lot) *Address:*	10	**5**	6		0		**50**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		5	Points/lot:		10	50
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**1125**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-17: Sona Lane DATE: 11/14/2023

PROJECT LOCATION: 14 Sona Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swale, inlets, and storm sewer to address structural flooding and yard erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY								
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements					0	
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	
						TOTAL BENEFIT POINTS	1125

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= $563

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= 2.00

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-18: 3 Oak Park Court

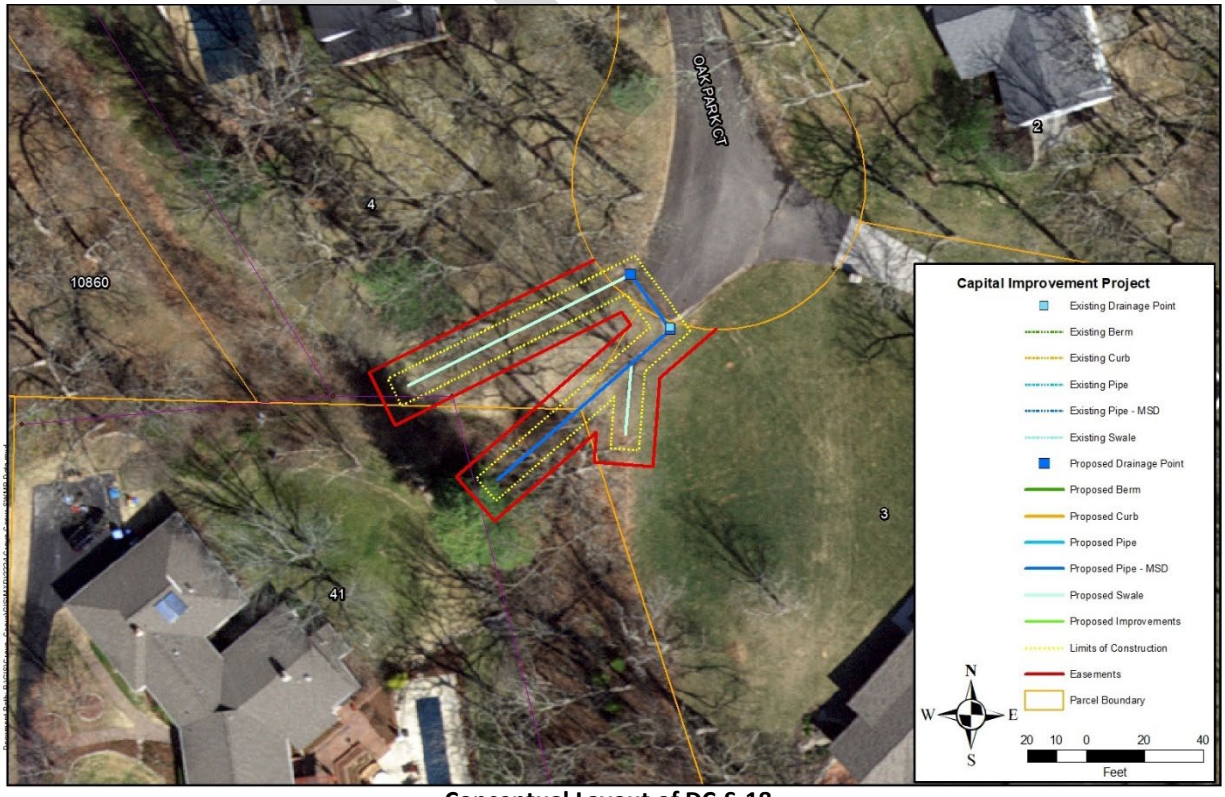
Problem description: Yard erosion on hillside due to flow off of end of street.

Recommendation: Install curb inlets at end of street and pipe to channel at bottom of hill.

Special Considerations: An alternative is to remove old asphalt swales and replace with grass swales with Instaturf ShearForce.



Existing clogged inlet



Conceptual Layout of DC-S-18

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-18 3 Oak Park Court

Project Description: Inlets and storm sewer to address yard erosion.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 6,200
			Contingency = 25%	$ 1,600
			TOTAL OPINION OF SURVEYING COST =	**$ 7,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	2.00	$ 55	$ 100
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	2	$ 3,500	$ 7,000
Sewer Pipe Small	LF	101	$ 140	$ 14,100
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA	1	$ 2,580	$ 2,600
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	126	$ 15	$ 1,900
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	17.8	$ 100	$ 1,800
Curb - Concrete Rem & Rep	LF	23	$ 50	$ 1,200
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 33,700
			Contingency = 30%	$ 10,100
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 43,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 107,000**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-18: 3 Oak Park Court DATE: 11/14/2023

PROJECT LOCATION: 3 Oak Park Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewer to address yard erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-18: 3 Oak Park Court DATE: 11/14/2023

PROJECT LOCATION: 3 Oak Park Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewer to address yard erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		3	Points/lot:		10	30
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**30**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-18: 3 Oak Park Court DATE: 11/14/2023

PROJECT LOCATION: 3 Oak Park Court, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewer to address yard erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**50**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$107**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.47**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-19: 308 South Spoede Road

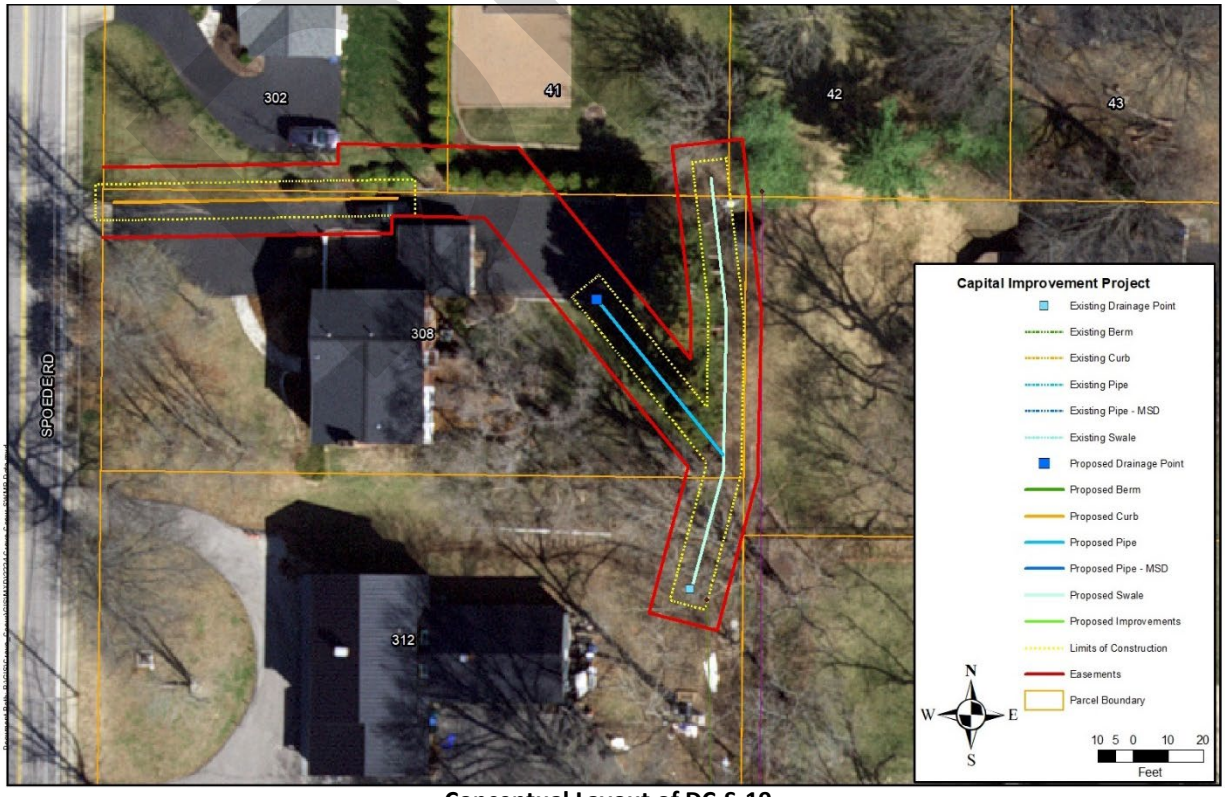
Problem description: Structural flooding due to increased flow from new construction at 41 Chaminade Drive.



Inlet 18N3-187D

Recommendation: Construct swale along east property line to inlet 18N3-187D with Instaturf ShearForce on steep section at downstream end near the inlet. Constuct catch basin on south side of driveway at east end of wall and pipe to southwest corner of property and discharge into swale. Construct curb along driveway from garage to the street.

Special Considerations: Additional grading maybe needed on 41 Chaminade Drive to intercept flow to the swale.



Conceptual Layout of DC-S-19

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-19 308 South Spoede Road

Project Description: Swale, catch basin, storm sewer, and curb to address structural flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.15	$ 12,000	$ 1,800
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.15	$ 5,000	$ 800
			Subtotal =	$ 10,100
		Contingency =	25%	$ 2,500
		TOTAL OPINION OF SURVEYING COST =		**$ 12,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
		Contingency =	25%	$ 1,900
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	0.70	$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	1	$ 3,500	$ 3,500
Sewer Pipe Small	LF	57	$ 140	$ 8,000
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA	1	$ 2,580	$ 2,600
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	118	$ 15	$ 1,800
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	80	$ 50	$ 4,000
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.15	$ 50,000	$ 7,500
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 27,400
		Contingency =	30%	$ 8,200
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 35,600**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 103,600**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-19: 308 South Spoede Road DATE: 11/14/2023

PROJECT LOCATION: 308 South Spoede Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, catch basin, storm sewer, and curb to address structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-19: 308 South Spoede Road DATE: 11/14/2023

PROJECT LOCATION: 308 South Spoede Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, catch basin, storm sewer, and curb to address structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75	1	25		75
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**105**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-19: 308 South Spoede Road DATE: 11/14/2023

PROJECT LOCATION: 308 South Spoede Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Swale, catch basin, storm sewer, and curb to address structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY										
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000			
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50			
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit				
	Bioswales		PER 100 LF			10				
	Forebays		AC			200				
	Wet Ponds		AC			100				
	Wetlands		AC			50				
	Biostabilization of banks (per bank)		PER 100 LF			10				
	Riffle Pool Complex		PER 100 LF			10				
	4.2. Eliminates combined sewer (per project)		EA			100				
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10				
	4.4 Preserves natural resource areas	No. Units				Points per Unit				
	Lakes, Wetlands, etc.		AC			30				
	Natural Corridor (min. 25ft width)		PER 100 LF			10				
	4.5 Conservation Easement		EA			20				
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)			
	Points for Easements		**20**							**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts								
								TOTAL SOLUTION POINTS		**20**
								TOTAL BENEFIT POINTS		**125**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$104**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.21**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-21: Chilton Lane

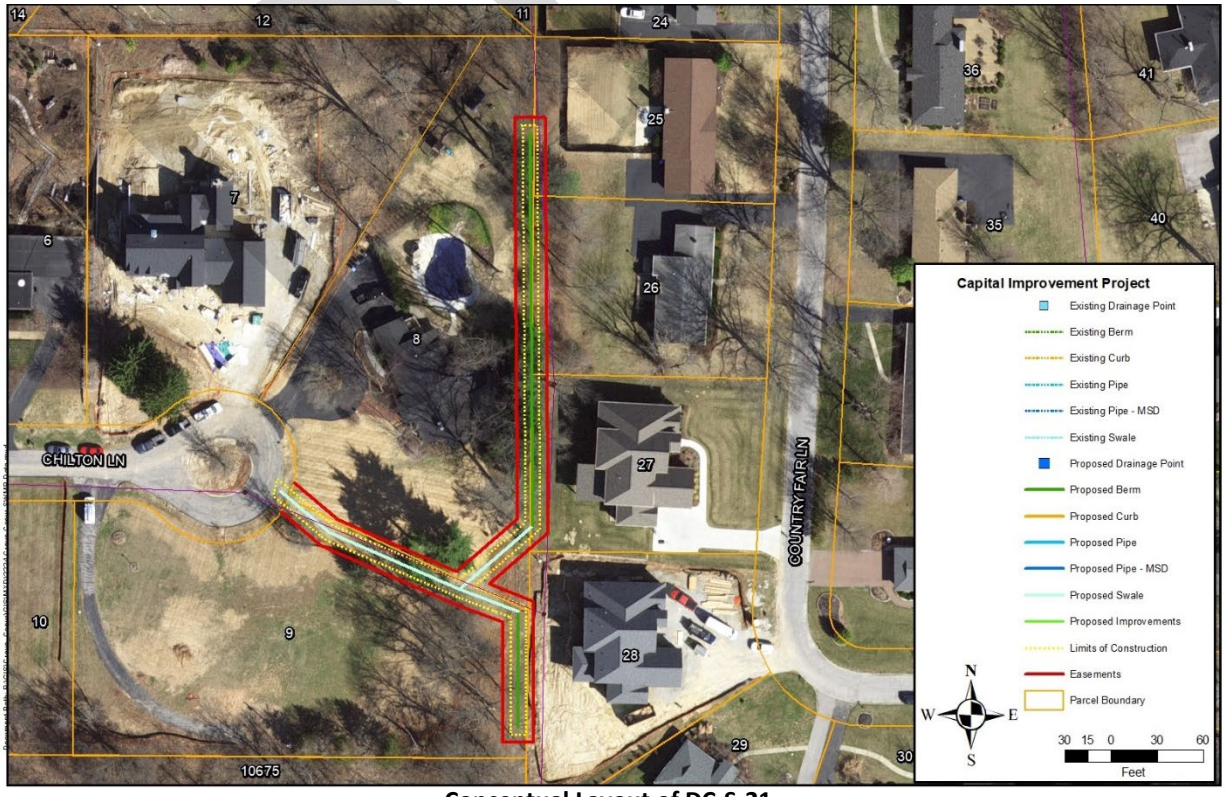
Problem description: Erosion on south side of street at east culvert. Increased flows at 8 Chilton Lane due to new construction to the east on Country Fair Lane.



Looking east from street between #8 and #9

Recommendation: Provide erosion control at culvert using either rock or Instaturf ShearForce. Construct a berm w/ swale along the east property line of #8 and #9 then swale w/ berm to the street along the property line between #8 and #9 that is protected with Instaturf ShearForce.

Special Considerations: A storm basin in the north corner of #8 should be considered as a best management practive and additional discharge area for the berm and swale along the east property line.



Conceptual Layout of DC-S-21

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-21 Chilton Lane

Project Description: Erosion control, berms, and swales to address erosion.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.30	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	6	$ 1,500	$ 9,000
Contruction Staking and As-Built Surveying	ACRE	0.30	$ 5,000	$ 1,500
			Subtotal =	$ 14,100
			Contingency = 25%	$ 3,500
			TOTAL OPINION OF SURVEYING COST =	**$ 17,600**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
			Contingency = 25%	$ -
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	565	$ 15	$ 8,500
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 26,500
			Contingency = 30%	$ 8,000
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 34,500**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 98,100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-21: Chilton Lane DATE: 11/14/2023

PROJECT LOCATION: 8 Chilton Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Erosion control, berms, and swales to address erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-21: Chilton Lane DATE: 11/14/2023

PROJECT LOCATION: 8 Chilton Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Erosion control, berms, and swales to address erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding: Points per Category	Chronic (<=2-Yr) Flooding: No. Lots Affected	Frequent (>2<=15-Yr) Flooding: Points per Category	Frequent (>2<=15-Yr) Flooding: No. Lots Affected	Infrequent (>15-Yr) Flooding: Points per Category	Infrequent (>15-Yr) Flooding: No. Lots Affected	Total Points
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		2	Points/lot:		10	20
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**30**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-21: Chilton Lane DATE: 11/14/2023

PROJECT LOCATION: 8 Chilton Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Erosion control, berms, and swales to address erosion.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements			10				10
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	10
							TOTAL BENEFIT POINTS	40

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$98**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.41**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-22: North Spoede Road & Mission Hills Court

Problem description: Street flooding near the intersection.

Recommendation: Construct 2 grate inlets w/ side intake on north side of Mission Hills Court approximately 50 feet east of North Spoede Road and connect to existing storm sewer with a manhole with a slotted cover.

Special Considerations: Hydraulic analysis of storm sewer system is needed that accounts for potential bypass at inlets and inlet capacity on the street and review spread if additional inlets are warranted on North Spoede Road.

Draft



Conceptual Layout of DC-S-22

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-22 North Spoede Road & Mission Hills Court

Project Description: Inlets and storm sewer to address street flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE		$ 12,000	$ -
Prepare Easement Plat and Scripts	EACH		$ 1,500	$ -
Contruction Staking and As-Built Surveying	ACRE		$ 5,000	$ -
			Subtotal =	$ -
			Contingency = 25%	$ -
			TOTAL OPINION OF SURVEYING COST =	**$ -**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
			Contingency = 25%	$ -
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	15.70	$ 55	$ 900
New Culvert	LF		$ 500.0	$ -
Manhole	LF	1	$ 625	$ 600
Inlet	EA	1.00	$ 3,500	$ 3,500
Sewer Pipe Small	LF	40	$ 140	$ 5,600
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY	17.8	$ 100	$ 1,800
Curb - Concrete Rem & Rep	LF	40	$ 50	$ 2,000
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 19,400
			Contingency = 30%	$ 5,800
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 25,200**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 71,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-22: North Spoede Road & Mission Hills Court DATE: 11/14/2023

PROJECT LOCATION: 800 North Spoede Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewer to address street flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-22: North Spoede Road & Mission Hills Court DATE: 11/14/2023

PROJECT LOCATION: 800 North Spoede Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewer to address street flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

				Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding								
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*		350		250		65		
		Basement (1 lot per structure)* *Address:*		250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*		300		200		50		
		If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	*	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*		100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*		50		35		12		
		Yard Flooding (1 per lot) *Address:*		10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)								
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*		200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*		50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*		25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*		10		6		1		
		Ponding (per ponding area) *Address:*		No. Ponds:		1	Points/pond:		5	5
	2.2.	Moderate Risk Erosion of misc. structures *Address:*		No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*		No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)		Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition		30						30
				TOTAL PROBLEM POINTS						**35**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-22: North Spoede Road & Mission Hills Court DATE: 11/14/2023

PROJECT LOCATION: 800 North Spoede Road, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Inlets and storm sewer to address street flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements	**50**						**50**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**50**
							TOTAL BENEFIT POINTS	**85**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$71**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.19**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

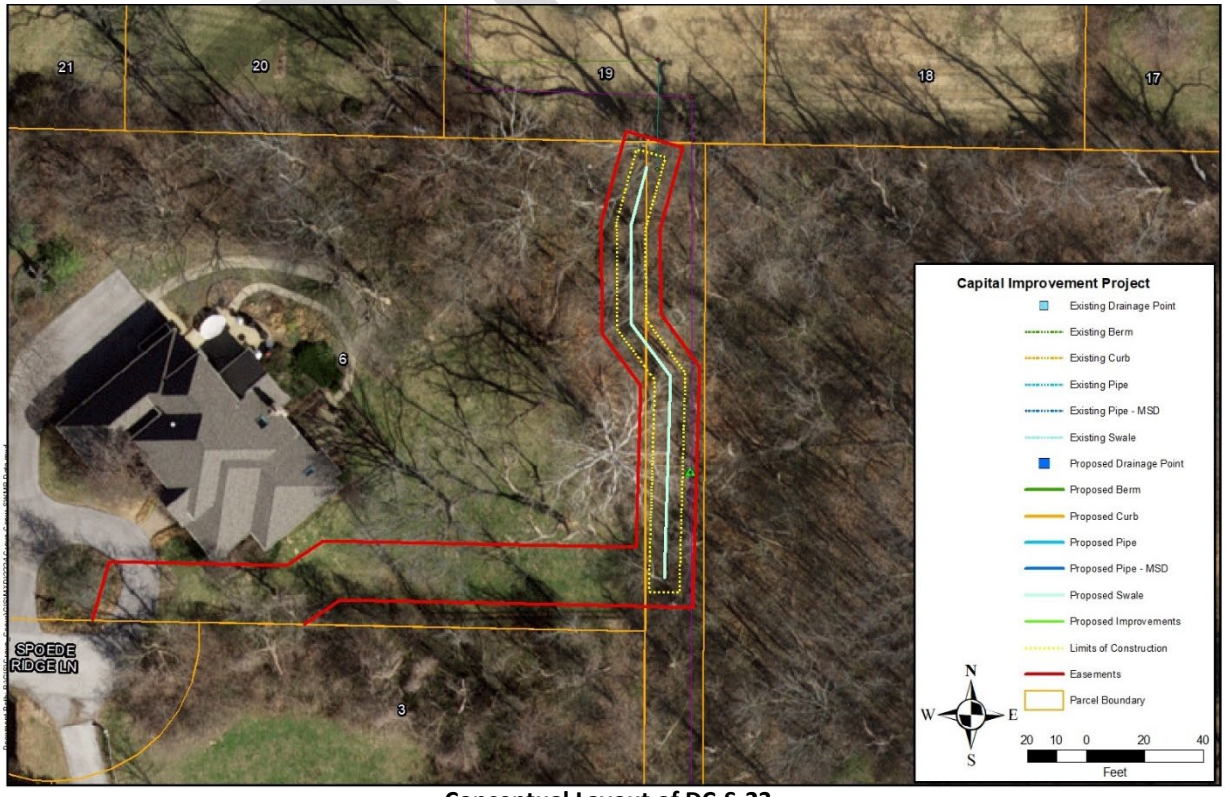
DC-S-23: 6 Spoede Ridge Lane

Problem description: Water backs up onto 19 Spoede Hills Drive potentially due to erosion from construction at 4 Allegro Lane silting in channel.

Recommendation: Construct better defined rock channel on 6 Spoede Ridge Lane and 6 Allegro Lane.



Silted in channel



Conceptual Layout of DC-S-23

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-23 6 Spoede Ridge Lane

Project Description: Rock channel to address yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.20	$ 12,000	$ 2,400
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.20	$ 5,000	$ 1,000
			Subtotal =	$ 6,400
			Contingency = 25%	$ 1,600
			TOTAL OPINION OF SURVEYING COST =	**$ 8,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
			Contingency = 25%	$ -
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	145	$ 15	$ 2,200
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.2	$ 50,000	$ 10,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 15,200
			Contingency = 30%	$ 4,600
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 19,800**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 73,800**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-23: 6 Spoede Ridge Lane DATE: 11/14/2023

PROJECT LOCATION: 6 Spoede Ridge Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Rock channel to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-23: 6 Spoede Ridge Lane DATE: 11/14/2023

PROJECT LOCATION: 6 Spoede Ridge Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Rock channel to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6	1	0		**6**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		1	Points/lot:		10	10
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**16**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-23: 6 Spoede Ridge Lane DATE: 11/14/2023

PROJECT LOCATION: 6 Spoede Ridge Lane, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Rock channel to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**					**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
						TOTAL SOLUTION POINTS		**20**
						TOTAL BENEFIT POINTS		**36**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$74**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.49**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

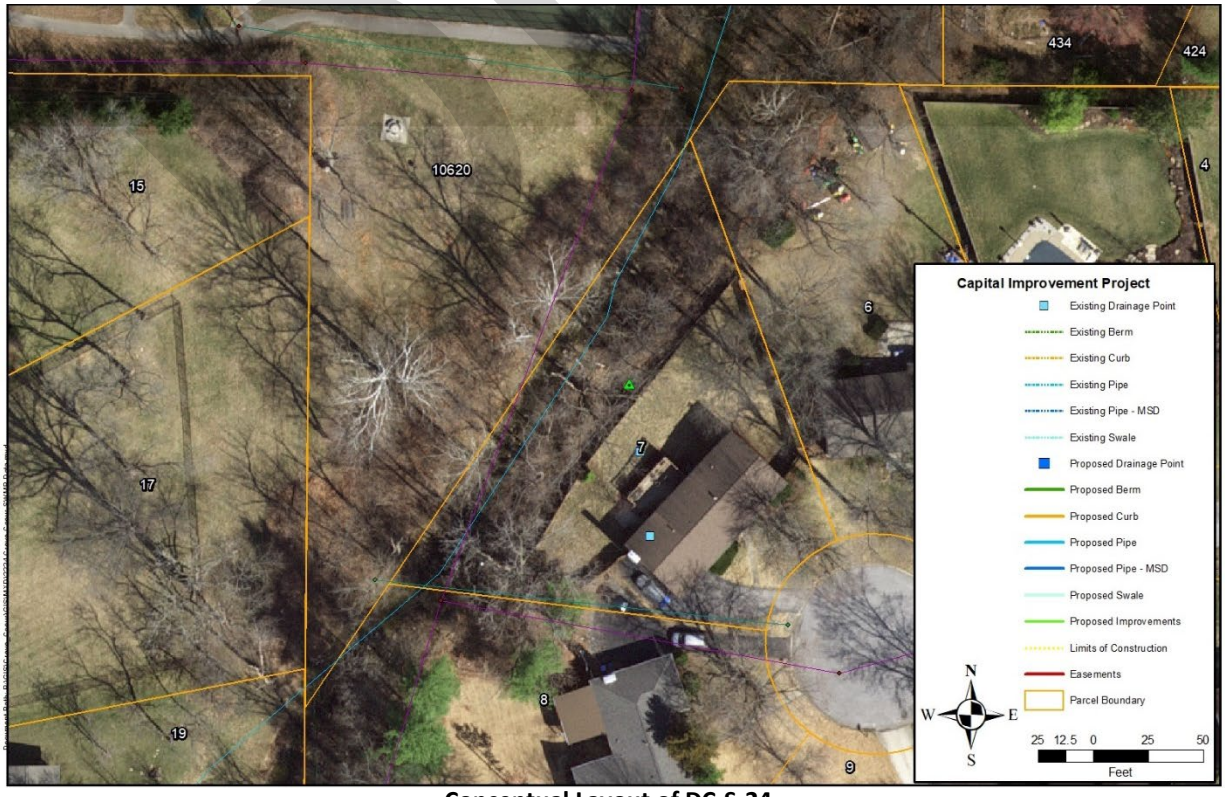
DC-S-24: 7 Quailways Drive

Problem description: Erosion, sinkholes and failing retaining wall.

Recommendation: Inspect pipe from existing inlets in rear yard for potential cause of sinkholes. Make necessary repairs. Replace retaining wall.



Failing retaining wall



Conceptual Layout of DC-S-24

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-24 7 Quailways Drive

Project Description: Pipe repairs and retaining wall replacement to address erosion and sinkholes.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.10	$ 12,000	$ 1,200
Prepare Easement Plat and Scripts	EACH	2	$ 1,500	$ 3,000
Contruction Staking and As-Built Surveying	ACRE	0.10	$ 5,000	$ 500
			Subtotal =	$ 4,700
		Contingency =	25%	$ 1,200
		TOTAL OPINION OF SURVEYING COST =		**$ 5,900**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
		Contingency =	25%	$ -
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
		Contingency =	25%	$ 9,200
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF	750	$ 50	$ 37,500
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.1	$ 50,000	$ 5,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 42,500
		Contingency =	30%	$ 12,800
		TOTAL OPINION OF CONSTRUCTION COST =		**$ 55,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 107,200**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-24: 7 Quailways Drive DATE: 11/14/2023

PROJECT LOCATION: 7 Quailways Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Pipe repairs and retaining wall replacement to address erosion and sinkholes.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-24: 7 Quailways Drive DATE: 11/14/2023

PROJECT LOCATION: 7 Quailways Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Pipe repairs and retaining wall replacement to address erosion and sinkholes.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				N		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:		1	Points/lot:		20	20
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:		1	Points/lot:		10	10
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							0
			TOTAL PROBLEM POINTS						**30**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-24: 7 Quailways Drive DATE: 11/14/2023

PROJECT LOCATION: 7 Quailways Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Pipe repairs and retaining wall replacement to address erosion and sinkholes.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**					**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**20**
							TOTAL BENEFIT POINTS	**50**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$107**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.47**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

DC-S-25: Haven View Drive

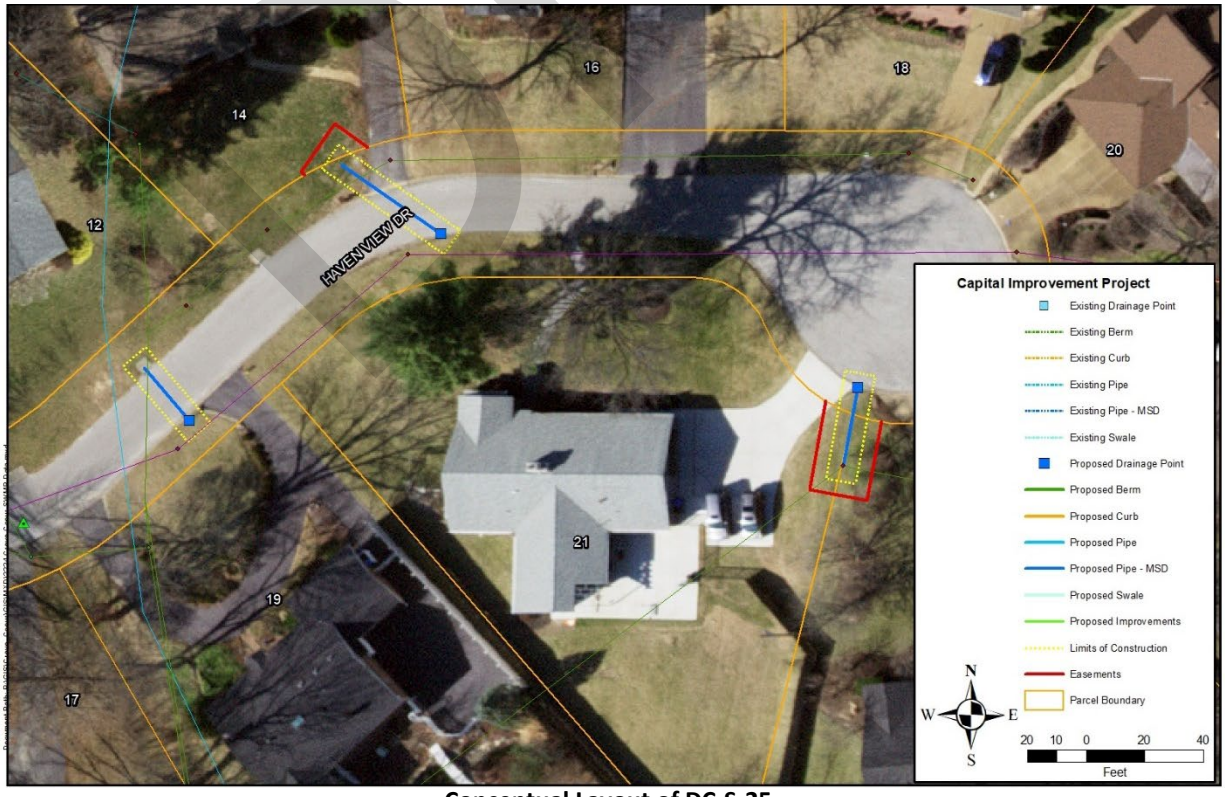
Problem description: Curb and gutters have been filled in due to pavement overlay and flows overtop curb and flows onto 19 Haven View Drive.



Haven View Drive

Recommendation: Mill out gutters and construct three 2 grate inlet w/ side intake on south side of the street. One to connect to manhole 17M3-008D on the cul-de-sac, one in front of #21 to connect to manhole 17M3-133D and one in front of #19 to connect to inlet 17M3-136D.

Special Considerations: The inlet in front of #19 could be connected directly to the 72”x72” box culvert that traverses #19.



Conceptual Layout of DC-S-25

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-25 Haven View Drive

Project Description: Gutters, inlets and storm sewer to address yard flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.02	$ 12,000	$ 200
Prepare Easement Plat and Scripts	EACH	3	$ 1,500	$ 4,500
Contruction Staking and As-Built Surveying	ACRE	0.02	$ 5,000	$ 100
			Subtotal =	$ 4,800
			Contingency = 25%	$ 1,200
			TOTAL OPINION OF SURVEYING COST =	**$ 6,000**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	50	$ 160	$ 8,000
ROW	HOURS	20	$ 160	$ 3,200
Permitting	HOURS	20	$ 160	$ 3,200
Final Design	HOURS	50	$ 160	$ 8,000
Develop Plans and Construction Documents	HOURS	50	$ 160	$ 8,000
Construction Support	HOURS	40	$ 160	$ 6,400
			$ -	$ -
			Subtotal =	$ 36,800
			Contingency = 25%	$ 9,200
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 46,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	17.00	$ 55	$ 900
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	3.00	$ 3,500	$ 10,500
Sewer Pipe Small	LF	90	$ 140	$ 12,600
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	2	$ 2,365	$ 4,700
Connection to Existing Manhole	EA	1	$ 3,130	$ 3,100
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY	61	$ 150	$ 9,200
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	50	$ 50	$ 2,500
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.02	$ 50,000	$ 1,000
			$ -	$ -
Mobilization and Bond	10%	1	$ 4,500	$ 4,500
			Subtotal =	$ 49,000
			Contingency = 30%	$ 14,700
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 63,700**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 125,100**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-25: Haven View Drive DATE: 11/14/2023

PROJECT LOCATION: 19 Haven View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Gutters, inlets and storm sewer to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-25: Haven View Drive DATE: 11/14/2023

PROJECT LOCATION: 19 Haven View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Gutters, inlets and storm sewer to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y		
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10	**1**	6		0		**10**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**40**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-25: Haven View Drive DATE: 11/14/2023

PROJECT LOCATION: 19 Haven View Drive, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Gutters, inlets and storm sewer to address yard flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:			Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:			Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units			Points per Unit		
	Bioswales		PER 100 LF		10		
	Forebays		AC		200		
	Wet Ponds		AC		100		
	Wetlands		AC		50		
	Biostabilization of banks (per bank)		PER 100 LF		10		
	Riffle Pool Complex		PER 100 LF		10		
	4.2. Eliminates combined sewer (per project)		EA		100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA		10		
	4.4 Preserves natural resource areas	No. Units			Points per Unit		
	Lakes, Wetlands, etc.		AC		30		
	Natural Corridor (min. 25ft width)		PER 100 LF		10		
	4.5 Conservation Easement		EA		20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)	
	Points for Easements		**20**				**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts					
						TOTAL SOLUTION POINTS	**20**
						TOTAL BENEFIT POINTS	**60**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$125**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **0.48**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

Draft

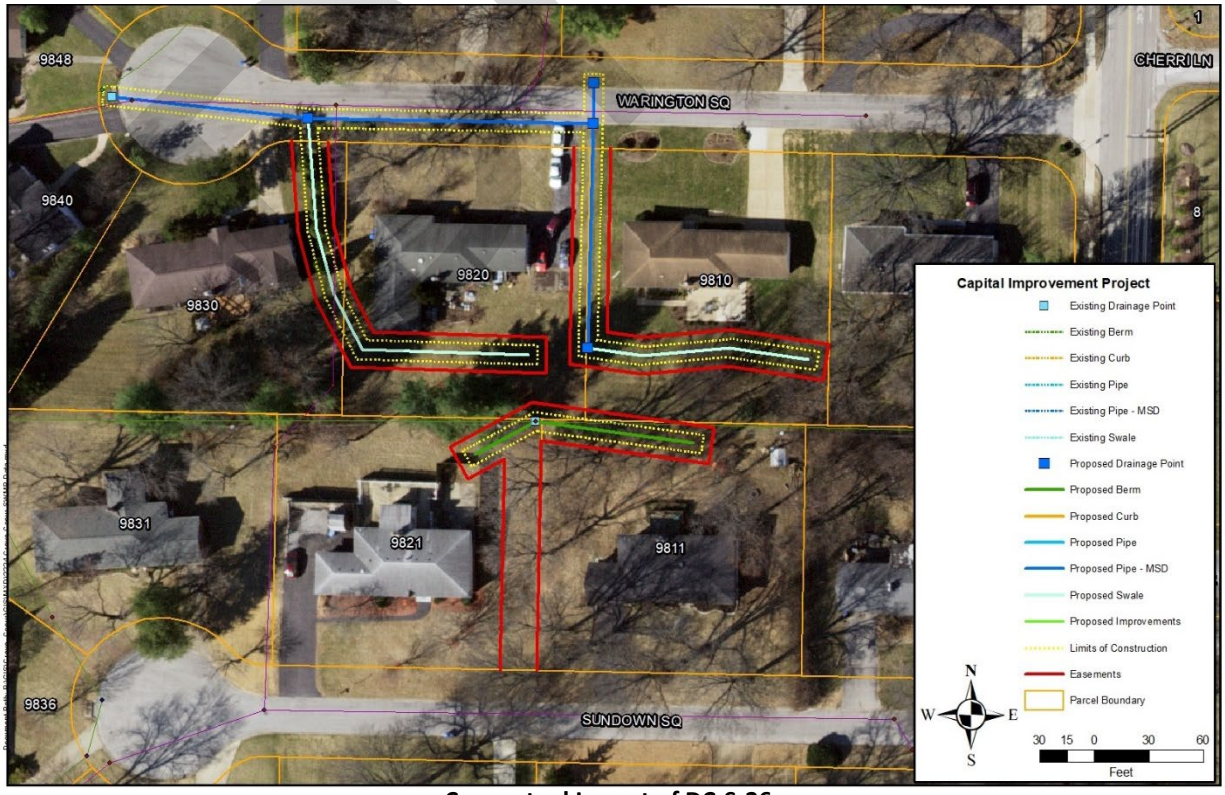
DC-S-26: Warington Square

Problem description: Yard and structural flooding of properties on south side of Warington Square.

Recommendation: Construct berm w/ swale to inlet 17M3-069D on 9811 and 9821 Sundown Square. Construct swale across 9810 Warington Square to a 2 grate inlet w/ side intake at the west property line then pipe to street and install 2 grate inlet w/ side intake on each side of street then pipe to existing inlet 17M3-080D with a curb inlet that is open on the back side in front of 9830 Warington Square to take flow from a swale along the east side of the house to and across the rear yard of 9820 Warington Square.



Looking east at 9810 Warington Square



Conceptual Layout of DC-S-26

Draft

Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID: DC-S-26 Warington Square

Project Description: Berm, swales, inlets, and storm sewer to address yard and structural flooding.

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE	0.30	$ 12,000	$ 3,600
Prepare Easement Plat and Scripts	EACH	5	$ 1,500	$ 7,500
Contruction Staking and As-Built Surveying	ACRE	0.30	$ 5,000	$ 1,500
			Subtotal =	$ 12,600
			Contingency = 25%	$ 3,200
			TOTAL OPINION OF SURVEYING COST =	**$ 15,800**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF	25	$ 20	$ 500
Geotechnical Report	LUMP	1	$ 7,000	$ 7,000
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ 7,500
			Contingency = 25%	$ 1,900
			TOTAL OPINION OF GEOTECHNICAL COST =	**$ 9,400**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	100	$ 160	$ 16,000
ROW	HOURS	40	$ 160	$ 6,400
Permitting	HOURS	40	$ 160	$ 6,400
Final Design	HOURS	60	$ 160	$ 9,600
Develop Plans and Construction Documents	HOURS	100	$ 160	$ 16,000
Construction Support	HOURS	60	$ 160	$ 9,600
			$ -	$ -
			Subtotal =	$ 64,000
			Contingency = 25%	$ 16,000
			TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =	**$ 80,000**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE	0.1	$ 30,000	$ 3,000
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY	109.40	$ 55	$ 6,000
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA	4	$ 3,500	$ 14,000
Sewer Pipe Small	LF	410	$ 140	$ 57,400
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA	1	$ 2,365	$ 2,400
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	EA		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF	432	$ 15	$ 6,500
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF	1,534	$ 50	$ 76,700
Utility Relocation	LUMP		$ 5,500	$ -
Site Restoration	ACRE	0.3	$ 50,000	$ 15,000
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ 181,000
			Contingency = 30%	$ 54,300
			TOTAL OPINION OF CONSTRUCTION COST =	**$ 235,300**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**$ 340,500**

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-26: Warington Square DATE: 11/14/2023

PROJECT LOCATION: 9820 Warington Square, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, inlets, and storm sewer to address yard and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (1 lot per parcel affected, 2 lots per intersection impacted, and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

Draft

Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-26: Warington Square DATE: 11/14/2023

PROJECT LOCATION: 9820 Warington Square, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, inlets, and storm sewer to address yard and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65	3	195
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N				Y	50	50
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		35	3	12		105
		Yard Flooding (1 per lot) *Address:*	10	**4**	6		0		**40**
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition	30						30
			TOTAL PROBLEM POINTS						**420**

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: DC-S-26: Warington Square DATE: 11/14/2023

PROJECT LOCATION: 9820 Warington Square, Creve Coeur, MO 63141 PROJECT TYPE: 3

PROJECT DESCRIPTION: Berm, swales, inlets, and storm sewer to address yard and structural flooding.

ENVIRONMENTAL CONSIDERATIONS:

COMMON GROUND:

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)	11-15 (5 pts)	>15 (0 pts)		
	Points for Easements		**20**					**20**
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
							TOTAL SOLUTION POINTS	**20**
							TOTAL BENEFIT POINTS	**440**

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= **$341**

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= **1.29**

Place "X" in one box below:

X	**Creve Coeur Project**
	Project by Others

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Appendix F
Cost and Prioritization Summary

Content:

- Potential Projects Master List
    - See Appendix E for detailed worksheets

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Potential Projects Master List

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Project Number	Project Name	Project Location	Project Description	Project Type (1 - Culverts/Structures, 2 - Bank Stabilization, 3 - Overland Flooding)	Environmental Considerations?	Common Ground?	Project Surveying, Geotechnical, and Engineering Cost	Project Construction Cost	Total Project Cost	Cost/Benefit Ratio
CC-C-16	Villa Hill Lane	12495 Villa Hill Lane, Creve Coeur, MO 63141	Bank stabilization to adress erosion threatening structures along an outside bend of Fernridge Creek.	1			$ 60,600.00	$ 43,400.00	$ 104,000.00	2.28
DC-C-01a	: Deer Creek in Malcolm Terrace Park	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at bridge with associated grade controls. City design plans were advanced to an 80% level prior to putting on hold due to funding.	1	X		$ 46,100.00	$ 445,600.00	$ 491,700.00	1.60
DC-C-18	Alden Lane	9 Alden Lane, Creve Coeur, MO 63141	Bank stabilization, grade control, and swaled to address erosion threatening structures in Monsanto Sunswept Creek and one of its tributaries as well as overland flow issues.	1			$ 69,400.00	$ 142,900.00	$ 212,300.00	1.47
DC-C-02	Beaver Drive Crossing	48 Beaver Drive, Creve Coeur, MO 63141	Culvert replacement with associated grade control and bank stabilization combined with bank stabilization sites upstream and downstream. Plus address nearby issues.	1			$ 173,600.00	$ 344,900.00	$ 518,500.00	1.41
CC-C-29	Royal Manor Drive	12553 Royal Manor Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek as well as an area inlet and swales to convey overland flow.	1	X	X	$ 188,700.00	$ 753,700.00	$ 942,400.00	1.35
DC-C-28	Tealwood Drive	47 Tealwood Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basin, new culvert, wing wall replacement, overland swales, and a new inlet to address erosion and overland flow issues in Pebble Creek and along Tealwood Dr.	1			$ 120,200.00	$ 353,700.00	$ 473,900.00	1.34
CC-C-07	Ferngate Lane	954 Ferngate Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basin, wing walls, and toe walls to address erosion threatening structures along a tributary to Creve Coeur Creek.	1		X	$ 69,100.00	$ 122,100.00	$ 191,200.00	1.09
DC-C-17	10675 Ladue Road	10675 Ladue Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.	1	X		$ 154,000.00	$ 467,700.00	$ 621,700.00	1.07
DC-C-01	Deer Creek in Malcolm Terrace Park	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at bridge, low water crossing and trail with associated grade controls and a low water crossing replacement.	1	X		$ 211,400.00	$ 905,500.00	$ 1,116,900.00	1.01
CC-C-13	North Mason Road	900 North Mason Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion and knickpoints threatening structures in Fernridge Creek.	1			$ 159,300.00	$ 460,200.00	$ 619,500.00	1.00
DC-C-16	Ladue and South Spoede Road	10656 Ladue Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a culvert replacement to address erosion in Monsanto-Sunswept Creek.	1			$ 113,200.00	$ 420,200.00	$ 533,400.00	0.98
DC-C-22	Denny Creek	403 South Lindbergh Boulevard, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Denny Creek.	1			$ 234,400.00	$ 1,526,100.00	$ 1,760,500.00	0.87
DC-C-01 ALT	Deer Creek in Malcolm Terrace Park Alternative	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at bridge and low water crossing with associated grade controls, low water crossing replacement, and trail relocation.	1	X		$ 230,800.00	$ 1,238,000.00	$ 1,468,800.00	0.82
DC-C-15	Chaminade Drive	14 Chaminade Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a pedestrian bridge replacement to address erosion along Monsanto-Sunswept Creek as well as an inlet capacity review to address overland flow issues. The pedestrian bridge is a private structure. The City will evaluate a public/private partnership for this project.	1	X		$ 151,700.00	$ 629,300.00	$ 781,000.00	0.77
CC-C-25	Chasselle and Chamblee Lane	700 Chamblee Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basins and rock armoring to address knickpoints and erosion threatening structures along a tributary to Smith Creek.	1			$ 259,500.00	$ 770,800.00	$ 1,030,300.00	0.75
CC-C-33	Bellington Lane	296 Bellington Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, a stilling basin, and replacing bridge abutments to address erosion in Rosenfelder Creek.	1		X	$ 162,300.00	$ 393,800.00	$ 556,100.00	0.65
CC-C-11	Fernridge Creek at Bellerive Estates Drive	12918 Bellerive Estates Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion along threatening structures Fernridge Creek.	1	X	X	$ 116,900.00	$ 243,500.00	$ 360,400.00	0.63
DC-C-19	Middlebrook Lane	5 Middlebrook Lane, Creve Coeur, MO 63141	Bank stabilization and bridge abutment replacement to address erosion in Monsanto-Sunswept Creek and one of its tributaries.	1			$ 68,400.00	$ 106,000.00	$ 174,400.00	0.37
DC-C-14	East Windrush Creek	1 East Windrush Creek, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a culvert replacement to address erosion threatening structures in a tributary to Windrush Creek.	1			$ 105,400.00	$ 288,600.00	$ 394,000.00	0.37
DC-C-09	281 Magna Carta Drive	281 Magna Carta Drive, Creve Coeur, MO 63141	Step grade control and stilling basin to protect outfall and replace failing grouted riprap structure in Deer Creek.	1		X	$ 69,100.00	$ 164,700.00	$ 233,800.00	0.32
DC-C-24	Sunswept Drive	15 Sunswept Drive, Creve Coeur, MO 63141	Bank stabilization and gabion wall replacement to address erosion threatening structures along Monsanto-Sunswept Creek.	2			$ 106,600.00	$ 371,200.00	$ 477,800.00	1.67
CC-C-23	Oak Hollow Drive	12346 Oak Hollow Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion threatening structures along an upper tributary to Fernridge Creek.	2		X	$ 110,600.00	$ 212,800.00	$ 323,400.00	1.55
DC-C-03	996 East Rue De La Banque Street	996 East Rue De La Banque Street, Creve Coeur, MO 63141	Bank Stabilization and a stilling basin to address knickpoints threatening structures in an upper tributary.	2			$ 67,200.00	$ 128,600.00	$ 195,800.00	1.52
CC-C-12	680 Bellerive Estates Drive	680 Bellerive Estates Drive, Creve Coeur, MO 63141	Bank stabilization to address erosion threatening structures along Fernridge Creek. This structure is located in the floodplain. City Council and Stormwater Committee will review for funding projects for structures located within the floodplain.	2	X	X	$ 98,400.00	$ 68,600.00	$ 167,000.00	1.45
CC-C-26	Chamonix Court	227 Chamonix Court, Creve Coeur, MO 63141	Bank stabilization, grade controls, rock armoring, stilling basin, and a retaining wall to address erosion and knickpoints threatening structures along a tributary to Smith Creek. The City Council and Stormwater Committee will review to determine if City funds will be used for the primarily aesthetic feature.	2		X	$ 162,500.00	$ 469,300.00	$ 631,800.00	1.43
DC-C-08	New Salem Drive and Camfield Square Drive	201 New Salem Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion threatening structures in Deer Creek and one of its tributaries.	2		X	$ 112,300.00	$ 271,600.00	$ 383,900.00	1.33
DC-C-23	10620 Country View Drive	10620 Country View Drive, Creve Coeur, MO 63141	Bank stabilization, grade control, and pipe replacement to address erosion threatening structures along Monsanto-Sunswept Creek in Dr. Phillip Venable Memorial Park. Bridge work will be combined with the planned Venerable Park project.	2			$ 69,300.00	$ 194,500.00	$ 263,800.00	1.13
CC-C-28	2 Chasselle Lane	2 Chasselle Lane, Creve Coeur, MO 63141	Grade control and rock armoring to address bank cutting along Ladue Rd. Work to be done is located in MoDOT ROW. City Council and Stormwater Committee need to evaluate if City funds will be used in MoDOT ROW.	2			$ 50,000.00	$ 56,200.00	$ 106,200.00	1.05
CC-C-01	Ferntop Lane Bank Stabilization	12970 Ferntop Lane, Creve Coeur, MO 63141	Rock armoring to address erosion and grade control at outfall knickpoint.	2		X	$ 66,200.00	$ 48,500.00	$ 114,700.00	1.05
DC-C-04	11572 New London Drive	11572 New London Drive, Creve Coeur, MO 63141	Bank stabilization to address erosion in an unnamed tributary.	2		X	$ 69,600.00	$ 112,300.00	$ 181,900.00	1.04
CC-C-34	Williamsburg Road	14 Williamsburg Road, Creve Coeur, MO 63141	Bank stabilization, grade controls, and rock armoring to address knickpoints and erosion threatening structures along Rosenfelder Creek.	2			$ 110,800.00	$ 174,300.00	$ 285,100.00	0.98
DC-C-11	Brooktrail Court South	257 Brooktrail Court, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address erosion threatening structures in Windrush Creek.	2		X	$ 165,500.00	$ 408,900.00	$ 574,400.00	0.98
DC-C-06	Malcolm Terrace Park	Malcolm Terrace Park, 11370 St Paul Street, Creve Coeur, MO 63141	Bank stabilization to address bank erosion in Deer Creek.	2			$ 74,900.00	$ 73,100.00	$ 148,000.00	0.95
CC-C-06	1009 Fernview Drive	1009 Fernview Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, stilling basins, and rock armoring to address erosion threatening structures along a tributary to Creve Coeur Creek.	2		X	$ 110,600.00	$ 380,300.00	$ 490,900.00	0.95
CC-C-02	Ferntop Lane Outfall Repair	12970 Ferntop Lane, Creve Coeur, MO 63141	Headwall, rock armor, and grade control at existing outfall.	2		X	$ 64,400.00	$ 31,700.00	$ 96,100.00	0.94
CC-C-09	Ambois Drive	13010 Ambois Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to address knickpoints and erosion threatening structures along Fernridge Creek.	2	X	X	$ 122,100.00	$ 352,300.00	$ 474,400.00	0.94

Project Number	Project Name	Project Location	Project Description	Project Type (1 - Culverts/Structures, 2 - Bank Stabilization, 3 - Overland Flooding)	Environmental Considerations?	Common Ground?	Project Surveying, Geotechnical, and Engineering Cost	Project Construction Cost	Total Project Cost	Cost/Benefit Ratio
DC-C-12	Brooktrail Court North	123 Brooktrail Court, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion in Windrush Creek as well as swales to address overland flow issues.	2		X	$ 113,000.00	$ 291,200.00	$ 404,200.00	0.93
CC-C-37	Balcon Estates	24 Balcon Estates, Creve Coeur, MO 63141	Bank stabilization and grade control to address erosion threatening structures along an unnamed tributary to Smith Creek.	2			$ 62,500.00	$ 80,900.00	$ 143,400.00	0.91
DC-C-26	Lindbergh Boulevard	8 Millstone Campus Drive, St. Louis, MO 63146	Bank stabilization, grade control, rock armoring, and a stilling basin to address erosion in an unnamed tributary along Lindbergh Blvd.	2			$ 97,700.00	$ 228,900.00	$ 326,600.00	0.91
DC-C-10	Villa Coublay Drive	44 Villa Coublay Drive, Creve Coeur, MO 63141	Bank stabilization and grade controls to repair erosion in Windrush Creek. Some of the proposed work is in the City of Frontenac. The project will need an intergovernmental agreement. City Council and Stormwater Committee as well as City of Frontenac will need to agree on the project.	2		X	$ 69,100.00	$ 159,800.00	$ 228,900.00	0.85
CC-C-20	Falaise Drive	571 Falaise Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address knickpoints in Fernridge Creek.	2		X	$ 110,600.00	$ 234,500.00	$ 345,100.00	0.82
CC-C-14	840 Angleterre Drive	840 Angleterre Drive, Creve Coeur, MO 63141	Grade controls with associated bank stabilization to address knickpoints in a tributary to Fernridge Creek.	2			$ 62,700.00	$ 93,300.00	$ 156,000.00	0.79
CC-C-01 ALT	Ferntop Lane Bank Stabilization Alternative	12970 Ferntop Lane, Creve Coeur, MO 63141	Rock armoring to address erosion and grade control at outfall knickpoint as well as bank stabilization along rear yards.	2		X	$ 104,200.00	$ 77,100.00	$ 181,300.00	0.77
CC-C-18	12426 Stratford Ridge Court	12426 Stratford Ridge Court, Creve Coeur, MO 63141	Grade control and stilling basin to address failing grouted riprap in Fernridge Creek.	2		X	$ 66,200.00	$ 65,900.00	$ 132,100.00	0.74
DC-C-27	22 South Tealbrook Drive	22 South Tealbrook Drive, Creve Coeur, MO 63141	Bank stabilization, grade control, and rock armoring to address erosion threatening structures in Pebble Creek. The property is partially located in the City of Ladue. An intergovernmental agreement will be needed for this project.	2			$ 66,500.00	$ 183,200.00	$ 249,700.00	0.72
CC-C-30	151 Royal Gate Drive	151 Royal Gate Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion threatening structures along Rosenfelder Creek.	2		X	$ 110,600.00	$ 254,900.00	$ 365,500.00	0.71
CC-C-35	12 Broadview Farm Road	12 Broadview Farm Road, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion in a tributary to Smith Creek.	2		X	$ 107,100.00	$ 236,100.00	$ 343,200.00	0.69
CC-C-04	Autumn Trails Court	13241 Autumn Trails Court, Creve Coeur, MO 63141	Grade control to address a knickpoint in a tributary to Creve Coeur Creek.	2		X	$ 74,500.00	$ 74,000.00	$ 148,500.00	0.62
CC-C-15	Millenium Park	Millenium Park, 2 Barnes West Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion along a tributary to Fernridge Creek in Millenium Park. This project will be combined with future project Millenium Park Phase 2.	2		X	$ 157,200.00	$ 648,200.00	$ 805,400.00	0.59
CC-C-32	Conway Downs Drive	12567 Conway Downs Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and a stilling basin to address erosion in Rosenfelder Creek.	2		X	$ 115,100.00	$ 204,500.00	$ 319,600.00	0.58
CC-C-10	Lampadaire Drive	12961 Lampadaire Drive, Creve Coeur, MO 63141	Grade controls to stabilize knickpoints in Fernridge Creek.	2		X	$ 69,300.00	$ 120,900.00	$ 190,200.00	0.57
CC-C-08	Bellerive Country Club	Bellerive Country Club, 12925 Ladue Road, St. Louis, MO 63141	A series of grade controls where Fernridge Creek confluences with Smith Creek.	2		X	$ 116,100.00	$ 284,400.00	$ 400,500.00	0.56
CC-C-05	Olive Boulevard	13150 Olive Boulevard, Creve Coeur, MO 63141	Bank stabilization and grade controls to address erosion threatening structures along Creve Coeur Creek and one of its tributaries.	2	X	X	$ 177,700.00	$ 716,300.00	$ 894,000.00	0.55
DC-C-21	10694 Country View Drive	10694 Country View Drive, Creve Coeur, MO 63141	Grade control with associated bank stabilization to address erosion along Monsanto-Sunswept Creek.	2			$ 62,500.00	$ 106,100.00	$ 168,600.00	0.55
DC-C-20	Sherwyn Lane	7 Sherwyn Lane, Creve Coeur, MO 63141	Bank stabilization to address erosion threatening structures in a tributary to Monsanto-Sunswept Creek.	2			$ 64,600.00	$ 89,200.00	$ 153,800.00	0.52
DC-C-13	Executive Estates Drive	109 Executive Estates Drive, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address erosion in Windrush Creek as well as a swale to address overland flow issues.	2			$ 164,600.00	$ 416,300.00	$ 580,900.00	0.48
CC-C-31	Boothbay Court	12318 Boothbay Court, Creve Coeur, MO 63141	Grade control with associated bank stabilization to address pipe outfall erosion threatening structures.	2		X	$ 62,500.00	$ 45,500.00	$ 108,000.00	0.46
DC-C-01b	Deer Creek in Malcolm Terrace Park	Malcolm Terrace Park 11370 St Paul Street, Creve Coeur, MO 63141	Bank Stabilization to address erosion at low water crossing with associated grade controls and a low water crossing replacement.	2	X		$ 147,500.00	$ 441,200.00	$ 588,700.00	0.46
DC-C-05	Westwood Country Club	Westwood Country Club, 11801 Conway Road, St. Louis, MO 63131	Grade controls and bank stabilization to address bank erosion and knickpoints in Deer Creek and one of its tributaries.	2			$ 317,100.00	$ 1,471,600.00	$ 1,788,700.00	0.44
CC-C-19	Questover Lane	665 Questover Lane, Creve Coeur, MO 63141	Bank stabilization, grade controls, and stilling basins to address erosion in Fernridge Creek.	2		X	$ 122,700.00	$ 491,800.00	$ 614,500.00	0.35
CC-C-03	13105 D'Artagnan Court	13105 D`Artagnan Court, Creve Coeur, MO 63141	Bank stabilization to address erosion with rock swale to convey subdivision drainage with associated grade controls.	2			$ 157,200.00	$ 383,800.00	$ 541,000.00	0.35
CC-C-27	Montsouris Drive	12365 Montsouris Drive, Creve Coeur, MO 63141	Bank stabilization to address erosion along an unnamed tributary near Montsouris Drive.	2			$ 70,300.00	$ 96,700.00	$ 167,000.00	0.23
CC-C-17	12344 Mulberry Tree Court	12344 Mulberry Tree Court, Creve Coeur, MO 63141	Grade control and stilling basin to address perched outfalls and a scour hole in a tributary to Fernridge Creek.	2		X	$ 62,500.00	$ 118,000.00	$ 180,500.00	0.22
CC-C-36	438 Twin Creek Road	438 Twin Creek Road, Creve Coeur, MO 63141	Bank stabilization to address erosion along Smith Creek.	2			$ 68,400.00	$ 64,000.00	$ 132,400.00	0.22
CC-C-21	Blackheath Court and Country Manor Lane	12230 Blackheath Court, Creve Coeur, MO 63141	Bank stabilization and rock armoring to address erosion in an upper tributary to Fernridge Creek.	2		X	$ 68,400.00	$ 72,300.00	$ 140,700.00	0.22
CC-C-24	17 Chamblee Lane	17 Chamblee Lane, Creve Coeur, MO 63141	Bank stabilization and fill to address sloughing and sinkholes along Smith Creek.	2			$ 62,700.00	$ 46,200.00	$ 108,900.00	0.20
DC-C-07	New Salem Drive	234 New Salem Drive, Creve Coeur, MO 63141	Bank stabilization to address bank erosion in Deer Creek.	2			$ 157,100.00	$ 466,100.00	$ 623,200.00	0.17
CC-C-22	Royal Valley Drive	12182 Royal Valley Drive, Creve Coeur, MO 63141	Grade controls and stilling basins to address knickpoints in Fernridge Creek.	2			$ 78,700.00	$ 160,600.00	$ 239,300.00	0.14
DC-S-03	Woodbridge Manor Road	8 Woodbridge Manor Road, Creve Coeur, MO 63141	Swales and inlet modifications to address street and structural flooding.	3			$ 53,900.00	$ 8,300.00	$ 62,200.00	6.83
CC-S-07	Mason Forest Drive	12574 Mason Forest Drive, Creve Coeur, MO 63141	Swale, slotted manhole, and inlet modifications to address yard, street, and structural flooding.	3			$ 61,300.00	$ 12,100.00	$ 73,400.00	4.69
DC-S-02	18 Sackston Woods Lane	18 Sackston Woods Lane, Creve Coeur, MO 63141	Storm sewer, inlets, and rock swale to address yard flooding.	3			$ 65,300.00	$ 93,300.00	$ 158,600.00	2.08
CC-S-04	Fernpark Drive	1032 Fernpark Drive, Creve Coeur, MO 63141	Swale, yard drain, storm sewer, and curb inlet to address yard and basement flooding.	3			$ 60,300.00	$ 55,400.00	$ 115,700.00	2.07
DC-S-17	Sona Lane	14 Sona Lane, Creve Coeur, MO 63141	Berm, swale, inlets, and storm sewer to address structural flooding and yard erosion.	3			$ 142,000.00	$ 420,700.00	$ 562,700.00	2.00
CC-S-09	252 Bellington Lane	252 Bellington Lane, Creve Coeur, MO 63141	Berm, swale, and inlet modifications to address yard and basement flooding.	3			$ 51,900.00	$ 10,000.00	$ 61,900.00	1.29
DC-S-26	Warington Square	9820 Warington Square, Creve Coeur, MO 63141	Berm, swales, inlets, and storm sewer to address yard and structural flooding.	3			$ 105,200.00	$ 235,300.00	$ 340,500.00	1.29
DC-S-19	308 South Spoede Road	308 South Spoede Road, Creve Coeur, MO 63141	Swale, catch basin, storm sewer, and curb to address structural flooding.	3			$ 68,000.00	$ 35,600.00	$ 103,600.00	1.21
DC-S-22	North Spoede Road & Mission Hills Court	800 North Spoede Road, Creve Coeur, MO 63141	Inlets and storm sewer to address street flooding.	3			$ 46,000.00	$ 25,200.00	$ 71,200.00	1.19
CC-S-05	740 North Mason Road	740 North Mason Road, St. Louis, MO 63141	Reconstructed berm and swale to contain overland flow in the cemetery.	3			$ 96,500.00	$ 42,100.00	$ 138,600.00	1.06
DC-S-09	Pine Manor Drive	8 Pine Manor Drive, Creve Coeur, MO 63141	Trench drain, inlets, inlet modifications, berm, and swales to address street and yard flooding.	3			$ 64,300.00	$ 15,900.00	$ 80,200.00	1.05
DC-S-13	Morwood Lane	53 Morwood Lane, Creve Coeur, MO 63141	Mill asphalt, inlets, berm, manhole, and grading to address seepage and yard flooding.	3			$ 71,200.00	$ 77,600.00	$ 148,800.00	0.94
DC-S-11	554 North Mosley Road	554 North Mosley Road, Creve Coeur, MO 63141	Swale to address yard gully and drainage issues.	3			$ 54,000.00	$ 19,200.00	$ 73,200.00	0.82
DC-S-05	Ladue Meadows	16 Ladue Meadows, Creve Coeur, MO 63141	Inlets and storm sewers to address yard flooding.	3			$ 59,400.00	$ 73,200.00	$ 132,600.00	0.72
CC-S-01	Cuiseaux Court	208 Cuiseaux Court, Creve Coeur, MO 63141	New inlet and pipe to existing storm sewer to convey runoff from the rear lots of Cuiseaux Court.	3			$ 78,500.00	$ 57,100.00	$ 135,600.00	0.70
DC-S-16	Wedgewood Lane	6 Wedgewood Lane, Creve Coeur, MO 63141	Inlets, storm sewer, and swale to address yard ponding.	3			$ 69,000.00	$ 42,500.00	$ 111,500.00	0.63
DC-S-01	Drainage Issues on Magna Carta Drive at Runnymede Drive and Templar Drive	11577 Templar Drive, Creve Coeur, MO 63141	New inlets and regrading pavement to address ponding issues along Magna Carta Drive.	3			$ 75,000.00	$ 94,600.00	$ 169,600.00	0.62
DC-C-29	The Knolls Lane	7 The Knolls Lane, Creve Coeur, MO 63141	Broken curb/drainageway replacement.	3			$ 58,800.00	$ 15,700.00	$ 74,500.00	0.62

Project Number	Project Name	Project Location	Project Description	Project Type (1 - Culverts/Structures, 2 - Bank Stabilization, 3 - Overland Flooding)	Environmental Considerations?	Common Ground?	Project Surveying, Geotechnical, and Engineering Cost	Project Construction Cost	Total Project Cost	Cost/Benefit Ratio
DC-S-15	Fourwynd Drive	438 Fourwynd Drive, Creve Coeur, MO 63141	Berm, swales, and a culvert replacement to address yard flooding and overland flow erosion.	3			$ 84,300.00	$ 129,600.00	$ 213,900.00	0.61
CC-S-10	12229 Ladue Woods Drive	12229 Ladue Woods Drive, Creve Coeur, MO 63141	Berm to address yard flooding.	3			$ 61,300.00	$ 7,900.00	$ 69,200.00	0.55
CC-S-02	Broadview Farms Subdivision	19 Broadview Farm Road, Creve Coeur, MO 63141	Overlay street, adjust pavement slope, reset curb inlet, and reconstruct curb to address ponding along Broadview Farm Rd.	3			$ 76,600.00	$ 30,800.00	$ 107,400.00	0.52
DC-S-07	East Ladue Estates Drive	57 East Ladue Estates Drive, Creve Coeur, MO 63141	Swale, berm, and underdrain field to address yard ponding.	3			$ 57,800.00	$ 20,400.00	$ 78,200.00	0.51
DC-S-23	6 Spoede Ridge Lane	6 Spoede Ridge Lane, Creve Coeur, MO 63141	Rock channel to address yard flooding.	3			$ 54,000.00	$ 19,800.00	$ 73,800.00	0.49
DC-S-14	Mary Meadows Lane	808 Mary Meadows Lane, Creve Coeur, MO 63141	Berm, swales, inlets, and storm sewer to address flooding and overland flow erosion.	3			$ 73,900.00	$ 92,300.00	$ 166,200.00	0.48
DC-S-25	Haven View Drive	19 Haven View Drive, Creve Coeur, MO 63141	Gutters, inlets and storm sewer to address yard flooding.	3			$ 61,400.00	$ 63,700.00	$ 125,100.00	0.48
DC-S-06	Fairways Circle	541 Fairways Circle, Creve Coeur, MO 63141	Storm sewer, inlets, berm, and swales to address yard flooding.	3			$ 80,000.00	$ 182,300.00	$ 262,300.00	0.48
DC-S-18	3 Oak Park Court	3 Oak Park Court, Creve Coeur, MO 63141	Inlets and storm sewer to address yard erosion.	3			$ 63,200.00	$ 43,800.00	$ 107,000.00	0.47
DC-S-24	7 Quailways Drive	7 Quailways Drive, Creve Coeur, MO 63141	Pipe repairs and retaining wall replacement to address erosion and sinkholes.	3			$ 51,900.00	$ 55,300.00	$ 107,200.00	0.47
CC-S-06	Auburndale Drive	39 Auburndale Drive, Creve Coeur, MO 63141	Shoulder and swale along N Mason Rd to address street flooding.	3			$ 60,300.00	$ 127,500.00	$ 187,800.00	0.43
DC-S-21	Chilton Lane	8 Chilton Lane, Creve Coeur, MO 63141	Erosion control, berms, and swales to address erosion.	3			$ 63,600.00	$ 34,500.00	$ 98,100.00	0.41
DC-S-04	561 Sarah Lane	561 Sarah Lane, Creve Coeur, MO 63141	Profile and mill asphalt to address street ponding.	3			$ 50,900.00	$ 14,900.00	$ 65,800.00	0.38
DC-S-08	121 Mystic Meadows Lane	121 Mystic Meadows Lane, Creve Coeur, MO 63141	Storm sewer extension and inlet to address overland flow erosion.	3			$ 60,500.00	$ 76,800.00	$ 137,300.00	0.33
CC-S-08	228 Falling Leaves Court	228 Falling Leaves Court, Creve Coeur, MO 63141	Drains, curb inlet, and storm sewer to address yard ponding.	3			$ 61,300.00	$ 106,900.00	$ 168,200.00	0.27
CC-S-03	Ferntrails Lane	13096 Ferntrails Lane, Creve Coeur, MO 63141	Berm and swale to shift overland flow away from houses.	3		X	$ 61,500.00	$ 16,800.00	$ 78,300.00	0.26

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Appendix G
Cost Prioritization Methodology

Content:

- Cost Worksheet Template
- Prioritization Worksheet Template
- Prioritization Worksheet Guidance Document
- Public or Private Checklist

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Cost Worksheet Template

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Creve Coeur Watershed Management Plan - Cost Opinion Worksheet

Project ID:

Project Description:

INTUITION & LOGIC

SURVEYING

Description	Unit	Quantity	Unit Cost	Sub Total
Boundary and Topo Surveying	ACRE		$ 12,000	$ -
Prepare Easement Plat and Scripts	EACH		$ 1,500	$ -
Contruction Staking and As-Built Surveying	ACRE		$ 5,000	$ -
			Subtotal =	$ -
		Contingency =	25%	$ -
		TOTAL OPINION OF SURVEYING COST =		**$ -**

GEOTECHNICAL

Description	Unit	Quantity	Unit Cost	Sub Total
Field Borings	LF		$ 20	$ -
Geotechnical Report	LUMP		$ 7,000	$ -
Global Stability Analysis	EACH		$ 1,000	$ -
			Subtotal =	$ -
		Contingency =	25%	$ -
		TOTAL OPINION OF GEOTECHNICAL COST =		**$ -**

ENGINEERING DESIGN AND CONSTRUCTION DOCUMENTS

Description	Unit	Quantity	Unit Cost	Sub Total
Preliminary Design	HOURS	NA	$ 160	#VALUE!
ROW	HOURS	NA	$ 160	#VALUE!
Permitting	HOURS	NA	$ 160	#VALUE!
Final Design	HOURS	NA	$ 160	#VALUE!
Develop Plans and Construction Documents	HOURS	NA	$ 160	#VALUE!
Construction Support	HOURS	NA	$ 160	#VALUE!
			$ -	$ -
			Subtotal =	#VALUE!
		Contingency =	25%	#VALUE!
		TOTAL OPINION OF ENGINEERING AND CONSTRUCTION OBSERVATION COST =		**#VALUE!**

CONSTRUCTION

Description	Unit	Quantity	Unit Cost	Sub Total
Clearing	ACRE		$ 30,000	$ -
Removal of Existing Structures	LUMP		$ 2,000	$ -
Excavation and Embankment in Place	CY		$ 35	$ -
Rock Grade Control	CY		$ 200	$ -
Rock Stilling Basin / Outlet Scour Protection	CY		$ 100	$ -
Rock Toe and Slope Protection	CY		$ 150	$ -
Bank Stabilization	SY		$ 120.00	$ -
Granular Backfill	CY		$ 55	$ -
New Culvert	LF		$ 500.0	$ -
Manhole	LF		$ 625	$ -
Inlet	EA		$ 3,500	$ -
Sewer Pipe Small	LF		$ 140	$ -
Sewer Pipe Medium	LF		$ 220	$ -
Sewer Pipe Large	LF		$ 360	$ -
Connection to Existing Inlet	EA		$ 2,365	$ -
Connection to Existing Manhole	EA		$ 3,130	$ -
Flared End Section Small	Ea		$ 2,580	$ -
Retaining Wall	SF		$ 50	$ -
Berm/Swale	LF		$ 15	$ -
Asphaltic Concrete Pavement	SY		$ 150	$ -
Pavement/Sidewalk Removal & Replacement	SY		$ 100	$ -
Curb - Concrete Rem & Rep	LF		$ 50	$ -
Utility Relocation	LUMP		$ 11,000	$ -
Site Restoration	ACRE		$ 50,000	$ -
			$ -	$ -
Mobilization and Bond	10%	1	$ -	$ -
			Subtotal =	$ -
		Contingency =	30%	$ -
		TOTAL OPINION OF CONSTRUCTION COST =		**$ -**

TOTAL SURVEYING, GEOTECHNICAL, ENGINEERING AND CONSTRUCTION COST OPINION =	**#VALUE!**

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Prioritization Worksheet Template

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: _____ DATE: _____

PROJECT LOCATION: _____

PROJECT DESCRIPTION: _____

			PROBLEM SOLVED CATEGORY Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
				Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM	1.1. FLOODING	1.1.1.	Structure Flooding							
			Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
			Basement (1 lot per structure) *Address:*	200		100		15		
			Attached Garage (1 lot per structure) *Address:*	100		50		8		
			Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc. Eligible misc. structures are those that would typically require a building permit to be issued. (1 lot per structure) *Address:*	50		25		4		
			Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
			Yard Flooding (1 per lot) *Address:*	10		5		0		
		1.1.2.	Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
			Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
			Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
			Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
			Traffic obstruction (> 6" of water) on residential street *Address:*	10		5		1		
	1.2. EROSION	1.2.1.	Threatening Structure (Ratio=Height of bank / distance from structure)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Habitable structures, residential (1 lot per structure) *Address:*	300		200		50		
			Misc structures including pools, patio/decks, sheds, tennis courts, detached garages, etc. Eligible misc. structures are those that would typically require a building permit to be issued. (1 lot per structure) *Address:*	150		100		25		
			Industrial, office, commercial and warehouse (1 lot per structure) *Address:*	300		200		50		
		1.2.2.	No. of lots (from 1.2.1) on outside of bend		lots	10 points per lot				
		1.2.3.	Threatening Roadway (2 lots per intersection impacted and 2 lots for undermined/failing bridges or culverts)	Pts. for Ratio > 0.70	No. Lots	Pts. for Ratio 0.36 - 0.70	No. Lots	Pts. for Ratio 0.15- 0.35	No. Lots	
			Arterial Road: (1 lot per 50' of roadway) *Address:*	75		50		12		
			Collector Road: (1 lot per 100' of roadway) *Address:*	35		25		6		
			Residential Road: (1 lot per 250' of roadway) *Address:*	20		12		3		
		1.2.4.	Threatening Natural Resources (parks, wetlands, wooded areas, etc.)	Buffer Width >50 ft		Buffer Width 25 - 50 ft		Buffer Width <25 ft		
				20		10		5		

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: _____ DATE: _____

PROJECT LOCATION: _____

PROJECT DESCRIPTION: _____

		PROBLEM SOLVED CATEGORY, CONT. Note: Problem points are awarded only for those problems solved by the proposed solution.	Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
			Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
2.0 STORM SEWER / OVERLAND FLOW	2.1. FLOODING	2.1.1. Structure Flooding							
		Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure)* *Address:*	350		250		65		
		Basement (1 lot per structure)* *Address:*	250		200		50		
		Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded)* *Address:*	300		200		50		
		* If there is an existing public system and points are taken for any of the 3 items above, add 50 points.	Existing System Y/N						
		Attached Garage (1 lot per structure) *Address:*	100		75		25		
		Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc. Eligible misc. structures are those that would typically require a building permit to be issued. (1 lot per structure) *Address:*	50		35		12		
		Yard Flooding (1 per lot) *Address:*	10		6		0		
		2.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
		Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		150		25		
		Traffic obstruction (> 6" of water) on arterial street *Address:*	50		35		6		
		Traffic obstruction (> 6" of water) on collector street *Address:*	25		15		2		
		Traffic obstruction (> 6" of water) on residential street *Address:*	10		6		1		
		Ponding (per ponding area) *Address:*	No. Ponds:			Points/pond:		5	
	2.2.	Moderate Risk Erosion of misc. structures *Address:*	No. Lots:			Points/lot:		20	
	2.3.	Yard Erosion (1 per lot) *Address:*	No. Lots:			Points/lot:		10	
	2.4	Condition of Existing System (if condition unknown, assign points based on age: Poor >50yrs, Fair 26-50 years, Good <25 years)	Poor >125% of Design Life (30 pts)		Fair 75-125% of Design Life (15 pts)		Good <75% of Design Life (0 pts)		
		Points for Condition							
			TOTAL PROBLEM POINTS						

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Creve Coeur Watershed Management Plan Prioritization System
Revised Benefit Points Allocation Schedule

PROJECT NAME: _____ DATE: _____

PROJECT LOCATION: _____

PROJECT DESCRIPTION: _____

SOLUTION BENEFIT CATEGORY									
3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:				Max points:	1000	
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:				Points per Add'l Proj.:	50	
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units				Points per Unit		
	Bioswales		PER 100 LF			10		
	Forebays		AC			200		
	Wet Ponds		AC			100		
	Wetlands		AC			50		
	Biostabilization of banks (per bank)		PER 100 LF			10		
	Riffle Pool Complex		PER 100 LF			10		
	4.2. Eliminates combined sewer (per project)		EA			100		
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA			10		
	4.4 Preserves natural resource areas	No. Units				Points per Unit		
	Lakes, Wetlands, etc.		AC			30		
	Natural Corridor (min. 25ft width)		PER 100 LF			10		
	4.5 Conservation Easement		EA			20		
5.0 MISC.	5.1. Ease of Implementation (number of new easements to be acquired)	0 (50 pts)	1-5 (20 pts)	6-10 (10 pts)		11-15 (5 pts)	> 15 (0 pts)	
	Points for Easements							
	5.2. Recreational/Educational	Yes = 100 No = 0 pts						
						TOTAL SOLUTION POINTS		
						TOTAL BENEFIT POINTS		

Note: A regional solution combines several smaller projects into a watershed or subwatershed solution.

TOTAL COST IN THOUSANDS= ☐

BENEFIT/ COST RATIO= TOTAL POINTS/ TOTAL COST IN THOUSANDS= ☐

Place "X" in one box below:

☐ **Creve Coeur Project**
☐ **Project by Others**

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Prioritization Worksheet Guidance Document

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Prioritization Worksheet – Guidelines for Use

General

- The prioritization worksheet is three pages long.
- Enter the project name, date, location, and description at the top of each page (it is automatically carried to pages 2 and 3 if using electronically).
    - The environmental considerations section can be used to note if any threatened structures are located in the floodplain or floodway.
    - The common ground section can be used to indicate if a project is located on common ground.
- The worksheet is separated into "Problem Solved Categories" and "Solution Benefit Categories"

Assigning Problem Points (pages 1-2)

Using information collected in the field and from complaint records, determine which of the two main Problem Categories the investigated problem falls under. Problem points are only awarded for those problems solved by the proposed solution.

- If the source of the problem is a stream, use Category 1.0 on the first page to assign the "Problem points".
- If the source of the problem is overland flow or inadequate/non-existent storm sewers, turn to Category 2.0 on the second page to assign the "Problem points".

Category 1.0 (page 1)

Category 1.0 is subdivided into 1.1 Flooding and 1.2 Erosion. If the project only deals with one of these types of problems, go directly to that subcategory and then evaluate each line in light of the problem identified. If the project deals with both types of problems, complete Section 1.1 and Section 1.2.

Every line on this page utilizes three levels of severity to assign points (except line 1.2.2).

- For structure and roadway flooding, the minimum frequency of storm (2-, 15- or 100-year) causing the problem should be computed or estimated. The number of lots affected is then entered under that storm heading.
- For erosion, field measurements should be made to determine the ratio of height of eroded bank divided by distance from nearest habitable structure. The number of lots affected should be entered to the right of the points shown for the appropriate ratio.
- Items in the misc. structures are any structures that would typically require a building permit to be issued. This applies to all misc. structures rating categories within the Prioritization worksheet.
- Category 1.2.3 utilizes the roadway type and length to assign the number of lots. Additional points are added for intersections and undermined/failing bridges or culverts.
    - If the undermined/failing bridges or culverts would cause multiple lots to be cut off in the event of failure, one lot should be added per each lot that will be cut off.
- Category 1.2.4 can be used to assign points based on the buffer width of the threatened natural resource.

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- If the project includes a grade control at an existing knickpoint, then the linear feet protected extends from that point up to the next hard bottomed road crossing or the end of the minimum buffer width, whichever is shorter (one lot is assigned per 250 feet of stream).
    - The benefit length is limited to 250 feet upstream of the project.

Category 2.0 (page 2)

Category 2.0 is used for flooding problems caused by overland flow or inadequate/non- existent storm sewer systems.

- Category 2.1 utilizes the same three levels of severity as Category 1.1, and the storm frequency should be computed or estimated in the same way.
- Erosion caused by overland flow is included as either as 2.2 "moderate risk erosion of miscellaneous structures" or 2.3 "yard erosion".
- Category 2.4 can be used to assign additional points to a problem based on the condition of the existing system. If the condition is unknown, points are assigned based on the age of the system.

Additional things to note under Problem Points:

- Include the address(es) of lots that are assigned points on the line provided under each subcategory.
- The total problem points from pages 1 and 2 are automatically summed at the bottom of page 2 and included in the total benefit points sum at the bottom of page 3 (if entered electronically).

Categories 3-5: Assigning Solution Points (page 3)

After filling out either page 1 or page 2, turn to page 3 to determine if any of the Solution Points can be applied. These points are given to projects whose solution achieves the benefits described in Categories 3-5.

- Category 3.1, reduction of flowrate leaving the site, would most commonly be achieved by the addition of a detention feature. The pre- and post-project peak flowrates are computed to determine the percent of reduction. This percentage is then multiplied by 1000 to obtain the total points awarded. This should only be used where the approximate reduction can be reliably estimated at the preliminary stage.

- Category 3.2 points can be applied when a proposed solution combines several smaller projects (that are not immediately adjacent to one another) into a watershed or subwatershed solution. Enter the number of total projects combined less one: for example, if 3 projects are combined, enter 2 as the number of additional projects.

- Category 4.1 points can be applied if the proposed solution includes any of the water quality features listed. These should only be used if the user has confidence that the feature will not be dropped during final design. For linear treatments, divide the total proposed length by 100 linear feet to obtain the number of units. For treatment areas, enter the number of acres. Round all quantities to the nearest whole number.

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    - Riffle pool complex – If the project includes a grade control at an existing knickpoint, then the linear feet protected extends from that point up to the next hard bottomed road crossing. This applies to perennial streams only.

- Category 4.2 points can be applied if the project eliminates a combined sewer system. A non-regional solution would get 100 points, while a regional solution could get 100 points per project that eliminates a combined sewer system.

- Category 4.3, which addresses inflow into the sanitary system, can be applied where the proposed solution would eliminate the inflow. The total number of locations eliminated is entered by the user.

- Category 4.4 points can be applied if the project is protecting a natural resource area. Multiply the acres of lake, wetland, etc. being protected by 30 points. For natural corridors that have a minimum 25 foot width, divide the total length being protected by 100 linear feet to obtain the number of units.
    - Natural Corridor – If the project includes a grade control at an existing knickpoint, then the linear feet protected extends from that point up to the next hard bottomed road crossing or the end of the minimum 25 ft width, whichever is shorter.

- Category 4.5 points can be applied if conservation easements will be acquired as part of the project.

- Category 5.1 assigns points for projects with fewer easements. The user's best estimate of the number of easements that will be required is used to determine how many points can be awarded. The user must enter the number of points (20, 10 or 5 points) appropriate for the number of easements estimated.

- Category 5.2 allows the user to enter 100 points if the proposed solution will include recreational or educational benefits to the public. The PP writeup should include a description of the benefits that are being provided.

Cost/Benefit Ratio

- When all Problem and Solution Points are assigned, the total benefit points will be summed automatically (if entered electronically).
- Divide the cost estimate for the project by 1,000 and enter it in the worksheet where indicated.
- The cost/benefit ratio will be automatically computed (if entered electronically).

Project Designation

At the bottom of page 3, indicate whether the project is likely to be performed by Creve Coeur or By Others. By others can include funding through the OMCI taxing districts, grant funding, or local funds committed to by residents.

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Public or Private Checklist

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Is a stormwater issue public or private?

If one or more boxes are checked, then a publicly-funded solution might be considered	
Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue?	☐ Check for yes
Does the stormwater issue threaten public or private structures?	☐ Check for yes
Does the stormwater issue threaten public or private roadways?	☐ Check for yes
Does the stormwater issue threaten public infrastructure or publicly-funded improvements?	☐ Check for yes
Is the issue caused by an undersized stormwater conveyance infrastructure?	☐ Check for yes
Does the proposed project address regional or systematic channel instability?	☐ Check for yes
Would a solution protect water quality or natural resources?	☐ Check for yes
Was the issue caused by altered upstream conditions?	☐ Check for yes
Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations?	☐ Check for yes
Was the issue caused by inadequate maintenance of a public system?	☐ Check for yes
Will the project improve public safety?	☐ Check for yes
Has the stormwater issue been identified as a monitor project?	☐ Check for yes
Is the focus of the project utility work?	☐ Check for no
Does the work focus on privately-owned infrastructure?	☐ Check for no

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Appendix H
Meeting Notes

Content:

- Stormwater Committee Meeting Notes
- City Council Presentation

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Stormwater Committee Meeting Notes

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INTUITION & LOGIC
16253 Swingley Ridge Road, Suite 100, St. Louis, MO 63017
636.777.3000

MEETING NOTES

DATE: 1-11-23
PROJECT: Creve Coeur Storm Water Master Plan
RE: Stormwater Committee Meeting
TIME: 04:45 pm
LOCATION: Creve Coeur Public Works

ATTENDEES:

Organization	Point of Contact	Phone Number	Email
City of Creve Coeur	Jim Heines	314-872-2538	jheines@crevecoeurmo.gov
City of Creve Coeur	Dione Garson	314-274-2107	dgarson@crevecoeurmo.gov
City of Creve Coeur	Margaret Ries	314-872-2533	mries@crevecoeurmo.gov
Intuition & Logic	Mark Meyer	636-777-3000	mark@ilincworld.com
Intuition & Logic	Tim Dean	636-777-3000	tim@ilincworld.com
Intuition & Logic	Jenna Stombaugh	636-777-3000	jenna.stombaugh@ilincworld.com
EDM	Kurtis Eisenbath	314-335-6905	kle@edm-inc.com
AMPM	Kevin Corwin	636-312-4480	kevinc@askampm.com

Refer to the Stormwater Committee meeting minutes for the full list of stormwater committee members present.

Introductions

Project Overview

- Project Work Plan
  - Tim Reviewed the work plan and project schedule. Tim reviewed the process the design team will use to develop the Storm Water Master Plan.
  - A Storm Water Master Plan webpage will be developed on the City's website. The webpage will be managed by the City and content will be supplied by the design team.

Draft

    - A Link to the stormwater survey and invite to the open house will be the first content.

- Public Engagement
    - We discussed the upcoming open house and format.
    - Open House
        - Open House #1 on 3/22/23
        - Held at the City in Council Chambers
        - PDFs of any boards, presentations, and comments received will be posted to the Storm Water Master Plan Webpage.
        - Develop 1pg handouts with overview of SWMP and contact info
    - Questionnaire
        - Online tool link: https://ampm.mysocialpinpoint.com/creve-coeur-storm-water-master-plan/share/7ea5ee87
            - Add note for clarification: "be sure to click next and fill out the survey to submit all information"

- Stormwater Committee Approved Conceptual Sites
    - Committee approved the 7th site
        - Will likely be a corridor repair instead of a spot repair
    - 7 sites
        1. Magna Carta Drive at Runnymede Drive and at Templar Drive - Storm drain modification and new storm drain(s).
        2. Ferntop Lane - Storm channel erosion (from the 2012 Stormwater Master Plan Projects spreadsheet)
        3. Deer Creek in Malcolm Terrace Park - Creek bank erosion
        4. Cuisseaux Court - Subdivision drainage
        5. Beaver Drive - Aging culvert beneath the
        6. Broadview Farm - Road drainage throughout the subdivision
        7. 10105 Dartagnan - Creek erosion in back yard.

Other Items

The above is an accurate and complete representation of the major conversations and decisions to the best of my knowledge. If there are corrections or revisions, please send them to me in writing at tim@ilincworld.com at your earliest convenience.

Best Regards,

Tim Dean, PE, CFM, LEED® AP

Draft

Principal
Intuition & Logic Engineering, Inc.

Draft

AGENDA
CITY OF CREVE COEUR
STORMWATER COMMITTEE
300 N NEW BALLAS RD
JUNE 14, 2023
4:45 PM

I. CALL TO ORDER

II. ROLL CALL

III. APPROVAL OF AGENDA

IV. NEW BUSINESS

1. **Intuition & Logic: Presentation and Committee Feedback**

V. APPROVAL OF MINUTES

2. **Stormwater Committee Meeting, May 10th Minutes (Draft) Summary:**

VI. BUSINESS FROM STAFF

VII. COMMENTS FROM THE PUBLIC

VIII. NEXT MEETING DATE

IX. ADJOURNMENT

Draft

Posted by: _____

Date/Time posted: _____

If you need special accommodations to attend a meeting, services may be arranged by contacting the Office of the City Administrator in advance.

MINUTES
CITY OF CREVE COEUR
STORMWATER COMMITTEE
300 N NEW BALLAS RD
MAY 10, 2023
4:45 PM

I. CALL TO ORDER

The meeting was called to order at 4:45 PM.

II. ROLL CALL

The Stormwater Committee members that were in attendance were Richard Kutta, Bernard Feldman, Patrick Brown, Samantha Davies, Mary Helen Gerst, and Kathy Rizzo.
City Council member Tim Carney was in attendance.
Also in attendance was City Public Works Director, Jim Heines, and Civil Engineer, Dione Garson.
Quorum was achieved.

III. APPROVAL OF AGENDA

Sam Davies made a motion for the approval of the agenda. Bernard Feldman was the second. All in favor.

IV. APPROVAL OF MINUTES

1. April 17th, 2023 Minutes (Draft)

Kathy Rizzo made a motion for the approval of April 17th, 2023 minutes. Patrick Brown was the second. All in favor.

V. UNFINISHED BUSINESS

2. Cost-Share Program Discussion

Dione Garson thanked the committee for filling out a Google Form to make comments and suggestions for the Cost-Share Program. The committee reviewed the responses to the items for consideration for the cost-share program.
The committee wants to follow City policy on obtaining bids based on the cost-estimate of the project for the cost-share program.
The committee discussed including projects that are problem-solving run off from new construction. The committee will accommodate off-site water as best as possible. Dick Kutta asked if there are civil matters between residents, should the committee get involved at all with regards to the cost-share program? The committee discussed if there is active litigation and whether or not the committee would get involved? The committee decided they would not get involved. Dick Kutta suggested putting that as a question on the application.

Draft

Dione Garson posed the question "Can HOA's use funding to do routine maintenance required by MSD?" to the committee.The committee proposed adding that to the application by asking to provide documentation with MSD regarding maintenance agreements and/or annual reports.
The committee discussed how to score the applications that will be submitted. A rubric was suggested to be created to score applications.
The committee discussed that if cisterns were to be allowed in the program, they should be underground cisterns.
The committee discussed putting a question on the application that asks "is the project part of the Deer Creek Watershed Alliance?".
The stormwater committee will not provide solutions to stormwater concerns, but will tell the applicant if a solution that is provided will not work.
Live staking could be an alternative suggestion for projects that may not qualify for the cost-share program.

VI. BUSINESS FROM STAFF

Dione Garson provided an update on City Stormwater Projects.
Alden Lane: There is a bid opening on May 31. Construction should take place in early July.
Hibler Road: The easement documents are ready. City staff will be meeting with residents shortly. Construction should begin in February.
Hibler Woods Drain: The contract was awarded to Spencer Contracting. Construction is to begin after Ladue Estates construction.
Dielmann Recreation Drainage: They have received final plans from HR Green. They are meeting with staff to determine the start date. It is ready to go to bid.
Golf Course Aeration: They are waiting for the final plan set.
Tarrytown: They are expecting to receive easement documents soon. Construction should start in November.

3. Watershed Management Plan Update

Intuition and Logic (I&L) staff are actively calling homeowners who reported stormwater issues. I&L submitted report sections for City staff to review. There are 105 streambank additions by I&L to the reporting site. I&L provided guidance and examples of public verses private criteria and City Staff is reviewing. I&L are creating materials for Open House #2.
Types of Reported Issues: House flooding 23, Property Flooding 78, Street Flooding

24, Streambank Erosion 152.
Property flooding is the most reported issue, not including the 105 streambank issues added by I&L.
Residents are continuing to report issues. Since the last stormwater committee meeting we have had 20 additional reported issues. There are 256 identified issues. Next week's open house meeting is to wrap up data collection. The staff is hopeful to have a report by I&L by January 2024 to be able to use it to develop the CIP.
Next meeting for Watershed Management Plan with I&L is an Open House on Wednesday, May 17th from 6:00-7:30PM.

4. Arbor Day Update

Dione Garson and Bernard Feldman had a booth at Arbor Day to create awareness about the stormwater management plan. No stormwater issues were reported. No one filled out the survey to report a stormwater issue. There was some interest in learning about the Watershed Management Plan. Flyers were given to residents that provided information about the stormwater management plan and it provided the date of Open House #2.

VII. COMMENTS FROM THE PUBLIC

No comments at this time.

VIII. NEXT MEETING DATE

The next stormwater committee meeting will be on Wednesday, June 14th.

IX. ADJOURNMENT

A motion to adjourn was made by Kathy Rizzo and seconded by Bernard Feldman. All in favor. Adjournment at 6:24PM.

Draft

Is a stormwater issue public or private?	
If one or more boxes are checked, then a publicly-funded solution might be considered	
Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue?	
Does the stormwater issue threaten public or private structures?	
Does the stormwater issue threaten public or private roadways?	
Does the stormwater issue threaten public infrastructure or publicly-funded improvements?	
Is the issue caused by an undersized stormwater conveyance infrastructure?	
Does the proposed project address regional or systematic channel instability?	
Would a solution protect water quality or natural resources?	
Was the issue caused by altered upstream conditions?	
Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations?	
Was the issue caused by inadequate maintenance of a public system?	
Will the project improve public safety?	
Has the stormwater issue been identified as a monitor project?	
Is the focus of the project utility work?	
Does the work focus on privately-owned infrastructure?	

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City of Creve Coeur
Building Division

When a Permit is Needed

The permit process is one of the most important parts of the building code and often the most misunderstood by homeowners, building owners and property managers. Requiring permits and inspections is the only way a building department can ensure alterations to a building, meet *minimum* requirements for safety, health and energy conservation. Performing work that does not meet these basic requirements could become an unfortunate and expensive disclosure issue for owners and can compromise needed coverage from their home and building insurance carrier. Ensuring the safety of our homes and businesses should be a priority for everyone.

The following projects require a city permit:

- Basement Finish
- Bathroom Remodel
- Carport Conversion
- Commercial Alteration
- Commercial Building Door Hardware
- Commercial Signs
- Commercial Tenant Finish
- Deck/Balcony/Porch (Even If Only Decking or Guardrails Are Being Replaced)
- Driveway Apron Replacement
- Emergency Generators
- Fences
- Fire/Water Damage Repair
- Fireplaces (Indoor or Outdoor)
- Foundation Repair
- Furnace/AC Equipment Replacement (Installed by a St. Louis County Licensed Mechanical Contractor)
- Garage Addition
- Gazebo/Pergola
- Grading, Filling or Excavating an Area 2,000 Square Feet or Greater
- Hot Tub
- House Demolition
- Interior Construction
- Kitchen Remodel (depends on project scope)
- New Commercial Building
- New Home
- New Stairs (Interior or Exterior)
- Outdoor Fire pits
- Outdoor Sports Court
- Patios That Include Exterior Stairs or Outdoor Fireplaces
- Pool House / Cabana
- Radon Mitigation
- Re-Roofing Commercial Buildings
- Retaining Walls over 48" height
- Room Addition
- Skylights
- Solar Panel Systems
- Sump Pump Pit & Drain Tile
- Permanent Swimming Pool (New)
- Permanent Swimming Pool (Repairs)
- Swimming Pool Demolition
- On-ground Storable Swimming Pool (deeper than 24")
- Utility Shed

NOTE: All remodeling in multi-story, multi-family buildings (condominiums and apartment buildings) requires a Building Permit to be issued by the City. The City wants to ensure that this remodeling will not void the 1 hour fire resistance rating of floors, ceilings and walls that are required to separate one dwelling unit from another.

Draft

The following projects do *not* require a city permit:

- Children's play structures
- Guttering & downspouts
- Install siding (unless wall studs or sheathing are damaged)
- Landscaping
- Minor repairs or drywall patching
- Paint house
- Political signs
- Re-roofing homes and townhomes (unless rafters or trusses are damaged)
- Tuck pointing exterior masonry veneers
- Replacement of windows or doors on existing structures without opening modifications.
- Replacement of cabinets or countertops in same location when project does not include any framing, electric or plumbing work

NOTE: St. Louis County will need to issue an ELECTRICAL PERMIT or a PLUMBING PERMIT to a licensed electrician or licensed plumber for any new electrical or plumbing work, including but not limited to:

- New electrical service panel
- New electrical boxes and wiring
- Replace water heater
- Low-voltage home security system
- Adding new circuits
- Resetting/relocating plumbing fixtures
- Lawn Irrigation System
- Replacement or rearrangement of supply pipes, waste pipes, soil pipes or vent pipes

Important Note:

These lists are *not* all inclusive. For questions about when you may need a building permit:
Please contact the Creve Coeur Building Division at (314) 872-2500

Please contact the St. Louis County Department of Public Works for any questions regarding:
Electrical Permit (314) 615-7082
Plumbing Permit (314) 615-7137

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City Council Presentation

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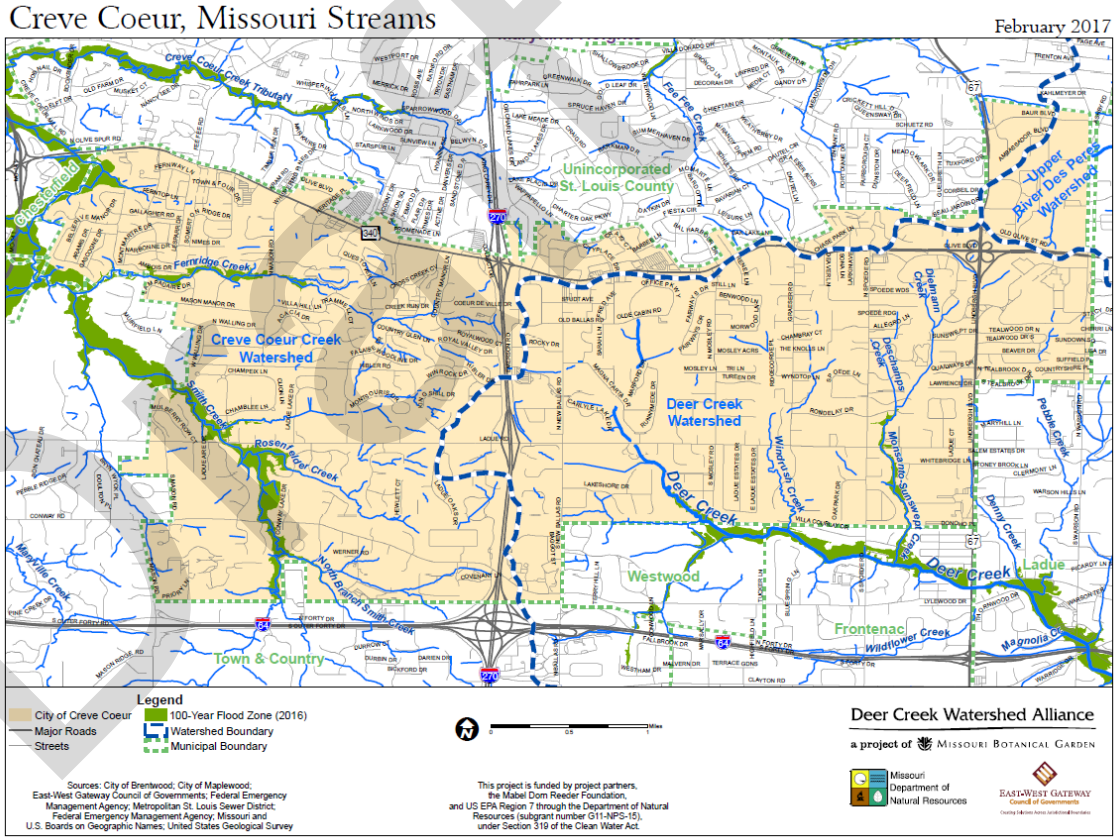
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INTUITION & LOGIC EDM AM:PM

Watershed Master Planning

- City Planning Effort
- Previous Efforts
  - 1999 Stormwater Evaluation Report
  - 2010 Stormwater Questionnaire
  - 2012 Stormwater Master Plan Update
- Overall Goals
  - Updated Master Plan
  - Integrate Public Input
  - Develop Prioritization Ranking Methodology



Watershed Management Plan

Goals & Objectives

Goal - Develop planning tools and capital improvement projects to address water quality, stream stability, and stormwater infrastructure and drainage issues.

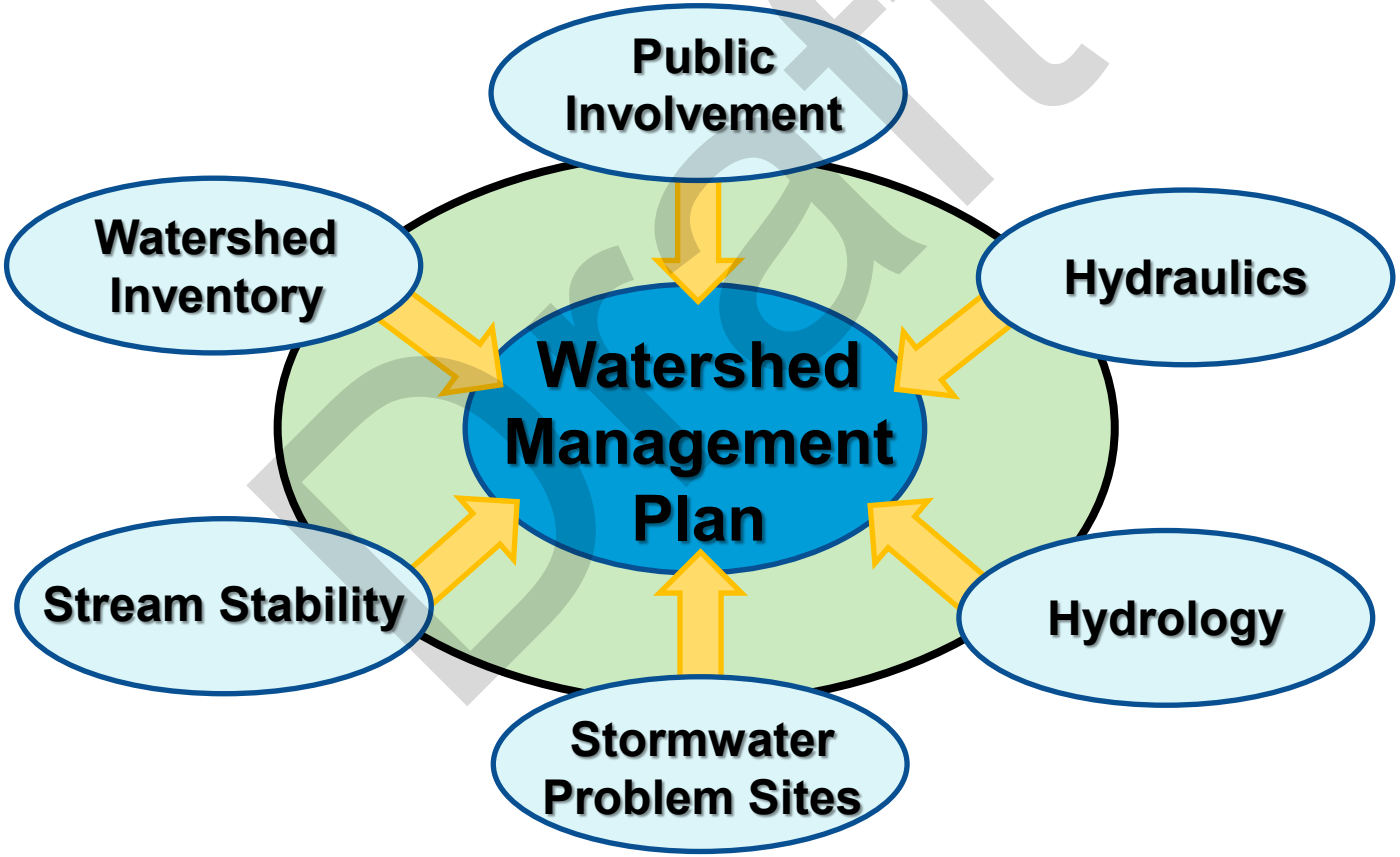
Study Objectives

- Maintain a proactive public involvement process
- Identify needed Capital Improvement Projects (CIPs) for stormwater issues
- Quantify existing hydrologic and hydraulic data
- Map stream corridors
- Evaluate stormwater problem sites
- Develop prioritization ranking method
- Develop software to assist the City in planning and budgeting for projects to maximize benefit of City residents throughout the five-year planning timeframes of the Capital Improvement Program (CIP)

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Watershed Management Plan

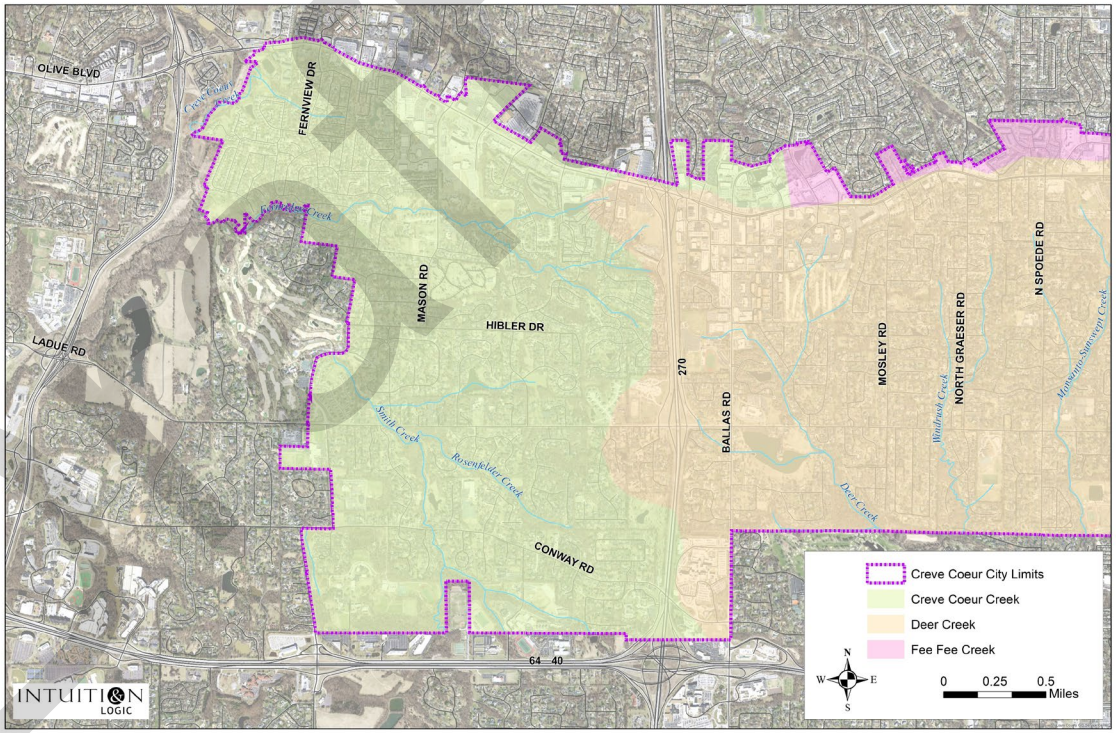
Major Study Components



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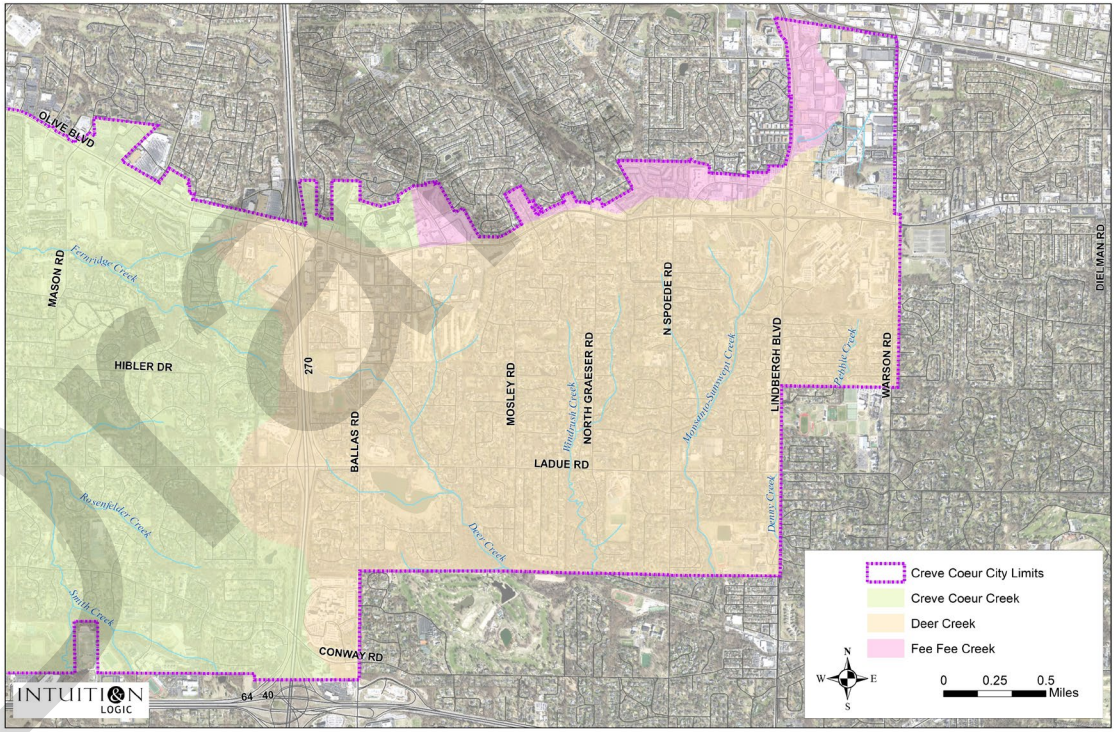
Creve Coeur Creek Watershed Study Area

- 27 Square Miles Watershed
- 4.4 Square Miles Channel Condition Assessment Study Area



Deer Creek Watershed Study Area

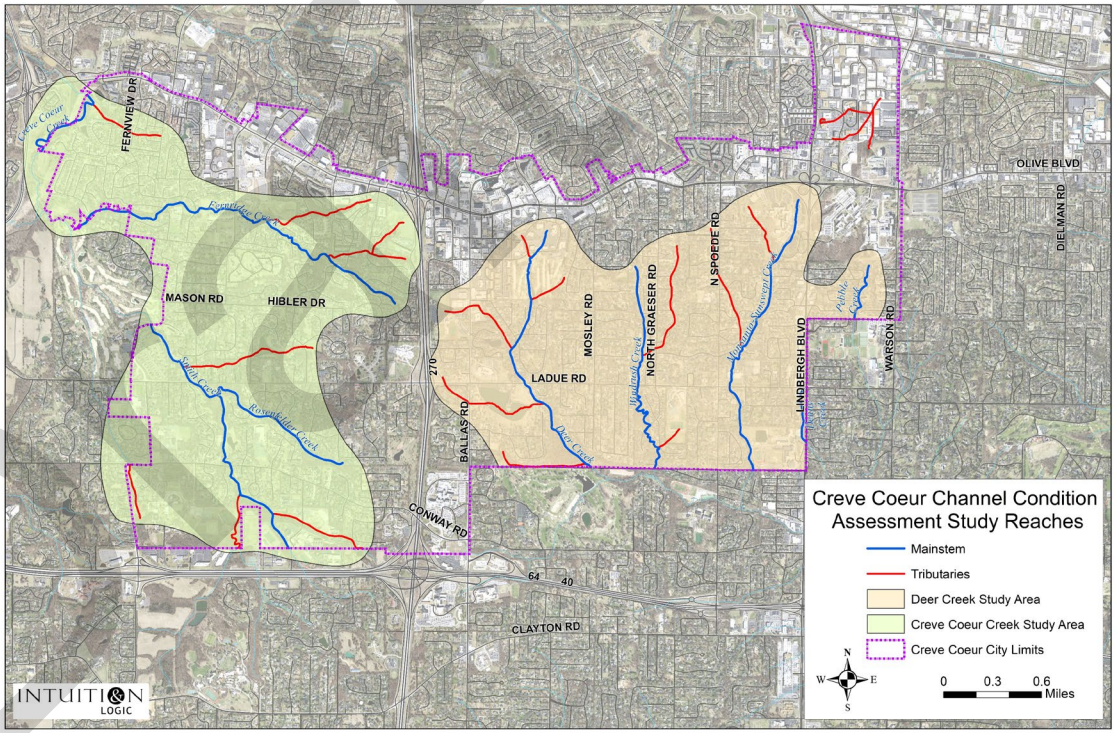
- 37.7 Square Miles Watershed
- 5.1 Square Miles Channel Condition Assessment Study Area



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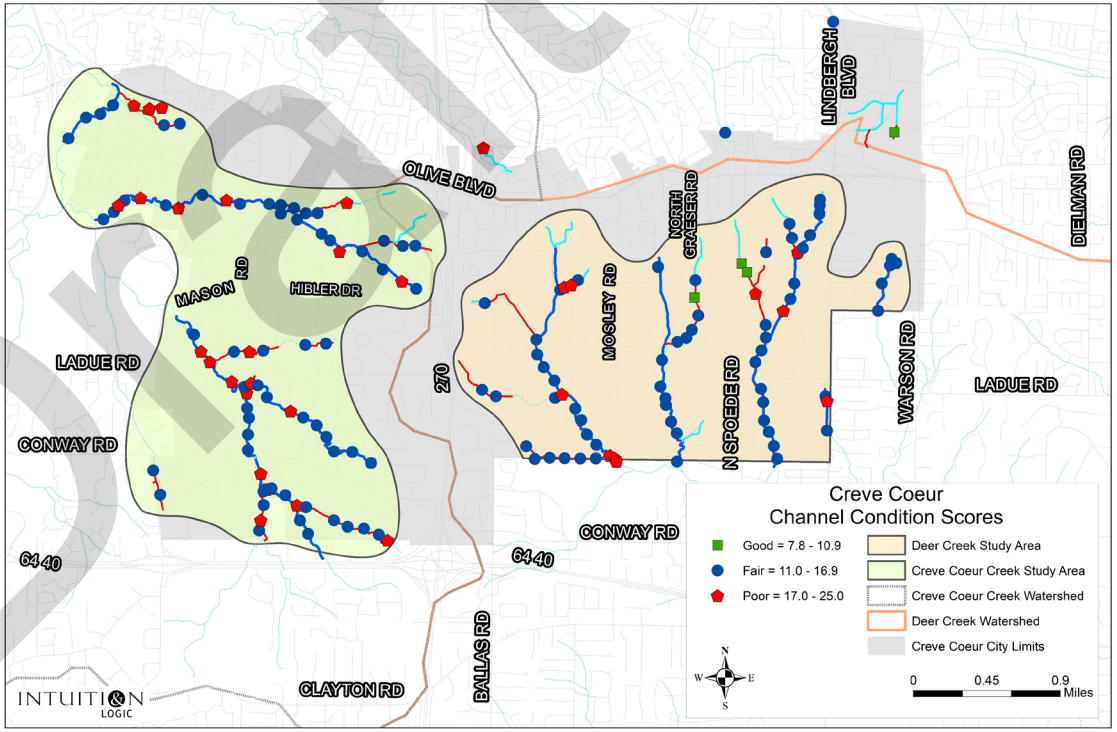
Channel Condition Assessment

- 9.5 Square Miles Study Area
- Over 20 miles of stream field observation
  - Creve Coeur Creek
  - Fernridge Creek
  - Smith Creek
  - Rosenfelder Creek
  - Deer Creek
  - Windrush Creek
  - Monsanto-Sunswept Creek
  - Pebble Creek
  - Denny Creek



Channel Condition Assessment Results

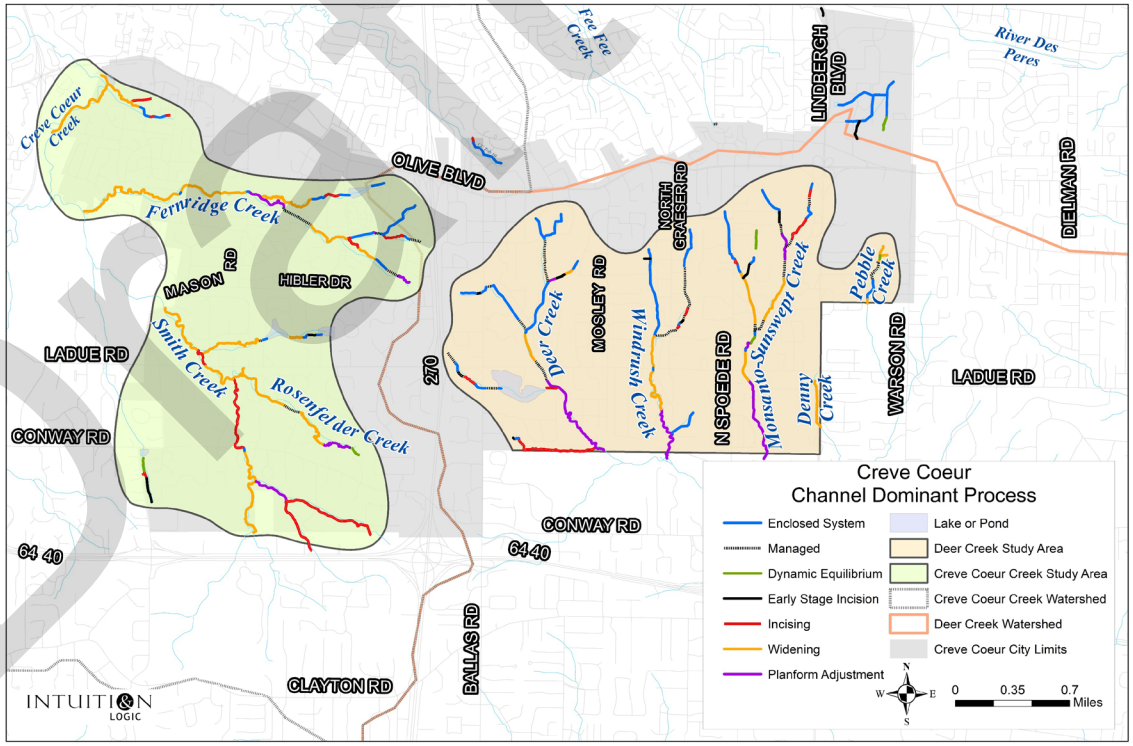
- 159 Total Channel Condition Data Points Taken
- 77 Points in the Deer Creek Watershed
  - Average Channel Condition Score of 14.1 (Fair)
- 82 Points in the Creve Coeur Creek Watershed
  - Average Channel Condition Score of 15.5 (Fair)



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Channel Dominant Process Results

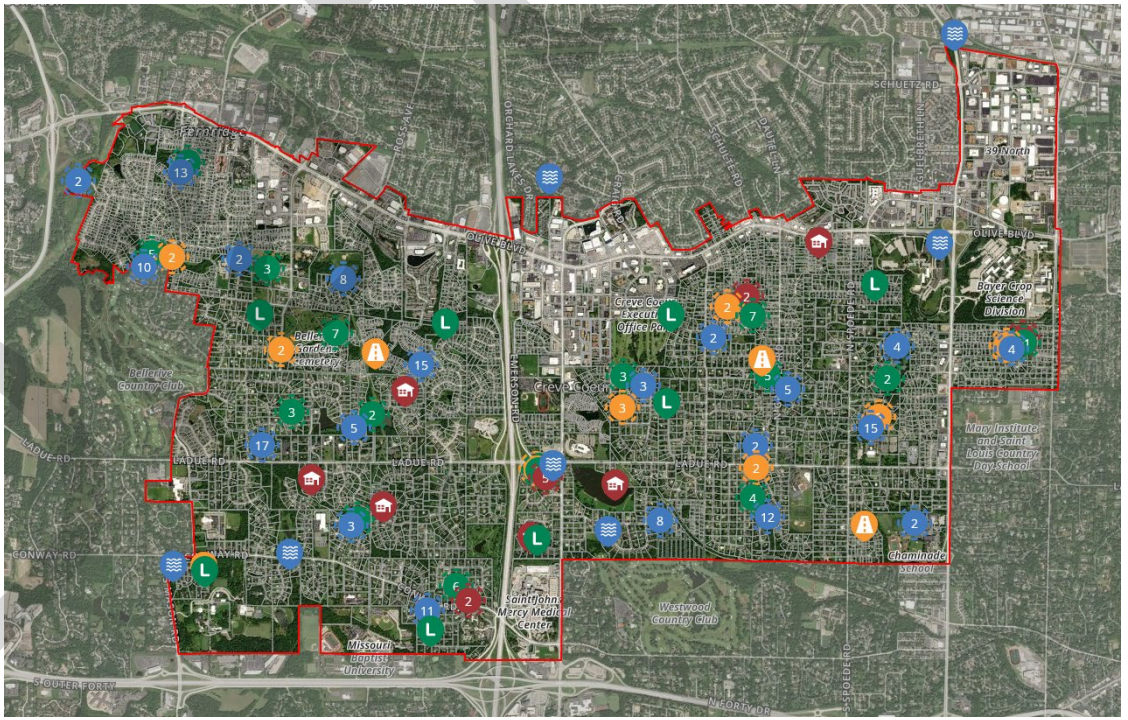
- Deer Creek Watershed
  - 29 Mainstem Reaches
  - 32 Tributary Reaches
  - Mainly Widening with some Planform Adjustment at the downstream limits
- Creve Coeur Creek Watershed
  - 24 Mainstem Reaches
  - 25 Tributary Reaches
  - Mainly Widening



Draft

Stormwater Problem Site Investigation

- Based on past problems received by the City and online survey responses
- Thank you for all for participating in the online survey!! A total of 172 responses were received
  - 23 Home Flooding
  - 73 Property Flooding
  - 52 Streambank Erosion
  - 24 Street Flooding

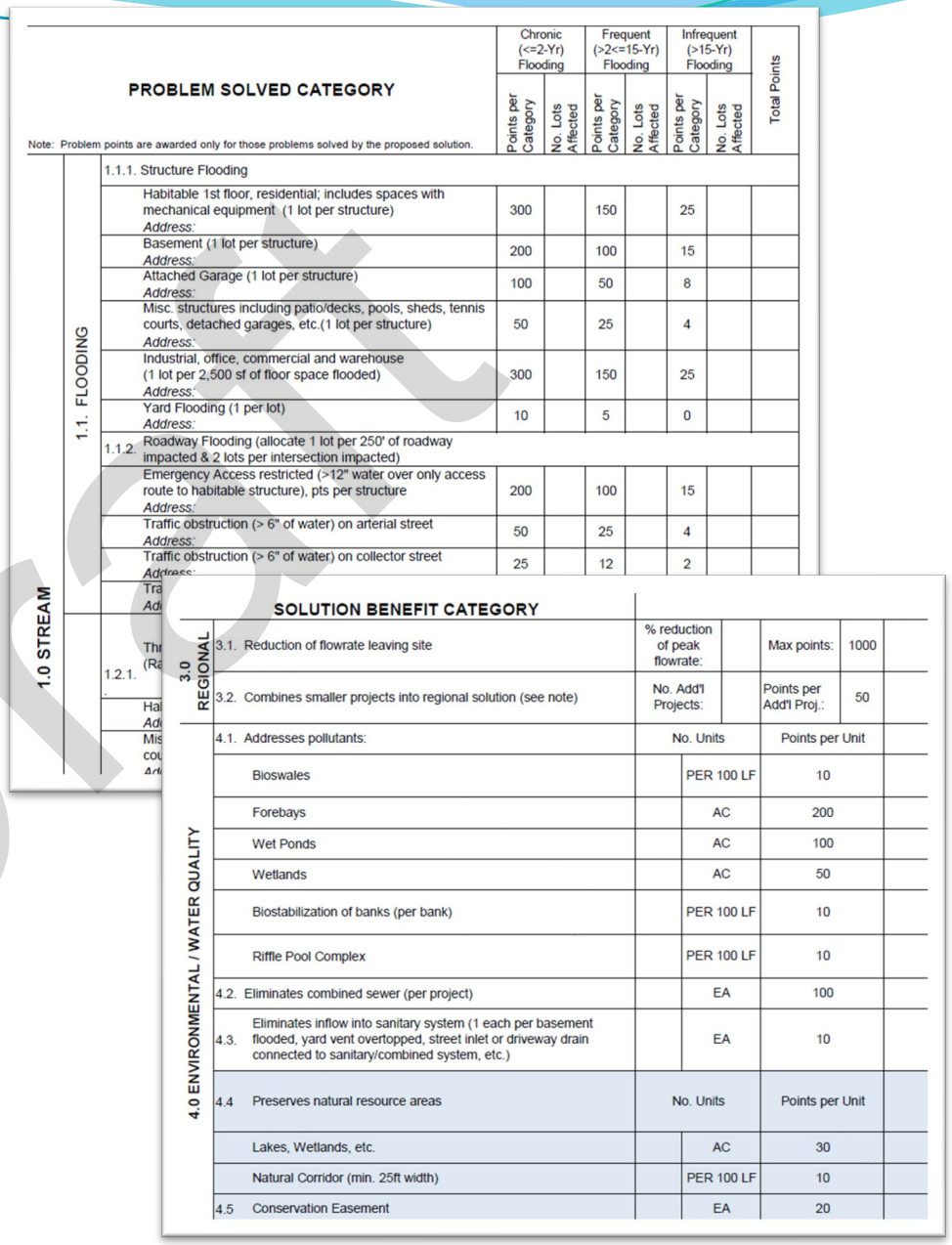


- Stormwater problem sites and field identified issues were grouped into 129 potential problem areas

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Prioritization Ranking Methodology

- Problem Solved Categories
  - Stream Flooding and Erosion
  - Storm Sewer/Overland Flow Flooding, Erosion, and Condition
- Solution Benefit Categories
  - Regional
  - Environmental/Water Quality
  - Ease of Implementation
  - Recreational/Educational Use
- Benefit/Cost Ratio



PROBLEM SOLVED CATEGORY

Note: Problem points are awarded only for those problems solved by the proposed solution.

		Chronic (<=2-Yr) Flooding		Frequent (>2<=15-Yr) Flooding		Infrequent (>15-Yr) Flooding		Total Points
		Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	Points per Category	No. Lots Affected	
1.0 STREAM / 1.1. FLOODING	1.1.1. Structure Flooding							
	Habitable 1st floor, residential; includes spaces with mechanical equipment (1 lot per structure) *Address:*	300		150		25		
	Basement (1 lot per structure) *Address:*	200		100		15		
	Attached Garage (1 lot per structure) *Address:*	100		50		8		
	Misc. structures including patio/decks, pools, sheds, tennis courts, detached garages, etc.(1 lot per structure) *Address:*	50		25		4		
	Industrial, office, commercial and warehouse (1 lot per 2,500 sf of floor space flooded) *Address:*	300		150		25		
	Yard Flooding (1 per lot) *Address:*	10		5		0		
	1.1.2. Roadway Flooding (allocate 1 lot per 250' of roadway impacted & 2 lots per intersection impacted)							
	Emergency Access restricted (>12" water over only access route to habitable structure), pts per structure *Address:*	200		100		15		
	Traffic obstruction (> 6" of water) on arterial street *Address:*	50		25		4		
	Traffic obstruction (> 6" of water) on collector street *Address:*	25		12		2		
	Tra… *Ad…*							
	1.2.1. Thr… (Ra…							
	Hal… *Ad…*							
	Mis… cou… *Ad…*							

SOLUTION BENEFIT CATEGORY

3.0 REGIONAL	3.1. Reduction of flowrate leaving site	% reduction of peak flowrate:		Max points:	1000
	3.2. Combines smaller projects into regional solution (see note)	No. Add'l Projects:		Points per Add'l Proj.:	50
4.0 ENVIRONMENTAL / WATER QUALITY	4.1. Addresses pollutants:	No. Units		Points per Unit	
	Bioswales		PER 100 LF	10	
	Forebays		AC	200	
	Wet Ponds		AC	100	
	Wetlands		AC	50	
	Biostabilization of banks (per bank)		PER 100 LF	10	
	Riffle Pool Complex		PER 100 LF	10	
	4.2. Eliminates combined sewer (per project)		EA	100	
	4.3. Eliminates inflow into sanitary system (1 each per basement flooded, yard vent overtopped, street inlet or driveway drain connected to sanitary/combined system, etc.)		EA	10	
	4.4 Preserves natural resource areas	No. Units		Points per Unit	
	Lakes, Wetlands, etc.		AC	30	
	Natural Corridor (min. 25ft width)		PER 100 LF	10	
	4.5 Conservation Easement		EA	20	

Draft

Prioritization Ranking System & Guidance Document

Based on MSD's ranking system

I&L made slight modifications for Creve Coeur including:

- Changing the lengths on item 1.2.3 to allow more points for critical road sections
- Expanding item 1.2.3 to more directly account for erosion threats to roadways and bridges
- Added 1.2.4 for threats to Natural Resources
- Modified 2.4 from Age to condition of existing system (pipes, culverts, etc.)
- Added 4.4 for preservation of Natural Resources
- Added 4.5 for Conservation Easements

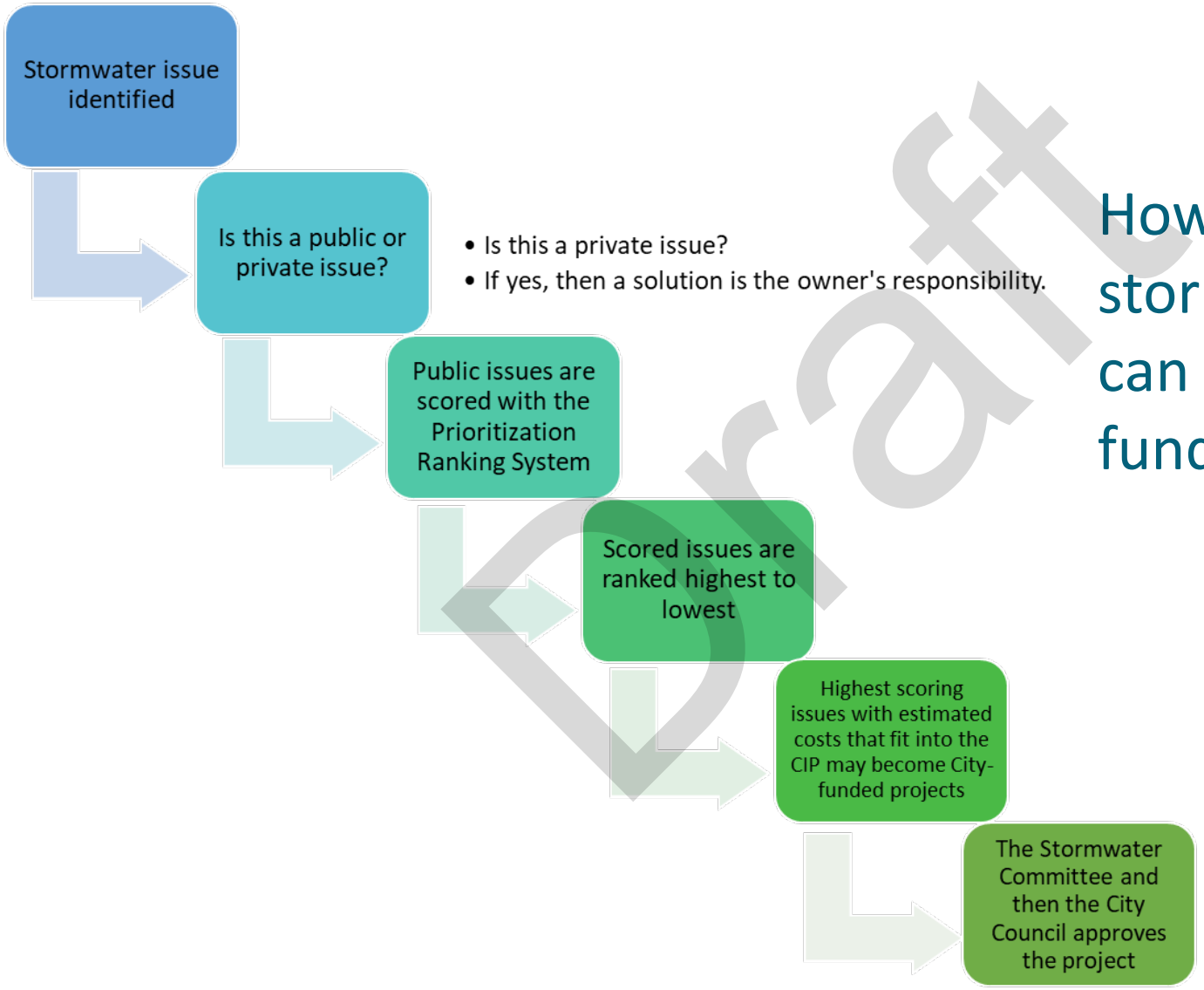
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Potential Projects

- City Project Criteria will determine what problem areas are eligible.
- Not every City identified issue will result in a City-funded project
- After the Watershed Management Plan is completed in January, new stormwater issues may develop. The City will then rank these newly identified issues using the same methodology, and these new issues may score higher than previously identified issues.
- Projects need to be approved by the Stormwater Committee and the City Council before receiving City funding. Being at the top of the ranking list alone does not guarantee the issue will be addressed by a City-funded solution.

Draft

How identified stormwater issues can become City-funded projects



Draft

Criteria for public funding consideration

If an identified issue checks one or more of the boxes, then the project might will be scored with the Prioritization Ranking System.

Is a stormwater issue public or private?	
If one or more boxes are checked, then a publicly-funded solution might be considered	
Would it be an unreasonable burden or unreasonably difficult for the homeowner to solve the issue?	☐ Check for yes
Does the stormwater issue threaten public or private structures?	☐ Check for yes
Does the stormwater issue threaten public or private roadways?	☐ Check for yes
Does the stormwater issue threaten public infrastructure or publicly-funded improvements?	☐ Check for yes
Is the issue caused by an undersized stormwater conveyance infrastructure?	☐ Check for yes
Does the proposed project address regional or systematic channel instability?	☐ Check for yes
Would a solution protect water quality or natural resources?	☐ Check for yes
Was the issue caused by altered upstream conditions?	☐ Check for yes
Was the issue caused by inadequate system design under previously less restrictive development or redevelopment regulations?	☐ Check for yes
Was the issue caused by inadequate maintenance of a public system?	☐ Check for yes
Will the project improve public safety?	☐ Check for yes
Has the stormwater issue been identified as a monitor project?	☐ Check for yes
Is the focus of the project utility work?	☐ Check for no
Does the work focus on privately-owned infrastructure?	☐ Check for no

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Next Steps

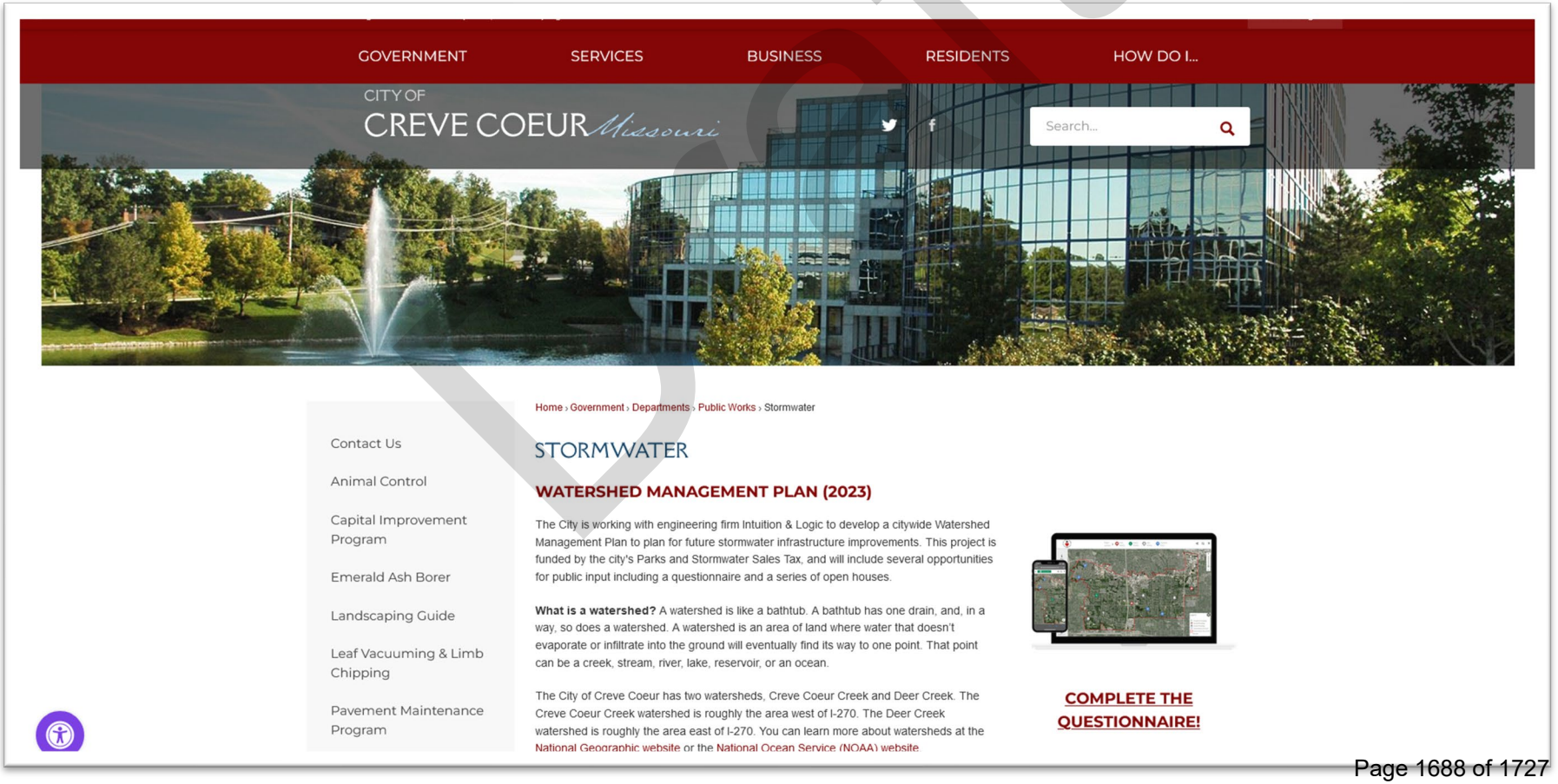
- Complete Development of Project Criteria.
- Evaluate potential problem areas using the City's criteria for stormwater project eligibility.
- For each project, conceptual designs will be developed and the projects will be ranked using the prioritization ranking methodology.
- CIP planning software will be developed to assist the City in future planning and budgeting for projects.
- Open House #3 will present the identified Capital Improvement Projects! We hope you join us!

Draft

Watershed Management Plan

Project Websites

https://www.crevecoeurmo.gov/stormwater

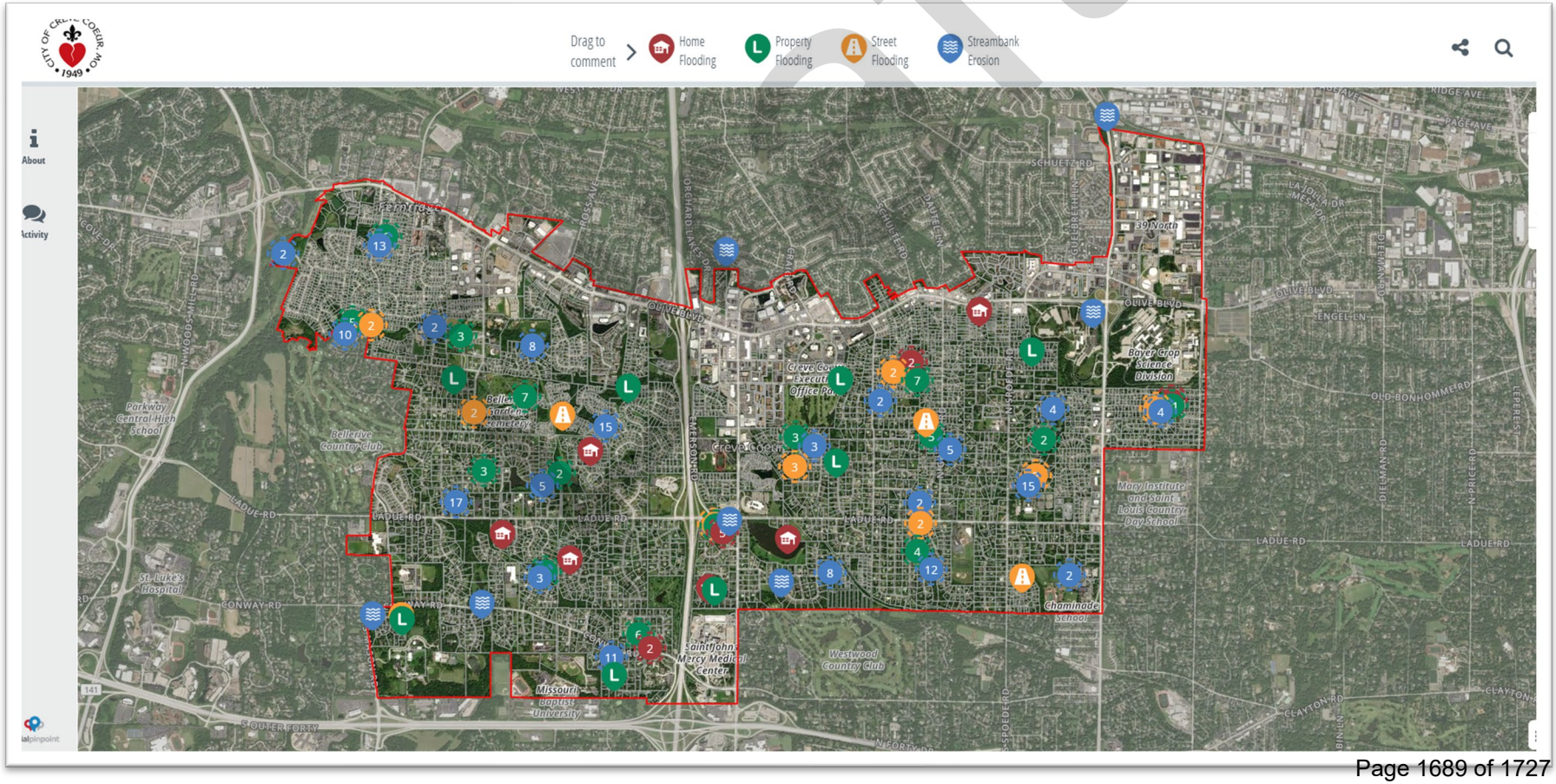


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Watershed Management Plan

Project Websites

https://ampm.mysocialpinpoint.com/creve-coeur-storm-water-master-plan#/



RESOLUTION NO. 1717

A RESOLUTION TO AMEND RESOLUTION NOS. 907, 992, and 1498 ADOPTING THE CITIZEN'S GUIDE TO ADVISORY BOARDS, COMMISSIONS AND COMMITTEES FOR THE CITY OF CREVE COEUR.

WHEREAS, the Citizen's Guide to Advisory Boards, Commissions and Committees should accurately reflect the roles of elected and appointed officials and staff and should be amended to reflect any recent changes, and

WHEREAS, staff has suggested updates and reformatting of the document to assure the information is current,

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CREVE COEUR, MISSOUR, AS FOLLOWS:

SECTION 1: The City Council hereby amends the Citizen's Guide to Advisory Boards, Commissions and Committees, and adopts the amended version which is attached hereto and incorporated as a part of this resolution as Exhibit A.

SECTION 2: This resolution shall take effect immediately upon its adoption.

ADOPTED THIS 8th DAY OF MARCH 2024.

_____
DR. ROBERT HOFFMAN
MAYOR

ATTEST:

_____
KELLIE HENKE
CITY CLERK

A Citizen's Guide to Advisory Boards, Commissions and Committees



City of Creve Coeur
300 N. New Ballas Road
Creve Coeur, Missouri 63141

Adopted Resolution No. 907 on April 8, 2010
Amended Resolution No. 992 on January 23, 2012
Amended Resolution No. 1498 on July 27, 2020
Amended Resolution No. XXXX on Month, Day, 2024

The information outlined in this document is for descriptive purposes only and is not intended to supersede or substitute for any legal provisions in the City Charter or Code of the City of Creve Coeur. In all cases, the reader should note that provisions of the City Charter and legislative actions of the City Council shall prevail and be binding.

TABLE OF CONTENTS

PREFACE

APPOINTED CITIZEN BOARDS, COMMISSIONS AND COMMITTEES – AN OVERVIEW 4

THE ROLE OF A BOARD, COMMISSION OR COMMITTEE 5

SUPPORT OF BOARD, COMMISSION OR COMMITTEE ACTIVITIES 6
ROLE OF THE COUNCIL LIAISON 6
ROLE OF THE STAFF LIAISON 6
ROLE OF THE MAYOR 7
ROLE OF THE CITY ATTORNEY 7
ROLE OF THE CHAIRPERSON 7

FOR THE RECORD . . . 8
MISSOURI STATE SUNSHINE LAW 8
POSTING OF MEETING NOTICES AND AGENDAS 8
MINUTES 8
BIENNIAL TRAINING 8
ATTENDANCE – DETERMINATION OF A QUORUM 9
PUBLIC ACCESSIBILITY AND ACCOMMODATION OF SPECIAL NEEDS 9

A MATTER OF ETHICS 10
CONFLICTS OF INTEREST 10
MISSOURI STATE ETHICS COMMISSION 10
ADVISORY OPINIONS 10

THE BOARDS, COMMISSIONS AND COMMITTEES – DUTIES AND RESPONSIBILITIES 11
ARTS COMMITTEE 11
AUDIT COMMITTEE 12
BOARD OF ADJUSTMENT 13
BUILDING CODE BOARD OF APPEALS 14
ECONOMIC DEVELOPMENT COMMITTEE 15
ENERGY AND ENVIRONMENT COMMITTEE 16
FINANCE COMMITTEE 17
HORTICULTURE, ECOLOGY AND BEAUTIFICATION COMMITTEE 18
PARKS AND HISTORIC PRESERVATION COMMITTEE 19
PERSONNEL APPEALS BOARD 20
PLANNING AND ZONING COMMISSION 21
POLICE AND SAFETY COMMITTEE 22
STORMWATER COMMITTEE 23

APPOINTED CITIZEN BOARDS, COMMISSIONS AND COMMITTEES– AN OVERVIEW

The City of Creve Coeur is served by a number of citizens as members of boards, commissions and committees. Each board, commission or committee exists to provide the Mayor, City Council, and staff members with needed insight into areas of citizen interest or concern. Boards, commissions and committees are intended to make recommendations to the elected officials. All legislative authority is vested in the City Council. The City Council is prohibited by law from delegating its legislative duties to a board, commission or committee.

ADVISORY BODY	# OF MEMBERS
Arts Committee	7 - 9 members
Audit Committee	5 members
Board of Adjustment	5 members & 3 alternates
Building Code Board of Appeals	5 members
Economic Development Committee	7 - 9 members
Energy and Environment Committee	7 - 9 members
Finance Committee	7 - 9 members
Horticulture, Ecology and Beautification Committee	7 - 9 members
Parks and Historic Preservation Committee	7 - 9 members
Personnel Appeals Board	5 members & 2 alternates
Planning and Zoning Commission	7 members
Police and Safety Committee	7 - 9 members
Stormwater Committee	7 - 9 members

THE ROLE OF A BOARD, COMMISSION OR COMMITTEE MEMBER

A member of a City board, commission or committee serves an important role in community life. The input of the members helps shape the policies under which the City operates.

In general, boards and commissions have some degree of final authority assigned to them by law or ordinance, whereas committees and task forces function strictly as advisory bodies. However, each entity shall have the authority assigned to it.

Pursuant to the City Charter, all board, commission and committee members are nominated for appointment by a three-person nominating committee. This committee is made up of the Mayor, Council President, and the chairperson of the respective board, commission or committee. In the event the term of the chairperson has expired, the vice chairperson, or if none, a designated member elected by a majority vote of the board, commission or committee serves on the nominating committee in the chairperson's place. The nominating committee recommends its selections to the City Council. The City Council votes to confirm all appointments.

By accepting a position on a board, commission or committee, members agree to:

- Review the meeting material as distributed by the staff liaison so that they are prepared to participate in the meeting.
- Attend as many meetings as possible and no less than 50 percent of all scheduled meetings each year.
- Attend biennial ethics training as scheduled by the City.

Each board, commission or committee shall meet at least annually. Each board, commission or committee shall also elect a chairperson and a vice chairperson on an annual basis (except for Planning and Zoning Commission, whose chairperson is appointed by the Mayor with the consent of the City Council). The chairperson shall have a limit of three (3) consecutive years for any one member.

The Mayor shall appoint a Council member, subject to the consent of a majority of the entire City Council, to serve as liaison for each board, commission or committee of the City with the exception of the Board of Adjustment, the Planning and Zoning Commission, and the Personnel Appeals Board. The appointed Council member shall be the liaison between the City Council and such board, commission or committee. The staff liaison of the Police and Safety Committee shall be the Chief of Police or their designee. The Director of Community Development shall serve as liaison to the Board of Adjustment and the Planning and Zoning Commission. The City Administrator shall appoint staff liaisons for all other boards, committees and commissions.

TERMS

The limit of tenure on all boards, commissions and committees (excluding the Board of Adjustment) is three (3) consecutive, three (3) year terms for a total of nine (9) years. (Regardless of tenure, each board, commission or committee member shall serve until their successor is appointed.) Terms expire on June 30 of the appropriate year.

SUPPORT OF BOARD, COMMISSION OR COMMITTEE ACTIVITIES

Role of the Chairperson

Each board, commission and committee, except the Planning and Zoning Commission (whose chairperson is appointed by Mayor with consent of the City Council), shall annually elect a chairperson and a vice chairperson who shall each serve for a term of one year. No person shall serve as a chairperson for more than three consecutive years.

The role of the chairperson is to:

- Call meetings to order and to chairperson meetings.
- Coordinate with the Mayor and City Council on the City's needs, policies and interests and to communicate them to the members of the board, commission or committee.
- Coordinate with the staff liaison, and through that individual with other members of the City staff, on matters requiring the attention of the staff.
- Serve as the third member of the Nominating Committee with the Mayor and Council President to select and recommend to Council the appointment of new members or reappointment of existing members to serve on the board, commission or committee when terms expire, or vacancies occur.

Role of the Council Liaison

The Mayor appoints one member of the City Council to each board, commission or committee as a non-voting council liaison, subject to the consent of the majority of the City Council, with the exception of Planning and Zoning and Board of Adjustment and the Personnel Appeals Board. Council liaisons do not count toward a quorum. The role of the council liaison is to communicate the City Council's needs, policies and interests to the members of the board, commission or committee and to communicate back to the City Council the recommendations made, and discussions held by the board, commission or committee. This ensures thorough communication between the elected officials and the members of the boards, commissions or committees.

Role of the Staff Liaison

Each board, commission and committee are assigned a staff liaison as provided above. Staff liaisons are members of the administrative staff and have knowledge and expertise in the functional area in which the board, committee or commission is involved. The staff liaison is a non-voting member of the board, commission or committee and does not count toward a quorum.

The staff liaison serves to:

- Provide research and information to help members formulate their recommendations to the Mayor and City Council.
- Coordinate and schedule meeting times, dates and locations.
- Coordinate with the chairperson on the various activities of the board, commission or committee.
- Provide continuity by maintaining complete files of the board, commission or committee and provide access to these records upon request by any member, City official, employee or members of the public.
- Annually review with the board, commission or committee Sunshine Law requirements pertaining to open meetings, minutes, agenda posting, etc., and ensure proper procedure is followed.

- Develop the agenda in collaboration with the chairperson, ensure agenda is posted in accordance with the Sunshine Law requirements and post the meeting schedule on the City's webpage calendar.
- Post agendas and meeting minutes to the city's automated agenda management system on a timely basis.
- Advise the City Administrator of the activities of the board, commission or committee, and ensure thorough communication between the administrative staff, the members of the boards, commission or committee and the Mayor and City Council.
- Schedule, in conjunction with the chairperson, no less than one (1) meeting per year.

Role of the Mayor

The Mayor serves as an ex-officio non-voting member of all boards, commissions and committees [Municipal Code Sec. 125.010 (c)]. In order to effectively carry out the duties of the office, the Mayor may attend the meetings of any board, commission or committee and participate in a discussion with the members.

Role of the City Attorney

The City Attorney is the legal counsel to the Mayor, City Council, City Administrator, employees, and the boards, commissions and committees of the City. The City Attorney reports to the City Administrator. Members of any board, commission or committee who desire the advice of the City Attorney on a matter before the board, commission or committee should coordinate such a request through the staff liaison.

FOR THE RECORD . . .

Missouri State Sunshine Law

All boards, commissions or committees of the City of Creve Coeur are subject to the provisions of the Missouri Open Meetings and Records Law (known as the Sunshine Law).

Posting of Meeting Notices and Agendas

Notices of meetings are required to be posted at least 24 hours in advance of the meeting, *exclusive of weekends and holidays*. (In an emergency situation, subject to State Statutes, less than 24 hours of notice is acceptable—subject to the approval of the City Clerk.) The main bulletin board in the front lobby of the Creve Coeur Government Center is the official posting location. The City Clerk is responsible for the contents of this bulletin board and works with the staff liaisons to ensure posting requirements are met. The meeting calendar is also printed in the newsletter and posted on the City's website.

In addition to the meeting notice, the Sunshine law and City policy requires that an agenda be developed and posted for the meeting containing the items of business to be discussed. The staff liaison works with the chairperson to develop this agenda. The agenda may be brief and simply contain a listing of the items to be discussed.

Minutes

Minutes of all board, commission and committee meetings will be taken and, at a minimum, will contain the following information:

- The meeting date, the time the meeting convened and the meeting place.
- The calling to order by the chairperson.
- The roll call, including a recording of the names of the members present and absent.
- A listing of staff members in attendance.
- A brief summary of the discussion and any motions made and voted upon by the members.
- The vote taken by a board, commission or committee on a motion; if a roll call vote is taken, the ayes and nays shall be attributed to each member voting, or if not voting, the abstention.
- Next meeting dates, times and locations, if determined.
- The time of adjournment.
- The name of the individual taking the minutes.

Minutes should be approved by the board, commission or committee at the next regularly scheduled meeting. The department with the operational responsibility for the board, commission or committee's primary function typically maintains the board, commission or committee's file, including the minutes and other work papers, subject to supervision by the City Clerk.

Biennial Training

In an effort to improve communication about committee roles and responsibilities of members, staff and the City Attorney will provide biennial training to committee members regarding ethics and other pertinent topics. On request, the City Attorney may also provide training on Robert's Rules of Order; public meeting requirements; effective meeting etiquette; and understanding the role and responsibilities of the chairperson, vice chairperson, staff liaison and council liaison.

Attendance – Determination of a Quorum

In order to conduct business, the board, commission or committee must have a quorum. A quorum is a simple majority (half of the regular members plus one). The chairperson is considered a member in the determination of a quorum. A quorum is generally calculated out of the total number of seats on a board, commission, committee, or task force, not out of the number of seats currently filled. For example, if the committee has eight (8) members and two (2) vacancies, the quorum is counted out of eight (8) members, not six (6). However, for those bodies with flexible membership, described as “up to” a certain number, a quorum is determined based on the greater of the minimum membership and the current number of appointed members. The Mayor, Council, and staff liaisons do not count toward a quorum. In the event a quorum is not obtained, discussion can occur but no official business or votes may be conducted. Should late arrivals result in a quorum being reached, official business may be conducted.

Board, commission and committee members are expected to attend no less than 50% of scheduled meetings each year. Unless otherwise provided by law or ordinance, a board, commission or committee member may be removed by the same process as they were appointed.

In 2020, Council passed Ordinance No. 5688 regarding permitting the use of videoconferencing and telephonic technology by City boards, commissions and committees in cases of emergency, in order to conduct City business for the benefit of the public.

Public Accessibility and Accommodation of Special Needs

The Missouri Sunshine Law requires that all meetings be held in a location that allows for public attendance. Individuals with special needs are encouraged by City policy to communicate their needs to the Office of the City Administrator in advance of any meeting so that the proper accommodations can be made, if any are required, for the individual to participate in the meeting.

In the event an individual with a special disability attends a meeting without advance notice of the need to provide an accommodation, the chairperson shall, absent an impending deadline for action, make reasonable effort to postpone and reschedule the item of business for which the individual is attending the meeting until arrangements can be made to satisfy the need(s) of the person.

A MATTER OF ETHICS

Conflicts of Interest

A code of ethics was adopted by Ordinance No. 1235, on July 27, 1987 (restated as Ordinance No. 3035 on January 24, 2005). Contained in Chapter 130, the code sets forth the ethical standards of conduct expected by the elected and appointed officials and the employees of the City. Further, the City Charter contains a conflict-of-interest provision set forth in Section 14.1, Personal Financial Interest. These materials are available on the City website.

Each member of a board, commission or committee of the City is required by ordinance to attend ethics training. The City of Creve Coeur will schedule ethics training for their employees and all board, commission and committee members biennially. Each appointed official is also required to read a copy of the City's code of ethics and to sign a statement indicating that he or she has received and read the material. The City Clerk maintains these statements.

Missouri State Ethics Commission

In 1992, the Missouri State Legislature passed ethics legislation creating a Missouri State Ethics Commission. Creve Coeur elected officials, appointed officials and employees are subject to the provisions of the state law. The state statutes have been incorporated into the City's Ethics Code by reference. Certain City officials are required to submit to the Missouri Ethics Commission, each year prior to May 1, a Statement of Personal Financial Interest covering the preceding 12 months. Currently, this includes the Mayor, City Council, City Administrator, Finance Director, candidates for elected office, and Planning and Zoning Commission and Board of Adjustment members.

Advisory Opinions

The City Attorney is authorized to issue advisory opinions to elected and appointed officials upon request in an attempt to ascertain whether the ethics code is applicable in a given situation.

THE BOARDS, COMMISSIONS AND COMMITTEES– DUTIES AND RESPONSIBILITIES

ARTS COMMITTEE

On August 24, 2009, the City of Creve Coeur established the Public Art Task Force. In 2011, the Public Art Task Force completed its assignment and was dissolved by Ordinance No. 5216 and replaced by the Arts Commission. In 2014, Ordinance 5391 was approved and changed the name from Arts Commission to Arts Committee and allowed the membership of the committee to range from seven (7) to nine (9) members. The responsibilities of the committee include:

- Adopting a final master plan for the City regarding public art, which it shall review and revise as needed thereafter, and implement subject to the oversight of the City Council and City Administrator;
- Promoting cultural arts within the City, making art a priority within the community;
- Serving as curator of the City's public art collection;
- Assisting the City Council and the Planning and Zoning Commission in using public art to enhance existing development within public parks and other public lands and in public structures;
- Serving as a resource for artistic components of land use developments;
- Providing advice on the process of developing fair, balanced and professional approaches to commissioning public art;
- Recommending selection process guidelines to ensure equal access for artists of all backgrounds;
- Developing announcements for placement in appropriate publications to inform artists of opportunities;
- Choosing a Selection Panel for each project, comprised of 5-7 art and design professionals as well as a representative of the owner of the project. Two members of the committee shall be members of each panel. The committee shall oversee the work of each panel;
- Assisting the City with contract negotiations, budgeting, payment schedules and insurance requirements regarding public art projects;
- Recommending maintenance guidelines in accordance with professional conservators to maintain collected work;
- Encouraging connections with other local, regional and national organizations working for the benefit of art and preservation of artistic values;
- Pursuing gifts and grants for support of arts programs and activities and for the procurement of public art;
- Working with any trust fund or charitable entity established to support public art in the City;
- Providing an annual report at the conclusion of each fiscal year to the City Council documenting efforts to fulfill these duties.

The Public Information Officer and Management Analyst serves as the staff liaison.

AUDIT COMMITTEE

The Audit Committee was created by Ordinance No. 5412 in 2015. The purpose of the Audit Committee is to serve as an advisory body to the City Council on matters concerning the City's annual audit. The Audit Committee has five (5) members, two (2) from the Finance Committee and three (3) Council Members appointed by the Mayor and approved by Council.

The Audit Committee shall:

- Coordinate the process of soliciting, selecting and hiring of the auditing firm, including presentation of the recommended firm to City Council for approval;
- Work cooperatively with the auditing firm during the audit;
- Review and present recommendation on audit results to the City Council;
- Otherwise work to improve the annual audit process.

Amended by Ordinance No. XXXX in 2024.

The Finance Director serves as the staff liaison.

BOARD OF ADJUSTMENT

The Board of Adjustment was established as a standing committee by Ordinance 225 in 1958. The Board of Adjustment has five (5) members who serve for a five-year term with three (3) alternates selected to serve in the absence of a member. The powers and duties of the board include:

- Hear and decide all matters referred to it and upon which it is required to decide under the Zoning Code;
- Interpret the provisions of the Zoning Code in such a way as to carry out its intent and purpose;
- Hear appeals in a manner prescribed in Section 405.1110 of the Zoning Code, where it is alleged, there is an error in any order, requirement, decision or determination made in the enforcement or interpretation of the Zoning Code;
- Authorize variances upon appeal, in accordance with the provisions of Section 405.970 the Zoning Code;
- Permit a variance in the yard requirements of any district where there are severe practical difficulties or extreme hardship in the carrying out of these provisions due to an irregular shape or the size of the lot or the sites of preexisting buildings, topographical or other site conditions; provided, that such variance shall not have a serious adverse impact on any adjoining property or the general welfare or establish an unsatisfactory precedent for other locations and situations;
- Permit the extension of a district where the boundary line of a district divides a lot held in a single ownership on the date of the adoption of the Zoning Code.

The Community Development Director serves as the staff liaison.

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Meetings of the Board of Adjustment shall be held as called by the Chairperson and at such other times as the Board of Adjustment shall determine.

Board of Adjustment duties and term limits have been Amended by Ord Nos. 279, 807, 1216, 1330, 1482, 1706 and 1780.

BUILDING CODE BOARD OF APPEALS

The Building Code Board of Appeals was established by Ordinance 1780 in 1996 and has five (5) members. Members of the Building Code Board of Appeals, to the extent possible, based on applications submitted to the City, should be representative of the following professions or disciplines: registered architects, builder or superintendent of building construction with ten years of experience, structural engineer, code enforcement professional, mechanical engineer, electrical engineer, civil engineer, fire protection engineer, mechanical contractor, electrical contractor, plumbing contractor, fire protection contractor, or other disciplines associated with the building trades or design professions. The powers and duties of the board include situations when it is alleged:

- The decision of the building official is not consistent with the true intent of the building code;
- The provisions of the building code have been incorrectly interpreted;
- The provisions of the building code do not apply;
- A proposed equivalent level of safety needs to be evaluated.

Any person with an interest at stake shall have a right to appeal a decision of the Code Official to the Building Code Board of Appeals. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply, or an equivalent form of construction shall be allowed to be used. The board shall have no authority to waive requirements of the building codes. The Building Code Board of Appeals shall meet upon notice from the chairperson, within five (5) calendar days of the filing of a written appeal with the building official, or at stated periodic meetings. The board shall only reverse or modify the decision of the code official by a majority vote of the quorum present and voting. Otherwise, the decision shall be deemed to be upheld. The board shall issue its decision by resolution.

The Chief Building Official serves as the staff liaison.

Amended by Ordinance Nos. 4076 and 4082.

ECONOMIC DEVELOPMENT COMMITTEE

The Economic Development Committee was originally created with a two-year trial period by Resolution 434 in 1994. The Economic Development Committee became a standing commission with the approval of Ord. No. 1798 in May 1996. There are seven (7) to nine (9) members on the Committee made up of residents, local business owners, managers or employees of Creve Coeur businesses or not-for-profit organizations. The Creve Coeur – Olivette Chamber of Commerce may nominate one of the seven members as a voting member subject to review by the Nominating Committee and approval by the City Council. The Economic Development Committee serves as an advisory body to the City Council and City staff regarding the recruiting of new businesses and nurturing existing local businesses, including to:

- Provide a forum for building local consensus on the economic issues facing the City and the means for addressing them;
- Promote Creve Coeur as a center for business activity in St. Louis County;
- Understand the needs and problem areas for employees, public institutions and not-for-profit organizations and development of strategies to address them;
- Develop plans and programs that will identify future business/institutional plans to encourage retention and expansion in the City, including financing opportunities:

The Economic Development Committee sponsors the Creve Coeur Business Awards Program to recognize Creve Coeur businesses and organizations. Award categories include:

- Heart of the Community - honors a Creve Coeur business or organization that has demonstrated a commitment to the community by making a positive impact in Creve Coeur or the St. Louis region.
- Most Innovative Business - honors a Creve Coeur business or organization that has demonstrated innovation, unique achievements or significant advancements in their field.
- Green Business Award - honors a Creve Coeur business or organization that has made sustainability (e.g., energy efficiency, recycling, composting, use of native landscapes, etc.) an integral part of its business practices.
- Favorite Restaurant Award - honors a Creve Coeur restaurant nominated by its customers for its outstanding service and food quality.

The Assistant City Administrator serves as the staff liaison.

Amended by Ordinance Nos. 5302 and 5391.

ENERGY AND ENVIRONMENT COMMITTEE

The Climate Action Task Force was originally formed by Resolution No. 810 in 2008 to create a Greenhouse Gas Emissions Reduction Action Plan. In 2014, the Climate Action Task Force completed its assignment and was dissolved by Ordinance No. 5391 and replaced by the Energy and Environment Committee with seven (7) to nine (9) members. The Energy and Environment Committee shall serve as an advisory body to the City Council and the City staff to expand sustainability, and also:

- Advise the City Council on issues related to sustainability, including initiatives to reduce waste, greenhouse gas emissions and consumption of energy from non-renewable sources;
- Advise the City Council on issues related to trash and recycling;
- Review and update the Climate Action Plan;
- Advise the City Council in maintaining current sustainability information in public spaces on the City's website and in City publications;
- Support and promote City functions related to sustainability.

The Public Information Officer and Management Analyst serves as the staff liaison.

The Energy and Environment Committee shall meet as deemed necessary by the Committee.

Sustainability Efforts include:

- Resolution No. 906 – Adoption Phase 1 - Climate Action Plan to Save Energy and Reduce Greenhouse Gas Emissions
- Resolution No. 913 – Grant administration for Energy Efficiency Lighting Improvements,
- Resolution No. 964 – Providing Residential Energy Efficiency Loan Program in city limits, Resolution No. 979 – Participation in energy efficiency leveraged loan program,
- Resolution No. 1137 – Conducting an Energy and Carbon Pollution Inventory and Develop and Energy Consumption and Carbon Pollution Reduction Plan,
- Resolution No. 1235 – Adoption Phase 2 - Climate Action Plan to Save Energy and Reduce Greenhouse Gas Emissions

FINANCE COMMITTEE

The Finance Committee was established with Ord No 264 in 1960 and has seven (7) members. The duties and responsibilities, as set forth in Section 9.5 and 9.6 of the City Charter, include:

- Reviewing the annual budget and making recommendations to the City Council prior to its adoption;
- Annually reviewing the Capital Improvement Program;
- Advising the City Council on other financial matters impacting the City as requested by the City Council or staff.

The Finance Director serves as the staff liaison.

Amended by Ordinance Nos. 807, 1129, 5391, and XXXX.

HORTICULTURE, ECOLOGY AND BEAUTIFICATION COMMITTEE

The Horticulture, Ecology and Beautification Committee (HEB) is the successor to the Recycling and Environment Committee (REB) created by Resolution 396 in 1990. Ordinance No. 5241 in 2012 amended the committee's name from REB to HEB and amended its mission and duties. The Horticulture, Ecology and Beautification Committee may have seven (7) to nine (9) members. The mission of the committee is to encourage the City and residents to plant, beautify and maintain all public and private spaces in an environmentally sustainable manner. Responsibilities of the Committee include:

- Advising the City Council, boards, committees, commissions and staff on issues related to horticulture and beautification, such as green space design and plantings in public areas;
- Monitoring and advising the City regarding its compliance with the Tree Preservation Ordinance;
- Encouraging and supporting the City's compliance as a Tree City U.S.A. by serving as the City's Tree Board.

The Human Resources Generalist serves as the staff liaison.

Amended by Ordinance Nos. 1899, 3065, 5241, and 5391.

PARKS AND HISTORIC PRESERVATION COMMITTEE

The Parks and Historic Preservation Committee was established with Ordinance No. 5391 and has seven (7) to nine (9) members. In 2014, the Historic Preservation and Park and Recreation Committees were combined as it was discovered they had overlapping responsibilities. The Parks and Historic Preservation Committee serves as an advisory body to the City Council and the City staff regarding city parks and historical building issues. The responsibilities of the committee include:

- Advising the City Council on recreation programs, facilities, fees and long-range recreation planning;
- Serving as a mechanism for resident input into the planning and operation of the City's leisure time activities;
- Assisting in the planning and promotion of opportunities for our City's park and recreation spaces and their users to enhance the quality of life for Creve Coeur residents and heighten resident awareness of Creve Coeur history;
- Advising the City Council on matters of historic preservation, including matters impacting - owned historic buildings and policies and programs pertaining to historic record archiving.

The Recreation Director serves as the staff liaison.

The Parks and Historic Preservation Committee shall meet as deemed necessary by the Committee

PERSONNEL APPEALS BOARD

The Personnel Appeals Board was established by Ord. No. 807 in 1977. The Personnel Appeals Board has five (5) members and (2) alternate members may be appointed to serve in the absence of a regular member. Each member shall be a registered voter. No member of the Personnel Appeals Board can be a member of any local, State or national committee of a political party or an elected officer of any partisan club or organization. No member of the Personnel Appeals Board can hold public office or employment in the City of Creve Coeur and cannot hold or be a candidate for any political office.

The powers and duties of the board are established in Section 130.020 of the Municipal Code are as follows:

- Hear disciplinary appeals set forth on this article and the personnel procedures manual;
- Perform other advisory activities as may be requested by the Mayor and City Council;

The Assistant City Administrator serves as the staff liaison.

The Personnel Appeals Board shall meet at least once annually and at any time at the call of the Chairman or three (3) Board members.

Amended by Ord. Nos. 1117, 1773, 5045, and 5391.

PLANNING AND ZONING COMMISSION

The Planning and Zoning Commission was established when the zoning code was adopted by Ord. 25 in 1951. The Planning and Zoning Commission has seven (7) members. The commission makes recommendations to the City Council and responsibilities include:

- Preparing and approving a comprehensive plan for the physical development of the City or portions thereof, and recommended modifications of the same from time to time as deemed in the City's best interest;
- Preparing and submitting to the City Council for its approval a zoning ordinance and Zoning Map with such regulations as to the location, height, width, bulk and appearance of buildings and other structures, the use of land and buildings, and the layout, improvement and landscaping of the site of any proposed development or redevelopment of property within the City of Creve Coeur, as it shall determine to be necessary or desirable for the promotion of the health, safety and general welfare of the inhabitants of the City;
- Considering all requests for rezoning, zoning text amendments, site development plan approvals and conditional use permits in the manner prescribed by the zoning code;
- Petitioning the City Council on its own initiative to amend, supplement, change or repeal the zoning code or any part thereof, or to amend the zoning ordinance or Zoning Map as the Commission determines to be in the City's best interest;
- Submitting an annual written report to the City Council containing the commission's recommendations concerning the zoning code, a summary of its activities during the past year, and its recommendations on specific community goals and objectives for the future and programs for achieving these;
- Recommending to the City Council the preparation of such municipal, State or national legislation as may, in the interest of the City, be necessary in carrying out the recommendations or suggestions of the Commission;
- Preparing and submitting to the City Council such other reports relating to its investigations, transactions and recommendations as it deems proper or as required by the Mayor or the City Council;
- Promulgating site development standards, architectural standards, and guidelines for new construction, reconstruction, or alternation for the purpose of assuring the mutual compatibility or buildings and their surroundings and the appearance, function and permanence of the location, form, shape, massing, and exterior materials of building and site improvements.

A quorum to conduct business consists of four (4) of the seven (7) voting members of the Commission. The votes of a majority of those attending shall be required to transact business; however, four (4) affirmative votes of voting members shall be required for a rezoning, text amendments to the zoning code, conditional use or site development plans, and site concept plan or minor site development plan.

The Community Development Director serves as both the staff liaison and council liaison.

The Planning and Zoning Commission meets the first and third Monday of each month.

Amended by Ordinance Nos. 264, 807, 1485, 1915, 1918, 1975, 1978, 2036, and 5165.

POLICE AND SAFETY COMMITTEE

The Police and Safety Committee was created with Ord. No. 5103. In 2009, the Police and Traffic Committees were combined to better serve the future needs to the community. The Police and Safety Committee has seven (7) to nine (9) members and shall serve as an advisory body to the City Council and City staff for police and public safety policy issues, including:

- Reviewing and commenting on draft ordinances as requested by the City Council or staff from time to time, or as initiated by the Committee;
- Advising on business and residential crime prevention and education matters;
- Advising on traffic regulations, concerns and policies;
- Reviewing and monitoring the City's Traffic Calming/Traffic Mitigation Plan and responding to traffic calming requests made pursuant to the plan;
- Advising on issues related to the protection and promotion of community health.

The Chief of Police serves as the staff liaison.

The Police and Safety Committee shall meet six (6) times per year, or as otherwise deemed necessary by the committee.

Amended by Ordinance No. 5391.

STORMWATER COMMITTEE

The Stormwater Committee was created with Ordinance No. 807 in 1977 and has seven (7) to nine (9) members. The Stormwater Committee shall serve as an advisory body to the City Council on stormwater control issues including:

- Reviewing and updating of the City's stormwater master plan;
- Review of specific problem locations as referred by the City Council and staff.
- Reviewing requests for funding for improvements to privately owned retention facilities as permitted under City policy and making recommendations to the City Council.

The Stormwater Committee reviews each problem location, which is referred to them by a property owner or by the City staff and decides, based on the staff's recommendation and data provided to it, on an appropriate design solution to the problem. A rating is assigned to the project to indicate the severity of the situation. Stormwater projects are funded by City revenue sources (including capital improvement and general funds) and Metropolitan Sewer District (MSD).

The Director of Public Works serves as the staff liaison.

Amended by Ordinance No. 5391.

CITY OF CREVE COEUR

Date: April 8, 2024
To: Mark Perkins, City Administrator
From: Kellie Henke, City Clerk
Subject: Amendments to the Citizen's Guide to Advisory Boards, Commissions and Committees

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Staff is recommending amendments to the Citizen's Guide to Advisory Boards, Commissions and Committees due to the dissolution of the Employee Pension Board of Trustees on March 1, 2024. Additional updates have been made to assure the guide reflects the current City Code.

MINUTES OF A MEETING
OF THE NOMINATING COMMITTEE
MONDAY, MARCH 25, 2024
5:45 P.M.

A meeting of the Nominating Committee was held in the City Clerk's Office, 300 North New Ballas Rd, City of Creve Coeur Government Center, Creve Coeur, MO 63141 on Monday, March 25, 2024 at 5:15 p.m.

Mayor Hoffman called the meeting to order to consider an appointment to the Energy and Environment Committee pursuant to the requirements of Section 4.4(i) of the Creve Coeur City Charter.

ENERGY & ENVIRONMENT COMMITTEE

The Nominating Committee consisted of:

Mayor Hoffman
Council President Greer

Mayor Hoffman stated one application was received from Tarab Kumar.

Council President Greer made a motion, seconded by Mayor Hoffman, to appoint Tarab Kumar for a three-year term on the Energy & Environment Committee which will expire June 30, 2027 the vote upon such motion being as follows, to-wit:

Council President Greer – Aye
Mayor Hoffman – Aye

The vote on the motion being 2 ayes and 0 nays, motion carried.

The Nominating Committee meeting adjourned at 5:16 p.m.

_____ _____

Nicole Greer
City Council President

Dr. Robert Hoffman
Mayor

Attest:

_____

Kellie Henke
City Clerk

D E P A R T M E N T O F P U B L I C W O R K S
O F F I C E M E M O

DATE: April 1, 2024

TO: Mark Perkins, City Administrator

FROM: Jim Heines, Director of Public Works

SUBJECT: Demolition of Structure at 1030 N. Lindbergh Blvd., Complete Perimeter Security Fence, and Plant Landscape Screen

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Background

The City of Creve Coeur purchased the property located at 1030 N. Lindbergh Blvd. in 2005 to be used as a leaf collection transfer site. When purchased, the property included a brick residential structure which had been converted to an office space for a construction company. The back portion of the lot was used for storage of equipment and supplies. The perimeter of the back lot was fenced in with a 6 ft. tall chain-link fence with three strands of barbed wire on top as a security fence. The fence butted up to the residential structure and used the west and north walls to complete perimeter security.

Not long after the purchase the house was leased to a landscape architect consultant who operated their business out of the building for about three years. Since that time there have been no tenants in the building or use by the city other than storage of materials and supplies.

Public Works staff has evaluated the condition of the building and due to significant roof leaks and a very wet basement, the house has become unusable to store supplies, and the cost to make necessary repairs cannot be justified.

Project Details

Public Works staff has reviewed our options and determined that the demolition of the house is the recommended solution. Once the house is removed, it will leave a gap in the security fence which will require the installation of fencing to secure. The existing fence is a 6 ft. tall chain-link fence with 3 strands of barbed wire on top. However, Public Works is recommending installing a 6 ft. tall black PVC coated chain-link fence and new gates without barbed wire on top to secure the storage yard.

In addition to the fencing and new gates, we plan to plant a hedge of Green Giant Arborvitae trees to help screen the fence and storage yard. There are existing trees and bushes in the front lawn of the property and we will save as much of the exiting vegetation as possible.

Recommendation

Public Works staff recommend approval of the installation of a 6 ft. tall black PVC coated fence and new gates to secure the gap left by the removal of the house.

Also recommended is to plant a vegetative screen on the N. Lindbergh side of the new fence to help screen the storage yard. Recommended plant specimens are Green Giant Arborvitaes. These are quick growing timber conifer which will stay green all year and provide ultimate screening.

Attachments: Proposed Improvements Site Drawing
Site Photos
Plant Photos
Planting Options



1030 Lindbergh Blvd. Demo

Parcels
City Limits

March 6, 2024

CITY OF CREVE COEUR, MO • 1949 •

Prepared By
HORNER SHIFRIN






NORTH
67
HISTORIC
66
BYWAY









Single Hedgerow

As a general rule, smaller and shorter Thuja varieties can be spaced closer together than taller and more vigorous trees, such as the Green Giant. Shorter hedges, such as those that are 8-10 feet tall, should be planted about 3-4 feet apart. Larger trees such as The Thuja Green Giant should be planted 5-6 feet apart. *Note: If you are planting near a building or wall, make sure to allow at least 10-15 feet to protect the foundation. Because of its sheer size, it's really not recommended that you plant a Green Giant near buildings, power lines, or other structures.



Double Hedgerow

This method provides for a quicker and more densely packed screen than planting in a straight row. It involves making a double row, with plants growing in the ground diagonally to one another. This method allows you to use less trees than planting in a straight line. The rule of thumb here is to space your plants 8-10 feet apart horizontally with around a 4-6 foot gap between the two rows.



*The same note applies to planting near a building or fence.