PRIOR LAKE SPRING LAKE WATERSHED DISTRICT

AGENDA

Tuesday, December 17, 2024

6:00 PM

Council Chambers
Prior Lake City Hall

BOARD OF MANAGERS:
Bruce Loney, President; Frank Boyles, Vice President;
Christian Morkeberg, Treasurer; Ben Burnett, Secretary; Matt Tofanelli, Manager

Note: Individuals with items on the agenda or who wish to speak to the Board are encouraged to be in attendance when the meeting is called to order.

Board Workshop 4:00 PM – *Council Chambers*

4:00 – 4:40 PM W.1 Administrator Report (Joni Giese)
4:40 – 4:50 PM W.2 Proposed 2025 Budget (Joni Giese)
4:50 – 5:20 PM W.3 Minnesota Watersheds Conference and Business Meeting Debrief (Ben Burnett)
5:20 – 5:30 PM W.4 PLOC Pipelining Schedule Update (Emily Dick)
5:30 – 5:50 PM W.5 Liaison Updates
- District Partners in Attendance
- Managers' Summary of other Meetings Attended

6:00 – 6:02 PM 1.0 **BOARD MEETING CALL TO ORDER & PLEDGE OF ALLEGIANCE**

6:02 – 6:07 PM 2.0 **PUBLIC COMMENT**

If anyone wishes to address the Board of Managers on an item not on the agenda or on the consent agenda, please come forward at this time. Go up to the podium, turn on the microphone and state your name and address. (The Chair may limit your time for commenting.)

6:04 - 6:10 PM **PUBLIC HEARING – 2025 Budget and Levy**
- 2025 Budget — Resolution 24-385 (Vote)
- 2025 Levy — Resolution 24-386 (Vote)

6:07 – 6:10 PM 3.0 **APPROVAL OF AGENDA** (Additions/Corrections/Deletions)

6:10 – 6:40 PM 4.0 **OTHER OLD/NEW BUSINESS**

4.1 Programs & Projects Update (Discussion)
4.2 Ferric Chloride System Assessment (Vote)
4.3 Permit 24.02: Trunk Highway (TH) 13 Trail (Vote)

6:40 – 6:50 PM 5.0 **TREASURER'S REPORT**

5.1 Monthly Financial Reports (Discussion Only)

- Financial Report
- Treasurers Report
- Cash Flow Projections
- Cost Analysis

6:50 – 6:55 PM 6.0 **CONSENT AGENDA**

The consent agenda is considered as one item of business. It consists of routine administrative items or items not requiring discussion. Items can be removed from the consent agenda at the request of the Board member, staff member, or a member of the audience. Please state which item or items you wish to remove for separate discussion.

6.1 Meeting Minutes – November 19, 2024, Board Workshop

6.2 Meeting Minutes – November 19, 2024, Board Meeting

6.3 Claims List and Bank Purchase Card Expenditures Summary

6.4 Budget Amendment Resolutions:

- Resolution 24-387: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 611-Highway 13 Wetland, FeCl System & Desilt, O&M to 550-FeCl Site Improvements
- Resolution 24-388: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 626-Lake Ridge Feasibility Study
- Resolution 24-389: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 550-200th Street Pond Improvements

6.5 Year End Fund Commitments:

- Resolution 24-390: Alum Internal Loading Fund Balance Commitment
- Resolution 24-391: Capital Project Planning Fund Commitment

6:55 – 7:00 PM 7.0 **UPCOMING MEETING/EVENT SCHEDULE:**

- CAC Meeting, Thursday, December 19, 2024, 6:00 pm (Prior Lake Library Large Meeting Room)
- Board of Managers Workshop, Tuesday, January 21, 2025, 4:00 pm (Prior Lake City Hall – Parkview Conference Room)
- Board of Managers Meeting, Tuesday, January 21, 2025, 6:00 pm (Prior Lake City Hall – Council Chambers)
- Farmer-Led Council Meeting, Thursday, January 23, 2025, 12:00 pm (Spring Lake Town Hall)

7:00 PM 8.0 **ADJOURNMENT**

PLSLWD Board Staff Report
December 12, 2024

Subject |	2025 Budget and Levy
Board Meeting Date |	December 17, 2024 **Item No:** Public Hearing
Prepared By |	Joni Giese, District Administrator
Attachments |	a) Resolution 23-385 Adopting the 2025 Budget b) Resolution 23-386 Certifying the Final 2024 Administrative and Metropolitan Water Management Tax Levy (Options A and B) c) 2025 Budget – Financial Statement Format (Options A and B) d) 2025 Budget Memorandum
Proposed Action |	Motion to adopt Resolution 23-385 for the 2025 Budget Motion to adopt Resolution 23-386 Certifying the Final 2025 Administrative and Metropolitan Water Management Tax Levy

Background

The Board of Managers adopted Resolution 24-384 approving a 2025 ad valorem levy of $2,066,590 and a budget of $3,216,725 at the September 2024 board meeting. The Board of Managers may revise the 2025 budget and reduce the levy at the December board meeting.

At the November 19, 2024, board meeting, the Board of Managers directed staff to prepare two 2025 ad valorem levy options for consideration. Option A reflects a 6% levy increase over the 2024 levy and Option B reflects a 5% levy increase.

Due notice has been given and a public hearing is scheduled on December 17, 2024, to receive any testimony regarding the District's 2025 budget and levy.

Discussion

The 2025 budget being brought forward for board consideration is $3,354,025. A breakout of funding sources between levy Options A and B is as follows:

	Option A		Option B	
2025 Levy	$2,065,940	61.6%	$2,046,450	61.0%
Budget Reserves	$999,418	29.8%	$1,018,908	30.4%
Grants & Revenue	$288,667	8.6%	$288,667	8.6%
Total Budget	**$3,354,025**	100.0%	**$3,354,025**	100.0%

- The levy value for Option B results in a tax rate that is identical to the 2024 tax rate. The levy value for Option A results in a 0.027% increase over the 2024 tax rate.
- The budget reflects the District's continued efforts to build reserve funds to cover future anticipated lake alum treatments.

- Approximately 90% of the budget is directed towards projects and programs to improve water quality and/or reduce flooding.
- Approximately 30% of the 2025 budget is being funded through budget reserves.
- The budget includes funds to implement the following projects:
    - ***Ferric Chloride Site Improvements.*** This project will make needed updates to the District's ferric chloride building and access drive to ensure continued operations for an important District facility that significantly reduces phosphorus loads into Spring and Prior Lakes.
    - ***Swamp Lake Iron Enhanced Sand Filter.*** Water from the Swamp Lake subwatershed ultimately drains through Spring and Prior Lakes. This project will reduce phorphorus loads originating from the Swamp Lake subwatershed from reaching Spring and Prior Lakes.
    - ***200th Street Pond Improvements.*** This project will reduce phosphorus loads into Fish Lake.
    - ***Prior Lake Outlet Pipelining Project.*** This project will improve water flows out of Prior Lake and will extend the life of a critical piece of flood resiliency infrastructure for the District. The budget for "PLOC Contributions" incorporates the District's portion of the local match required for a MPCA grant received that will help fund the project.
- Approximately $141,500 in grant funds will be received from District partners (Scott County and Spring Lake Township) and the Board of Water and Soils Resources (BWSR) to cover budgeted project & program costs. This will be a significant increase from 2024.

The budget is presented in two formats. The budget is presented in a financial statement format with individual budget line items listed along with comparisons to the 2024 and 2023 budgets. Budget values shown in red text reflect the variations between levy Options A and B. The budget memorandum provides a description of each budget line item and specific activities/projects covered by each budget item.

Recommendation

Staff recommends the Board adopt Resolution 23-385 for the 2025 Budget.

Staff recommends the Board adopt Resolution 23-386 (reflective of Option B) Certifying the Final 2025 Administrative and Metropolitan Water Management Tax Levy.

Resolution 24-385

Adopting the 2025 Budget

WHEREAS the Prior Lake-Spring Lake Watershed District (PLSLWD) is a watershed management organization and political subdivision of the State of Minnesota established under and operating with powers and purposes set forth at Minnesota Statutes Chapters 103B and 103D;

WHEREAS the PLSLWD has an approved watershed management plan under Minnesota Statutes Section 103B.231;

WHEREAS the PLSLWD Board of Managers ("Board") prepared a budget for 2025 and on September 17, 2024, and December 17, 2024, with due notice in accordance with Minnesota Statutes Section 103D.911, held public hearings on the budget at which time all interested parties had an opportunity to address the Board; and

WHEREAS the Board has considered the expressed views of all interested parties, the priorities for PLSLWD action in 2025, and the fiscal effects of PLSLWD expenditures on taxpayers;

THEREFORE, BE IT RESOLVED that the Board hereby adopts a budget of $3,354,025 for 2025, as follows:

- General Fund: $280,000
- 509 Implementation Fund: $3,074,025

The question was called on the adoption of the Resolution and there were ___ yeas and ___ nays as follows:

	Yea	Nay	Absent
Boyles	☐	☐	☐
Burnett	☐	☐	☐
Loney	☐	☐	☐
Morkeberg	☐	☐	☐
Tofanelli	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary

Resolution 24-386 (DRAFT: Option A - 6%)

Certifying the Final 2025
Administrative and Metropolitan Water Management Tax Levy

WHEREAS the Prior Lake-Spring Lake Watershed District (PLSLWD) is a watershed management organization and political subdivision of the State of Minnesota established under and operating with powers and purposes set forth at Minnesota Statutes Chapters 103B and 103D;

WHEREAS the PLSLWD has an approved watershed management plan under Minnesota Statutes Section 103B.231;

WHEREAS Minnesota Statute Section 103D.905, Subdivision 3, authorizes the PLSLWD to levy an *ad valorem* tax on real property within the PLSLWD for the administrative expenses of the District not to exceed $500,000.00;

WHEREAS Minnesota Statutes Section 103B.241, Subdivision 1, authorizes the PLSLWD to levy an *ad valorem* tax on real property within the PLSLWD sufficient to pay the increased costs to the PLSLWD to prepare and implement its watershed management plan;

WHEREAS after due notice and public hearing, the PLSLWD Board of Managers ("Board") adopted Resolution 24-384 approving a 2025 ad valorem levy of $2,066,590.

WHEREAS after due notice, the PLSLWD Board has held a further public hearing to receive testimony regarding its 2025 budget and levy;

THEREFORE, BE IT RESOLVED that in accordance with Minnesota Statutes Section 103D.915, the Board hereby approves and directs the secretary to certify to the Scott County Auditor an *ad valorem* levy in the total amount of $2,065,940 to be levied on all taxable property within the PLSLWD, composed of the following:

- $ 261,600 for the General Fund under authority of Minnesota Statutes Section 103D.905, Subdivision 3;
- $ 1,804,340 to implement the watershed management plan under Minnesota Statutes Section 103B.241, Subdivision 1, for the general projects and programs of the PLSLWD.

The question was called on the adoption of the Resolution and there were __ yeas and __ nays as follows:

	Yea	Nay	Absent
Boyles	☐	☐	☐
Burnett	☐	☐	☐
Loney	☐	☐	☐
Morkeberg	☐	☐	☐
Tofanelli	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary

Resolution 24-386 (DRAFT: Option B - 5%)

Certifying the Final 2025
Administrative and Metropolitan Water Management Tax Levy

WHEREAS the Prior Lake-Spring Lake Watershed District (PLSLWD) is a watershed management organization and political subdivision of the State of Minnesota established under and operating with powers and purposes set forth at Minnesota Statutes Chapters 103B and 103D;

WHEREAS the PLSLWD has an approved watershed management plan under Minnesota Statutes Section 103B.231;

WHEREAS Minnesota Statute Section 103D.905, Subdivision 3, authorizes the PLSLWD to levy an *ad valorem* tax on real property within the PLSLWD for the administrative expenses of the District not to exceed $500,000.00;

WHEREAS Minnesota Statutes Section 103B.241, Subdivision 1, authorizes the PLSLWD to levy an *ad valorem* tax on real property within the PLSLWD sufficient to pay the increased costs to the PLSLWD to prepare and implement its watershed management plan;

WHEREAS after due notice and public hearing, the PLSLWD Board of Managers ("Board") adopted Resolution 24-384 approving a 2025 ad valorem levy of $2,066,590.

WHEREAS after due notice, the PLSLWD Board has held a further public hearing to receive testimony regarding its 2025 budget and levy;

THEREFORE, BE IT RESOLVED that in accordance with Minnesota Statutes Section 103D.915, the Board hereby approves and directs the secretary to certify to the Scott County Auditor an *ad valorem* levy in the total amount of $2,046,450 to be levied on all taxable property within the PLSLWD, composed of the following:

- $ 261,600 for the General Fund under authority of Minnesota Statutes Section 103D.905, Subdivision 3;
- $ 1,784,850 to implement the watershed management plan under Minnesota Statutes Section 103B.241, Subdivision 1, for the general projects and programs of the PLSLWD.

The question was called on the adoption of the Resolution and there were __ yeas and __ nays as follows:

	Yea	Nay	Absent
Boyles	☐	☐	☐
Burnett	☐	☐	☐
Loney	☐	☐	☐
Morkeberg	☐	☐	☐
Tofanelli	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary

PRIOR LAKE SPRING LAKE WATERSHED DISTRICT
2025 Budget - Draft (12-17-2024) - Option A (6% levy increase)

Program Element		2025 Source of Funds: 2025 Levy	Budget Reserve	Grant Funds/Fees	2025 Budget	2024 Budget	2023 Budget
	General Fund (Administration)						
	Revenues						
	Property Taxes	$ 261,600	$ -	$ -	$ 261,600	$ 252,000	$ 249,200
	Interest	-	-	18,400	18,400	9,000	3,000
	Other	-	-	-	-	-	-
	Total Revenues	**$ 261,600**	**$ -**	**$ 18,400**	**$ 280,000**	**$ 261,000**	**$ 252,200**
	Expenditures						
	Administrative Salaries and Benefits	$ 137,100	$ -	$ 18,400	$ 155,500	$ 145,000	$ 138,000
	703 · Telephone, Internet & IT Support	19,500	-	-	19,500	16,000	16,200
	702 - Rent	28,200	-	-	28,200	27,500	28,300
	706 · Office Supplies	7,000	-	-	7,000	8,000	9,000
	709 · Insurance and Bonds	13,000	-	-	13,000	13,000	14,200
	670 · Accounting	36,300	-	-	36,300	33,500	31,000
	671 · Audit	11,000	-	-	11,000	10,500	9,000
	903 · Fees, Dues, and Subscriptions	1,500	-	-	1,500	1,500	1,500
	660 · Legal (not for projects)	8,000	-	-	8,000	6,000	5,000
	General Fund (Administration) Expenditures	**$ 261,600**	**$ -**	**$ 18,400**	**$ 280,000**	**$ 261,000**	**$ 252,200**
	Net Change in General Fund	-	-	-	-	-	-

Program Element		2025 Source of Funds: 2025 Levy	Budget Reserve	Funds/Fees	2025 Budget	2024 Budget	2023 Budget
	Implementation Fund						
	Revenues						
	Property Taxes	$ 1,804,340	$ -	$ -	$ 1,804,340	$ 1,697,000	$ 1,670,736
	Grants/Fees	-	-	145,967	145,967	34,000	120,664
	Interest	-	-	124,300	124,300	61,000	67,200
	Budget Reserves	-	999,418	-	999,418	523,356	362,300
	Total Revenues	**$ 1,804,340**	**$ 999,418**	**$ 270,267**	**$ 3,074,025**	**$ 2,315,356**	**$ 2,220,900**
	Expenditures						
	Program Salaries and Benefits (not JPA/MOA)	$ 379,700	$ -	$ 124,300	$ 504,000	$ 485,500	**492,900**
Water Qual	550 Public Infrastructure Partnership Projects	$ -	$ -	$ -	$ -	$ -	$ -
Water Qual	550 FeCl Site Improvements	154,500	116,700		271,200	$ 158,100	
Water Qual	550 200th Street Pond Improvements	-	26,400	15,000	41,400	5,600	-
Water Qual	550 Swamp Lake IESF	211,615	331,718	91,967	635,300	61,000	
Water Qual	550 Buck Stream Bank Stabilization	-	-	-	-	223,400	
Water Qual	611 Farmer-led Council	72,000	-	-	72,000	55,000	54,000
Water Qual	611 Cost-Share Incentives	88,000	-	-	88,000	68,000	58,000
Water Qual	611 Highway 13 Wetland, FeCl System & Desilt, O&M	159,500	55,000	-	214,500	146,900	98,000
Water Qual	611 Carp Management	88,500	-	-	88,500	96,500	94,000
Water Qual	611 Spring Lake Demonstration Project Maintenance	1,200	-	-	1,200	1,200	1,200
Water Qual	611 Buck Stream Stabilization Parcel Maintenance	4,000			4,000	-	-
Water Qual	611 Alum Internal Loading Reserve	200,000	-	-	200,000	230,000	220,000
Water Qual	611 Fish Stocking (consolidated with Carp Mgmt in 2025)	-	-	-	-	2,000	3,000
Water Qual	626 Planning and Program Development	32,000	-	-	32,000	27,500	17,500
Water Qual	626 Fish Lake Management Plan Update	-		-	-	-	81,300
Water Qual	626 Lake Ridge Feasibility Study	-	48,000	7,500	55,500	60,000	
Water Qual	626 LGU Plan Review	3,000	-		3,000	4,000	4,000
Water Qual	626 Engineering not for programs	21,000	-	-	21,000	20,000	15,000
Water Qual	626 Debt Issuance Planning	15,000	-	-	15,000	-	10,000
Water Qual	626 District Plan Update	-	-		-	2,500	2,500
Water Qual	626 Capital Project Planning (Prev: Upper Watershed Projects)	16,200	291,600	-	307,800	349,600	524,500
Water Qual	637 District Monitoring Program	89,100	-	-	89,100	84,500	81,000
Water Qual	648 Permitting and Compliance	65,000	-	-	65,000	62,000	79,000
Water Qual	648 Update MOAs with cities & county	-	5,000	-	5,000	5,000	10,000
Water Qual	648 BMP and Easement Inventory & Inspections	35,500	-	4,500	40,000	47,875	10,000
	WQ TOTAL	**1,256,115**	**874,418**	**118,967**	**2,249,500**	**1,710,675**	**1,363,000**
Water Storage	550 District-wide Hydraulic & Hydrologic model	4,000	-	-	4,000	5,000	5,000
Water Storage	626 Comprehensive Wetland Plan Update	-	35,500	-	35,500	35,500	-
	WS TOTAL	**4,000**	**35,500**	**-**	**39,500**	**40,500**	**5,000**
AIS	637 Aquatic Vegetation Management	18,600	-	12,000	30,600	17,500	15,000
AIS	637 Automated Veg Monitoring (consol w Veg Mgmt 2025)	-	-	-	-	1,300	2,000
AIS	637 Aquatic Veg Surveys (consolidated w Veg Mgmt 2025)	-	-	-	-	12,000	5,500
AIS	637 Boat inspections on Spring, Upper & Lower Prior	19,000	-	15,000	34,000	34,000	32000
	AIS TOTAL	**37,600.0**	**-**	**27,000**	**64,600**	**64,800**	**54,500**
Ed & Out	652 Education and Outreach Program	18,800	8,500	-	27,300	38,500	40,000
	E&O TOTAL	**18,800**	**8,500**	**-**	**27,300**	**38,500**	**40,000**
	PLOC Contribution	**108,125**		**-**	**108,125**	**38,981**	**185,500**
	Debt (Bond) Payments	**-**	**81,000**		**81,000**		
	Debt Payment Reserve	-	-	-	-	-	**80,000**
	Total Implementation Fund	**$ 1,804,340**	**$ 999,418**	**$ 270,267**	**$ 3,074,025**	**$ 2,378,956**	**$ 2,220,900**
	Net Change in Fund Balance Implementation Fund	-	-	-	-		-

	Grant Funds/Fees Anticipated				2025 Budget	2024 Budget	2023 Budget
	Interest Income (general fund & Implementation fund)			$ 142,700	$ 142,700	$ 70,000	70,200
	648 New Easement Acquisition/Amendment Fees			4,500	4,500	5,000	5,000
Water Qual	**648 Easement amendment/violations fees**			-	-	2,000	500
	2025 WBIF Grant			104,967	104,967	-	-
	626 UWB (BWSR Lower MN River South (WBIF Grant)			-	-	-	3,958
	Fish Lake Mgmt Plan & Swamp IESF Feas. ('23 WBIF Grant)			-	-	-	82,806
	Spring Lake Twnshp Contributions			9,500	9,500	-	4,000
	AIS Grant for Upper Prior Lake (DNR Grant)			-	-	-	4,335
AIS	**611 Aquatic Vegetation Mgmt. (Scott County)**			27,000	27,000	27,000	20,065
	Total Grant Funds/Fees Anticipated			**$ 288,667**	**$ 288,667**	**104,000**	**$ 190,864**

Budget Summary

Fund Sources/Fund Expenditures	2025 Levy	Budget Reserves	Grants/Rev	Budget Total	2024 Levy	Levy Increase	% Increase
General Fund	$ 261,600		$ 18,400	$ 280,000	252,000		
Implementation Fund	$ 1,804,340	$ 999,418	$ 270,267	$ 3,074,025	1,697,000		
Total Fund Sources	**$ 2,065,940**	**$ 999,418**	**$ 288,667**	**$ 3,354,025**	**1,949,000**	**$ 116,940**	**6.00%**
Expenditures							
General Fund				280,000			
Implementation Fund				3,074,025			
Total Expenditures				**3,354,025**			

Fund Balance Commitments/Assingments

	2025 (Budget) 12-31-24 Bal	Additions	Reductions	12-31-25 Bal	2024 (Estimate) 12-31-23 Bal	Additions	Reductions	12-31-24 Bal
611 Alum Internal Loading Reserve	$ 910,000	$ 200,000	$ (28,000)	$ 1,082,000	$ 700,000	$ 230,000	$ (20,000)	$ 910,000
626 Capital Project Planning (Prev: Upper Watershed Projects)	$ 291,600	$ 16,200	$ (307,800)	$ -	$ 442,000	$ 194,000	$ (344,400)	$ 291,600
Debt Payment Reserve	$ 180,000	$ -	$ (81,000)	$ 99,000	$ 180,000	$ -		$ 180,000
	$ 1,381,600	**$ 216,200**	**$ (416,800)**	**$ 1,181,000**	**$ 1,322,000**	**$ 424,000**	**$ (364,400)**	**$ 1,381,600**

PRIOR LAKE SPRING LAKE WATERSHED DISTRICT
2025 Budget - Draft (12-17-2024) - Option B (5% Levy Increase)

Program Element		2025 Source of Funds: 2025 Levy	Budget Reserve	Grant Funds/Fees	2025 Budget	2024 Budget	2023 Budget
	General Fund (Administration)						
	Revenues						
	Property Taxes	$ 261,600	$ -	$ -	$ 261,600	$ 252,000	$ 249,200
	Interest	-	-	18,400	18,400	9,000	3,000
	Other	-	-	-	-	-	-
	Total Revenues	**$ 261,600**	**$ -**	**$ 18,400**	**$ 280,000**	**$ 261,000**	**$ 252,200**
	Expenditures						
	Administrative Salaries and Benefits	$ 137,100	$ -	$ 18,400	$ 155,500	$ 145,000	$ 138,000
	703 · Telephone, Internet & IT Support	19,500	-	-	19,500	16,000	16,200
	702 - Rent	28,200	-	-	28,200	27,500	28,300
	706 · Office Supplies	7,000	-	-	7,000	8,000	9,000
	709 · Insurance and Bonds	13,000	-	-	13,000	13,000	14,200
	670 · Accounting	36,300	-	-	36,300	33,500	31,000
	671 · Audit	11,000	-	-	11,000	10,500	9,000
	903 · Fees, Dues, and Subscriptions	1,500	-	-	1,500	1,500	1,500
	660 · Legal (not for projects)	8,000	-	-	8,000	6,000	5,000
	General Fund (Administration) Expenditures	**$ 261,600**	**$ -**	**$ 18,400**	**$ 280,000**	**$ 261,000**	**$ 252,200**
	Net Change in General Fund	-	-	-	-	-	-

Program Element		2025 Source of Funds: 2025 Levy	Budget Reserve	Funds/Fees	2025 Budget	2024 Budget	2023 Budget
	Implementation Fund						
	Revenues						
	Property Taxes	$ 1,784,850	$ -	$ -	$ 1,784,850	$ 1,697,000	$ 1,670,736
	Grants/Fees	-	-	145,967	145,967	34,000	120,664
	Interest	-	-	124,300	124,300	61,000	67,200
	Budget Reserves	-	1,018,908	-	1,018,908	523,356	362,300
	Total Revenues	**$ 1,784,850**	**$ 1,018,908**	**$ 270,267**	**$ 3,074,025**	**$ 2,315,356**	**$ 2,220,900**
	Expenditures						
	Program Salaries and Benefits (not JPA/MOA)	$ 379,700	$ -	$ 124,300	$ 504,000	$ 485,500	**492,900**
Water Qual	550 Public Infrastructure Partnership Projects	$ -	$ -	$ -	$ -	$ -	$ -
Water Qual	550 FeCl Site Improvements	154,500	116,700		271,200	$ 158,000	
Water Qual	550 200 Street Pond Improvements	-	26,400	15,000	41,400	5,600	-
Water Qual	550 Swamp Lake IESF	192,125	351,208	91,967	635,300	61,000	
Water Qual	550 Buck Stream Bank Stabilization	-	-	-	-	223,400	
Water Qual	611 Farmer-led Council	72,000	-	-	72,000	55,000	54,000
Water Qual	611 Cost-Share Incentives	88,000	-	-	88,000	68,000	58,000
Water Qual	611 Highway 13 Wetland, FeCl System & Desilt, O&M	159,500	55,000	-	214,500	305,000	98,000
Water Qual	611 Carp Management	88,500	-	-	88,500	96,500	94,000
Water Qual	611 Spring Lake Demonstration Project Maintenance	1,200	-	-	1,200	1,200	1,200
Water Qual	611 Buck Stream Stabilization Parcel Maintenance	4,000			4,000	-	-
Water Qual	611 Alum Internal Loading Reserve	200,000	-	-	200,000	230,000	220,000
Water Qual	611 Fish Stocking (consolidated with Carp Mgmt in 2025)	-	-	-	-	2,000	3,000
Water Qual	626 Planning and Program Development	32,000	-	-	32,000	27,500	17,500
Water Qual	626 Fish Lake Management Plan Update	-		-	-	-	81,300
Water Qual	626 Lake Ridge Stormwater Feasibility Study	-	48,000	7,500	55,500	60,000	
Water Qual	626 LGU Plan Review	3,000	-		3,000	4,000	4,000
Water Qual	626 Engineering not for programs	21,000	-	-	21,000	20,000	15,000
Water Qual	626 Debt Issuance Planning	15,000	-	-	15,000	-	10,000
Water Qual	626 District Plan Update	-	-		-	2,500	2,500
Water Qual	626 Capital Project Planning (Prev: Upper Watershed Projects)	16,200	291,600	-	307,800	636,000	524,500
Water Qual	637 District Monitoring Program	89,100	-	-	89,100	84,500	81,000
Water Qual	648 Permitting and Compliance	65,000	-	-	65,000	62,000	79,000
Water Qual	648 Update MOAs with cities & county	-	5,000	-	5,000	5,000	10,000
Water Qual	648 BMP and Easement Inventory & Inspections	35,500	-	4,500	40,000	47,875	10,000
	WQ TOTAL	**1,236,625**	**893,908**	**118,967**	**2,249,500**	**2,155,075**	**1,363,000**
Water Storage	550 District-wide Hydraulic & Hydrologic model	4,000	-	-	4,000	5,000	5,000
Water Storage	626 Comprehensive Wetland Plan Update	-	35,500	-	35,500	35,500	-
	WS TOTAL	**4,000**	**35,500**	**-**	**39,500**	**40,500**	**5,000**
AIS	637 Aquatic Vegetation Management	18,600	-	12,000	30,600	17,500	15,000
AIS	637 Automated Veg Monitoring (consol w Veg Mgmt 2025)	-	-	-	-	1,300	2,000
AIS	637 Aquatic Veg Surveys (consolidated w Veg Mgmt 2025)	-	-	-	-	12,000	5,500
AIS	637 Boat inspections on Spring, Upper & Lower Prior	19,000	-	15,000	34,000	34,000	32000
	AIS TOTAL	**37,600.0**	**-**	**27,000**	**64,600**	**64,800**	**54,500**
Ed & Out	652 Education and Outreach Program	18,800	8,500	-	27,300	38,500	40,000
	E&O TOTAL	**18,800**	**8,500**	**-**	**27,300**	**38,500**	**40,000**
	PLOC Contribution	**108,125**		**-**	**108,125**	**38,981**	**185,500**
	Debt (Bond) Payments	**-**	**81,000**		**81,000**		
	Debt Payment Reserve	-	-	-	-	-	**80,000**
	Total Implementation Fund	**$ 1,784,850**	**$ 1,018,908**	**$ 270,267**	**$ 3,074,025**	**$ 2,823,356**	**$ 2,220,900**
	Net Change in Fund Balance Implementation Fund	-	-	-	-		-

	Grant Funds/Fees Anticipated				2025 Budget	2024 Budget	2023 Budget
	Interest Income (general fund & Implementation fund)			$ 142,700	$ 142,700	$ 70,000	70,200
	648 New Easement Acquisition/Amendment Fees			4,500	4,500	5,000	5,000
Water Qual	**648 Easement amendment/violations fees**			-	-	2,000	500
	2025 WBIF Grant			104,967	104,967	-	-
	626 UWB (BWSR Lower MN River South (WBIF Grant)			-	-	-	3,958
	Fish Lake Mgmt Plan & Swamp IESF Feas. ('23 WBIF Grant)			-	-	-	82,806
	Spring Lake Twnshp Contributions			9,500	9,500	-	4,000
	AIS Grant for Upper Prior Lake (DNR Grant)			-	-	-	4,335
AIS	**611 Aquatic Vegetation Mgmt. (Scott County)**			27,000	27,000	27,000	20,065
	Total Grant Funds/Fees Anticipated			**$ 288,667**	**$ 288,667**	**104,000**	**$ 190,864**

Budget Summary

Fund Sources/Fund Expenditures	2025 Levy	Budget Reserves	Grants/Rev	Budget Total	2024 Levy	Levy Increase	% Increase
General Fund	$ 261,600		$ 18,400	$ 280,000	252,000		
Implementation Fund	$ 1,784,850	$ 1,018,908	$ 270,267	$ 3,074,025	1,697,000		
Total Fund Sources	**$ 2,046,450**	**$ 1,018,908**	**$ 288,667**	**$ 3,354,025**	**1,949,000**	**$ 97,450**	**5.00%**
Expenditures							
General Fund				280,000			
Implementation Fund				3,074,025			
Total Expenditures				**3,354,025**			

Fund Balance Commitments/Assingments

	2025 (Budget) 12-31-24 Bal	Additions	Reductions	12-31-25 Bal	2024 (Estimate) 12-31-23 Bal	Additions	Reductions	12-31-24 Bal
611 Alum Internal Loading Reserve	$ 910,000	$ 200,000	$ (28,000)	$ 1,082,000	$ 700,000	$ 230,000	$ (20,000)	$ 910,000
626 Capital Project Planning (Prev: Upper Watershed Projects)	$ 291,600	$ 16,200	$ (307,800)	$ -	$ 442,000	$ 194,000	$ (344,400)	$ 291,600
Debt Payment Reserve	$ 180,000	$ -	$ (81,000)	$ 99,000	$ 180,000	$ -		$ 180,000
	$ 1,381,600	**$ 216,200**	**$ (416,800)**	**$ 1,181,000**	**$ 1,322,000**	**$ 424,000**	**$ (364,400)**	**$ 1,381,600**

PRIOR LAKE-SPRING LAKE WATERSHED DISTRICT

MEMORANDUM

TO: PLSLWD BOARD OF MANAGERS

FROM: JONI GIESE

SUBJECT: 2025 BUDGET (DRAFT)

DATE: 12/17/2024

The following provides background to the 2025 Budget. The activities are broken out between the General Fund and Implementation Fund, with the implementation fund budget line items organized under the Water Resource Management Plan's three priorities: Water Quality, Reduce Flooding, and Aquatic Invasive Species (AIS). Expenses relating to Prior Lake Outlet Channel (PLOC) operations are reflected in a separate 2025 PLOC budget.

When a budget item benefits more than one of the priorities, it is listed under the category of projected highest benefit. Budget totals are broken out by recommended revenue sources.

405 - General Fund

570 - 573 Administrative Salaries and Benefits

Description: This budget item includes staff salaries and associated benefits for administrative activities, which includes holidays and PTO. Staff time also includes District document archiving procedures.

Why it is Important: Staff must expend a certain portion of their time on basic office operations, such a preparing time reports, preparing state-mandated reports and operations.

2024 Budget: $145,000

2024 Year End Expense: $145,000 (estimate)

2025 Budget: $155,500

One staff member is anticipated to retire in 2025. The General Fund budget was increased to provide 120 hours of training time for new staff member by existing staff member prior to retirement.

Estimated salaries and benefits are based on the following assumptions:

- 7% average salary increase (3% COLA + 4% average merit)
- 13.7% increase in healthcare insurance premiums
- 3.85% increase in dental insurance premiums

Specific salary/benefit estimates covered by this budget item include:

Salaries and payroll taxes (social security and medicare)	$121,900
Benefits (PERA, Health, Dental, Disability, Life Insurance)	33,600
TOTAL:	**$155,500**

2025 Revenue Source(s):

- Levy: $137,100
- Interest Income: $18,400

703 – Telephone, Intranet & IT Support

Description: This budget item includes staff cellular phone reimbursements, database support, and District website domain hosting and listing fees. It also includes IT consultant support services. Office telephone and intranet services are included in the Prior Lake City Hall lease.

Why it is Important: District staff use their cellular phones to perform District business. The District needs to maintain a presence on the internet via a website. District business is primarily performed on computers. A well-maintained computer system protects the District from cyber-attacks, enhances staff productivity, and allows efficient use of/upgrades to software licenses and hardware. The Districts' Microsoft software license is paid through the IT consultant and reflected in the consultant fees listed below.

2024 Budget: $16,000

2024 Year End Expense: $15,800 (estimate)

2025 Budget: $19,500 ($20,800 total with approximately 6% allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

Staff cell phone reimbursements	$2,800
Website hosting and listing fees, Database updates	1,100
IT consultant standard support	15,600
TOTAL:	**$19,500**

2025 Revenue Source(s):

- Levy: $19,500

702 – Rent

Description: The District entered into a lease for office space with the City of Prior Lake, effective July 1, 2021. The District has the option to renew the lease for four additional one-year terms with an annual cost escalation of 3 percent per year. The renewal in 2025 will be the final one-year renewal. A new lease will need to be renegotiated for the year starting July 1, 2026.

2024 Budget: $27,500

2024 Year End Expense: $27,500

2025 Budget: $28,200 ($30,000 total with approximately 6% allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

City of Prior Lake lease payments	$28,200
TOTAL:	**$28,200**

2025 Revenue Source(s):

- Levy: $28,200

706 – Office Supplies

Description: This budget item includes general office supplies, copier rental, copies/printing, postage, new computers/tablets, mileage and meals associated with performing District business.

Why it is Important: Office supplies are needed to perform District business.

2024 Budget: $8,000.

2024 Year End Expense: $6,000 (estimate).

2025 Budget: $7,000 ($7,500 total with approximately 6% allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

Ricoh copier (rent and copies)	$4,200
Mileage	800
Postage	1,000
Other office supplies	1,000
TOTAL:	**$7,000**

2025 Revenue Source(s):

- Levy: $7,000

709 – Insurance and Bonds

Description: This budget item includes annual property, liability (including bonds), auto, and workers compensation insurance coverage premiums.

Why it is Important: District should have insurance coverage to protect District's property and cover potential liabilities.

2024 Budget: $14,200

2024 Year End Expense: $12,700.

2025 Budget: $13,000 Includes premium adjustments and increases based on insurance provider stated rate percentage increases for 2025. (Total $13,800 with approximately 6% allocated to PLOC budget).

Specific activities/projects covered by this budget item include:

Property	$1,900
Liability	5,300
Excess Liability	1,700
Auto	400
Workers compensation	3,700
TOTAL:	**$13,000**

2025 Revenue Source(s):

- Levy: $13,000

670 – Accounting

Description: This budget item covers accounting services provided the District's contracted certified public accountant (CPA) to maintain accounting software and records, help prepare monthly and year-end financial statements, assist with annual audit, process biweekly payroll and year-end forms, and prepare custom reports/analysis as requested. The District CPA also provides accounting services for the PLOC, costs for which are reflected in a separate PLOC budget.

Why it is Important: Per the PLSLWD Governance Manual, the District will contract with the certified public accountant to monthly review the District bank accounts, payroll and investment funds, and to assist with monthly bookkeeping to ensure the District's finances are managed in accordance with generally accepted accounting principles and best practices.

2024 Budget: $33,500

2024 Year End Expense: $33,500 (estimate).

2025 Budget: $36,300 (Separate fee allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

Contracted accounting firm, CliftonLarsonAllen LLP (CLA)	$36,300
TOTAL:	**$36,300**

2025 Revenue Source(s):

- Levy: $36,300

671 – Audit

Description: This budget item covers annual audit costs paid to contracted auditor. Other associated audit costs, such as District accountant's time to prepare for audit, work with auditors, and to submit audit to the state, along with the District attorney's time to respond to

audit questions (e.g., audit opinion) are expensed in 670 – Accounting and 660 – Legal, respectively.

Why it is Important: An annual audit is required per State Statute 103D.355.

2024 Budget: $10,500 ($14,000 per audit cost per biannual proposal – 25% allocated to PLOC)

2024 Year End Expense: $10,500

2025 Budget: $11,000 ($14,700 total – 25% allocated to PLOC).

Specific activities/projects covered by this budget item include:

Contracted audit firm (Abdo)	$11,000
TOTAL:	**$11,000**

2025 Revenue Source(s):

- Levy: $11,000

903 – Fees, Dues and Subscriptions

Description: This budget item includes organization memberships, service subscriptions not associated with projects/programs, and fees associated with staff hiring.

2024 Budget: $1,500

2024 Year End Expense: $1,500 (estimate).

2025 Budget: $1,500

Specific activities/projects covered by this budget item include:

Organization memberships	$200
Miscellaneous fees	200
Subscriptions	1,100
TOTAL:	**$1,500**

2025 Revenue Source(s):

- Levy: $1,500

660 – Legal (not project related)

Description: This budget item covers miscellaneous legal services not associated with a District project.

Why it is Important: Legal issues arise as a course of performing District duties. It is in the District's best interest to consult an attorney to ensure issues are addressed in the best interest of the District.

2024 Budget: $6,000

2024 Year End Expense: $8,000 (estimate)

2025 Budget: $8,000

Specific activities/projects covered by this budget item include:

Contracted legal firm, Smith Partners	$8,000
TOTAL:	**$8,000**

2025 Revenue Source(s):

- Levy: $8,000

509 – Implementation Fund

570 – 573 Program Salaries and Benefits

Description: This budget item includes staff salaries and associated benefits for Implementation Fund activities. It also includes all Board of Managers per diems.

Why it is Important: The District's programs and projects can only be accomplished with stable, highly skilled staff.

2024 Budget: $485,500

2024 Year End Estimate: $458,200 (estimate) Implementation Fund salary costs are low in 2024 due to budgeting for, but not hiring seasonal interns in 2024 and the retirement of a part-time staff member whose salary was also included in the 2024 budget.

2025 Budget: $509,000. For 2025, salaries and benefits are projected to increase due to cost of living and to adjust the salary of several staff members to better align with market conditions. Staff salary and benefits allocated to the PLOC are approximately 6.0% of staff salary/benefits to reflect expected staff activity associated with the PLOC. Includes salaries for two summer seasonal interns.

Estimated salaries and benefits are based on the following assumptions:

- 7% average salary increase (3% COLA + 4% average merit)
- 13.72% increase in healthcare insurance premiums
- 3.85% increase in dental insurance premiums

Specific salary/benefit estimates covered by this budget item include:

Salaries, per diems, and payroll taxes (social security and medicare)	$399,400
Benefits (PERA, Health, Dental, Disability, Life Insurance)	104,600
TOTAL:	**$504,000**

2025 Revenue Source(s):

- Levy: $379,700
- Interest Income: $124,300

Water Quality Projects

550 Public Infrastructure Partnership Projects (PIPP)

Description: This program was developed to help reduce runoff to the lakes by working with LGU partners to retrofit streets, highways, public properties and other public infrastructure with volume management, rate controls and phosphorus load reduction BMPs as LGUs complete public site or public infrastructure construction, repair, or maintenance projects.

Why it is Important: Phosphorus and other pollutants in stormwater runoff is a significant water quality problem. Water quality BMPS, runoff volume reductions, and rate control reduces waterbody impairments and flooding.

How Long in Existence: 2015

2024 Budget: $0

2024 Year End Expense: $0 (estimated)

2025 Budget: $0

550 FeCl Site Improvements

Description: This capital project is meant to address end of lifecycle maintenance required to replace and update major system components of the District's Ferric Chloride system including building, tank, piping, and access drive.

Why it is Important: The ferric chloride system treats stormwater coming from County Ditch 13, which is responsible for carrying the majority of pollutants into Spring Lake. The system infrastructure is aging creating concerns for longevity and safety.

How Long in Existence: 2024

2024 Budget: $158,100

2024 Year End Expense: $41,400 (estimated)

2025 Budget: $271,200

Specific activities/projects covered by this budget item include:

EOR FeCl Site Improvements Engineering	$7,660
Remnant FeCl Removal for Construction	$9,032
Building Improvements Construction	$234,350
Drive Improvements Construction	$20,158
TOTAL:	**$271,200**

2025 Revenue Source(s):

- Levy: $154,500
- Budget Reserves: $116,700

550 – 200th Street Pond Improvements Project

Description: This project is expected to be constructed in 2025 and is included in the District's Fish Lake Management Plan and Water Resources Management Plan (WRMP).

Why it is Important: Implementation of projects advances the mission and goals of the District as identified in the two District plans.

2024 Budget: $32,000 ($17,000 reclass from Upper Watershed Projects and $15,000 first 50% of WBIF grant)

2024 Year End Expense: $5,600 (estimate).

2025 Budget: $41,400

Specific activities/projects covered by this budget item include:

SWCD and Professional Services	$6,400
Pond Construction	$35,000
TOTAL:	**$41,400**

2025 Revenue Source(s):

- Levy: $0
- Budget Reserves: $26,400
- Grants: $15,000

550 – Swamp Lake IESF

Description: This project is expected to be constructed in 2025 and is included in the District's Swamp Lake IESF Feasibility Study and Water Resources Management Plan (WRMP).

Why it is Important: Implementation of projects advances the mission and goals of the District as identified in the feasibility study and District's WRMP.

2024 Budget: $61,000

2024 Year End Expense: $42,400 (estimate)

2025 Budget: $635,300

Specific activities/projects covered by this budget item include:

EOR Engineering Services	$105,700
Construction, Legal, Permits, Etc.	$529,600
TOTAL:	**$635,300**

2025 Revenue Source(s):

	Option A (6%)	Option B (5%)
• Levy:	$211,615	$192,125
• Budget Reserves:	$331,718	$351,208
• Grants:	$91,967	$91,967

611 – Farmer-led Council

Description: The purpose of the Farmer-led Council (FLC) is to: improve public understanding of farming operations; proactively address water quality concerns; help develop win-win programming and provide networking and education opportunities for District farmers. Initiatives and projects within the Farmer-Led Council Program in 2025 include cost share projects, speakers fees, Scott SWCD assistance, FLC training stipend, and meeting costs. The incentives and cost-shares provided by the FLC program change each year as new information is learned and as new conservation ideas are spearheaded by the FLC members.

Why it is Important: There are 50-60 farmers in the District and a small number of farmers manage roughly half of the farmland acreage. There is a lot of opportunity to make a big difference with the key players, most of which are at the table through FLC.

How Long in Existence: March 2013

2024 Budget: $55,000

2024 Year End Expense: $55,000 (estimate)

2025 Budget: $72,000

Specific activities/projects covered by this budget item include:

SWCD Staff time (project coordination, assessing farms, etc.)	$30,000
Lake Friendly Farm program (alternating years – include in 2026)	$0
Program pass through costs, including, but not limited to, cover crops, water quality inlets, preparing conservation plans.	$38,000
Meetings (food, space rental, materials, etc.)	$2,000
Guest Speaker fees for FLC meetings	$2,000
TOTAL:	**$72,000**

2025 Revenue Source(s):

- Levy: $72,000

611 - Cost-share Incentives

Description: With cash incentives paid for by the District, Scott SWCD and other partners encourage residential and agricultural best management practices. The District has cooperated in the creation of a Cost Share Docket with the Scott SWCD, Scott WMO, Lower Minnesota River Watershed District, and the Vermillion River Watershed. Programs and practices included in the cost share docket include, but are not limited to, residue management (no-till & strip till), conservation cover, cover crops, filter strips, streambank and shoreline protection, nutrient management, well decommissioning, and wetland restoration. District dollars for this program are amplified by Scott SWCD-secured grant funding for cost share projects, making projects even more cost-effective. Scott SWCD contributions to cost share projects are not reflected in the District's budget.

Why it is important: Water resources throughout the watershed benefit through adoption of conservation practices on the land. Since non-point source pollution is largely unregulated, it is essential that landowners are provided incentives that include technical assistance as well as cost share funds to mitigate pollution. Cost share dollars are based upon a "pay for performance" principle.

How Long in Existence: 2011

2024 Budget: $68,000

2024 Year End Expense: $68,000 (estimate).

2024 Budget: $88,000

Specific activities/projects covered by this budget item include:

Cost Share Technical Services (SWCD staff time)	$45,000
Cost Share Projects (pass-through)	$30,000
Cost Share Management (SWCD staff time)	$13,000
TOTAL:	**$88,000**

2025 Revenue Source(s):

- Levy: $88,000
- Grant(s): $0 *(Note: SWCD grants used for cost share projects are not accounted for in the overall budget as they do not pass through the District)*

611 - Highway 13 Wetland, FeCl System and Desilt Pond

Description: The Desilt Pond was built in 1978. A ferric chloride system was constructed in 1998 upstream at the outlet of the wetland treatment system. The FeCl system was designed for water quality treatment but also stores water. It was redesigned in 2013. The facility on average doses around 6,100 gallons of FeCl throughout the year. Treatment typically occurs March through November annually removing approximately 55% of the dissolved phosphorus and 34% of the total phosphorus concentrations in the water. In 2024, a feasibility study was conducted to assess the lifespan of the facility and equipment, system effectiveness, and better access for chemical delivery. System sensors and data loggers were replaced in 2024 to allow the system to continue flow paced dosing.

Why it is Important: The ferric chloride system treats stormwater coming from County Ditch 13, which is responsible for carrying the majority of pollutants into Spring Lake.

How Long in Existence: 1998

2024 Budget: $146,900

2024 Year End Expense: $135,000 (estimate).

2025 Budget: $214,500

Specific activities/projects covered by this budget item include:

Ferric Chloride deliveries (~2.5 fills)	$27,000
System Monitoring to meet MPCA Permits: Lab analysis	$17,500
Utilities, permits, maintenance and equipment	$3,000
Hwy 13 Excavation Engineering	$100,000
Legal	$12,000
Desilt Outlet Improvements	$40,700
Feedline Locate	$14,300
TOTAL:	**$214,500**

2024 Revenue Source(s):

- Levy: $159,500
- Budget Reserves: $55,000

611 – Carp Management

Description: Carp management includes funding for efforts identified in the District's Integrated Pest Management Plan.

Why it is Important: Carp management improves water quality and lake habitat. This estimate assumes the 2024 population estimate for Upper Prior Lake shows carp populations reduced to sustainable levels and a transition to a maintenance phase for Upper Prior Lake. In 2025, populations estimates will be performed on Spring Lake to determine if management can transition to maintenance phase.

How Long in Existence: Since 2010

2024 Budget: $96,500

2024 Year End Expense: $94,500 (estimate).

2025 Budget: $88,500

Specific activities/projects covered by this budget item include:

Consultant/Contractor services (removals and seinings-approx. two events, population assessments, pit station operations, data analysis, desilt/bypass barrier design consulting related to carp, data management, presentation to Board)	$78,900
Bluegill stocking (Desilt pond next to Spring Lake)	$2,000
Tracking (PIT station maintenance, 10 radio tags, PIT tags)	$2,800
Program equipment (waders, net repairs, bins, gloves, ice signs, etc.)	$650
Storage shed rental for carp. equipment	$1,600
CD13 bypass weir tine barrier engineering and construction	$2,000
Barrier	$550
	$88,500

2024 Revenue Source(s):

- Levy: $88,500

611 - Spring Lake Demonstration Parcel Maintenance

Description: Partially funded by a CPL grant and Great River Greening, beach, oak savanna and shoreline restoration and low-maintenance grass as completed in 2017. On-going annual buckthorn treatment and an invasive herbaceous species treatment are expected for 2025.

Why it is Important: This restoration site includes two educational signs that highlight to the public the importance of oak savanna native plants and give credit to our restoration project partners. In addition, this shoreline restoration helps enhance previous habitat work completed at the nearby Spring Lake Regional Park and provides vital habitat connections for wildlife by maintaining critical oak savanna habitat.

How Long in Existence: Since 2017.

2024 Budget: $1,200

2024 Year End Expense: $600 (estimate).

2025 Budget: $1,200

Specific activities/projects covered by this budget item include:

Buckthorn treatment	$600
Herbaceous treatment	$600
TOTAL:	**$1,200**

2025 Revenue Source(s):

- Levy: $1,200

611 – Buck Stream Stabilization Parcel Maintenance

Description: Partially funded by a CWF grant, stream stabilization was completed in 2024. On-going annual buckthorn treatment and vegetation management are expected for 2025 and 2026.

Why it is Important: This restoration site reconnects the floodplain of a highly erosive section of the Buck stream which will reduce sediment and nutrient loading to Buck Lake, and therefore, Spring Lake. Two years of vegetation maintenance support by the District is expected ($4,000 each year) to establish native seeding and control for recurring buckthorn.

How Long in Existence: Since 2024.

2024 Budget: $0

2024 Year End Expense: $0 (estimate)

2025 Budget: $4,000

Specific activities/projects covered by this budget item include:

Vegetation management and buckthorn treatment	$4000
TOTAL:	**$4,000**

2025 Revenue Source(s):

- Levy: $4,000

611 - Alum Internal Loading Reserve

Description: This line item was created to fund alum treatments for waterbodies in the District. Upper Prior Lake's 2020 Alum Treatment was approximately $500,000 and another treatment of the same or higher estimated cost is anticipated in the coming years. A future alum treatment on Upper Prior Lake is needed to meet grant assurances for a previous BWSR grant. Spring Lake will also likely need maintenance treatments in the near future. Fish and Pike Lake may need alum treatments in the future as well. Moving forward the fund will cover sediment monitoring, treatment design, and physical treatment.

Why it is Important: Alum treatments are effective in capturing internal phosphorus loads. Recent treatments in Spring and Upper Prior have resulted in improvements in lake quality indicators.

How Long in Existence: Since 2017 (incrementally build up and then spend on treatments)

2024 Budget: $230,000

2024 Year End Expense: $20,000 (estimate) for Spring Lake sediment coring

2024 Year End Commitment: $210,000

Total Committed Funds: $910,000 (after 2024 commitment)

2025 Budget: $200,000 (continue to build reserve)

Specific activities/projects covered by this budget item include:

Complete sediment coring analysis on Spring Lake	4,000
Conduct sediment coring analysis on Upper Prior Lake	$24,000
Continue to build reserve	$172,000
TOTAL:	**$200,000**

2025 Revenue Source(s):

- Levy: $200,000

611 - Fish Stocking

Description: Annual stocking of bluegills in the upstream wetlands of Spring Lake and Prior Lake with known carp observations to reduce carp populations.

Why it is important: Bluegills are an important predator of carp eggs. The District monitors connected wetlands for carp spawning activity and bluegill presence. To keep recruitment in the lakes down, the District needs to stock these upstream wetlands with bluegills. The DNR only allows stocking to occur in connected wetlands where carp spawning typically occurs. Fish stocking generates a lot of community enthusiasm, volunteerism, and goodwill towards the District.

How Long in Existence: 2019

2024 Budget: $2,000

2024 Year End Expense: $2,500 (includes expenditure of $500 donation from Spring Lake Association).

2025 Budget: Starting in 2025, fish stocking has been consolidated into the 611 Carp Management program.

626 - Planning and Program Development

Description: This category includes general activities that support the District's planning and program development activities. Costs associated with these activities include professional training courses and webinars, software and other subscriptions, equipment replacement, all Board activity costs, professional organization membership dues, volunteer and advisory committee appreciation costs, and activities designed to support staff appreciation and morale.

2024 Budget: $27,500

2024 Year End Expense: $27,500 (estimate).

2025 Budget: $32,000

Specific activities/projects covered by this budget item include:

Software/other subscriptions	$7,000
Training (staff and managers)	$12,000
Minnesota Watersheds membership dues	$7,500
Board activity	$2,000
Advisory committee/volunteer appreciation	$1,000
Staff logo wear and field gear	$1,000
Staff Appreciation Activities	$1,500
TOTAL:	**$32,000**

2024 Revenue Source(s):

Levy: $32,000

626 – Lake Ridge Feasibility Study

Description: The Lake Ridge Estates Stormwater Feasibility Study ("Lake Ridge Feasibility Study") will investigate the feasibility of potential stormwater BMP improvements within Lake Ridge Estates. This study was a suggested next step in the District's Fish Lake Management Plan and Water Resources Management Plan (WRMP).

Why it is Important: This project will determine if stormwater BMP enhancements are feasible within Lake Ridge Estates, which could reduce external loads to Fish Lake.

2024 Budget: $60,000

2024 Year End Expense: $12,000 (estimate).

2025 Budget: $55,500

2025 Revenue Source(s):

- Levy: $0
- Budget Reserves: $48,000
- Grant Revenue $7,500

626 – LGU Plan Review

Description: Other agencies within PLSLWD occasionally update their plans and rules. As part of their plan or rules update process they solicit review comments from PLSLWD. This budget item covers the District Engineer's time needed to review and provide comments on partner agencies' proposed plans and rules.

2024 Budget: $4,000

2024 Year End Expense: $1,700

2025 Budget: $3,000

Specific activities/projects covered by this budget item include:

Consultant review and comments (Scott County Groundwater Plan and Scott WMO 2027-2037 Watershed Management Plan update)	$3,000
TOTAL:	**$3,000**

2025 Revenue Source(s):

Levy: $3,000

626 - Engineering not for Programs (general engineering)

Description: Throughout the year, staff requests the District Engineer assistance with tasks associated with partners or PLSLWD that were unanticipated. This budget item also include time for the District Engineer to attend board and staff meetings.

Why it is Important: Staff needs to consult with engineering experts on unanticipated, time-sensitive concerns. Staff also need to coordinate with the District Engineer on an on-going basis to coordinate work deliverables and schedules.

2024 Budget: $20,000

2024 Year End Expense: $20,000 (estimate).

2025 Budget: $21,000

Specific activities/projects covered by this budget item include:

Engineer bi-monthly attendance at staff coordination meetings	$3,700
Engineer attendance at board meetings	$5,700
Misc. assistance to staff and partners	$11,600
TOTAL:	**$21,000**

2025 Revenue Source(s):

- Levy: $21,000

626 – Debt Issuance Planning

Description: In 2022, the managers interviewed public finance advisory firms and selected a preferred firm to work with. District staff continue to work to advance potential projects towards implementation. Should District staff obtain landowner support on several projects in 2025 for implementation in either 2025 or 2026, the District will likely need to start the process of planning for debt issuance.

Why it is Important: The approach and timing of debt issuance is best performed with guidance provided by public finance advisors. This budget will be used for "Proof of Concept" planning that will result in a multi-year plan that identifies funding needs, gaps, and approaches that best address the District's needs.

2024 Budget: $0

2024 Year End Expense: $0 (estimate)

2025 Budget: $15,000

Specific activities/projects covered by this budget item include:

Public finance advisors "Proof of Concept"	$15,000
TOTAL:	**$15,000**

2025 Revenue Source(s):

- Levy: $15,000

626 - District Plan Update

Description: The District approved the 2020-2030 Water Resources Management Plan Update in 2020. Updates on ten-year cycles are required by state statute and Rule 8410.

Why it is Important: As the District refines implementation projects for District initiatives, such as Upper Watershed projects, it is beneficial to incorporate refined projects into the Water Resource Management Plan in order to affirm CIP funding and to bolster the District's changes of obtaining grant funds. The District completed a minor plan amendment in 2024 with no amendment envisioned for 2025.

2024 Budget: $2,500

2024 Year End Expense: $500 (estimate).

2025 Budget: $0

626 – Capital Project Planning (Previous Name: Upper Watershed Projects)

Description: The District is working to advance projects to provide water quality and/or flood mitigation benefits. This budget item covers initial feasibility screenings, feasibility studies, landowner consultation and negotiations. Generally, once landowner approval is secured, the project is transferred to 550 - Capital Projects.

Why it is important: Several lakes in PLSLWD are listed as impaired by the MPCA. Watershed District residents have indicated an on-going concern about potential flooding in the District.

How Long in Existence: 2020

2024 Budget: $636,000

2024 Year End Expense: $58,000 (estimate).

2024 Transfers to Other Projects: $286,400

UW Remaining Budget (12/31/2024): $291,600 - estimate

2024 Year End Commitment: $291,600

2025 Budget: $307,800

Specific activities/projects covered by this budget item include:

Fish Lake – shoreline cost share, soil grid sampling, other external load management actions	$18,000
Feasibility Studies (new and/or update). Potential projects include Spring Lake West, Buck Chemical, MB13 site, Buck Lake Outlet	$140,000
Projects TBD (flood and/or water quality)	$111,800
District Engineer Assistance	$21,000
Liaison Assistance (SWCD - $15,000, Edina Realty- $2,000)	$17,000
TOTAL:	**$307,800**

2023 Revenue Source(s):

- Levy: $16,200
- Previously Committed Funds: $291,600

637 - District Monitoring Program

Description: This program includes District monitoring activities including planning and coordination of the volunteer and contracted lake sampling, lake level and chemistry monitoring; precipitation monitoring; weather station; stream chemistry, level, flow and synoptic monitoring; database management; equipment purchase and maintenance; TMDL's; data management; and reporting. The District's Long-term Monitoring Plan that is part of the Water Resources Management Plan provides greater details on program activities.

Why is it Important: Characterize current conditions; track changes over time**;** protect human health; target potential water quality problems**;** design pollution prevention programs; assess program goals and respond to emergencies.

How Long in Existence:
Lake Chemistry: 2004; CAMP, 1997
Stream Monitoring: ≤1991
Lake Level Monitoring: 1906
Precipitation Monitoring: ≤1989
Zoo/Phytoplankton: 2020

2024 Budget: $84,500

2024 Year End Expense: $84,500 (estimate).

2025 Budget: $89,100

Specific activities/projects covered by this budget item include:

Lake Chemistry Monitoring: TRPD and CAMP contracts; winter chloride analysis	$27,600
Lake Level Monitoring: Logger service, website graphing, equipment hardware & maintenance	$2,200
Stream Monitoring: Water quality lab analysis, level sensor replacement (5-year cycle , equipment maintenance	$35,000
Flow Monitoring: SWCD contracted flow monitoring and benchmark surveying	$4,000
Precipitation Monitoring: Weather station service and maintenance	$200
Effectiveness Monitoring: Studies relating to projects effectiveness; $1,600 to SWCD for one Sutton Drone survey, $1,000 to EOR for drone data analysis and memo; monitoring equipment.	$9,200
Zoo/Phytoplankton Monitoring: Collection and lab analysis	$2,300
Equipment, Boat and Truck O&M: Miscellaneous equipment including well tubes, stream loggers, hardware, equipment servicing, etc. Gas, truck oil changes, required truck maintenance, and boat gas, maintenance, and winterization.	$3,200
Data Management: Contracted database services	$5,400
TOTAL:	**$89,100**

For more detailed descriptions of the activities/projects covered by this budget item, see the PLSLWD Long Term Monitoring Plan.

2025 Revenue Source(s):

- Levy: $89,100

648 - Permitting and Compliance

Description: The District has established rules and standards for land disturbing activities. This budget item includes engineering review of public and private projects until equivalency is established and District has confidence partners are enforcing equivalent rules. It also includes Scott SWCD assistance with coordinating development reviews, attending development review meetings, processing, performing erosion and sediment control inspections, and closing out District permitted projects.

Why it is Important: District rules function to protect District water resources, such as water resource buffering, along with water quality, rate control, and volume control requirements for

new and redevelopment projects. The permitting program also helps fulfill the District's obligations under its MS4 Permit.

How Long in Existence: The District's Board of Managers first adopted Rules regarding the protection and management of land and water resources in 1975.

2024 Budget: $62,000.

2024 Year End Expense: $43,000 (estimate).

2025 Budget: $65,000. For ongoing development review and permitting activity. New rules were approved in 2022. With the application of the rules over the past two years, staff has determined that several minor revisions are needed to the rules to better clarify District regulatory intent.

Specific activities/projects covered by this budget item include:

EOR Engineering Review Services	$27,000
SCWD Services	$30,000
Rules Update	$8,000
TOTAL:	**$65,000**

2025 Revenue Source(s):

- Levy: $65,000

648 - Update MOAs with Cities and County

Description: With the adoption of updated District rules, the District is working to establish equivalency MOAs for permitting with Savage, Prior Lake and Scott County. Equivalency MOAs indicate that the LGU's rules have been reviewed and determined to be equivalent with the District's rules. When this occurs, the District chooses to not enforce the District's rules as the LGU's rules are achieving an equivalent outcome.

Why it is important: These MOAs are contingent upon the LGU creating equivalent rules and successfully enforcing their rules. Equivalency reduces permitting burden on District residents.

How Long in Existence: Varies; All have expired.

2024 Budget: $5,000

2024 Year End Expense: $1,000 (estimate). Working to establish final equivalency agreements with Prior Lake and Scott County and Savage in 2025.

2025 Budget: $5,000

Specific activities/projects covered by this budget item include:

Legal and engineering services associated with negotiating and preparing MOAs.	$5,000
TOTAL:	**$5,000**

2025 Revenue Source(s):

- Budget Reserve: $5,000

648 - BMP and Easement Inventory & Inspections

Description: The District's conservation easements provide buffers surrounding wetlands and watercourses within the District. Most of the easements were acquired during the land development or redevelopment process, but some were acquired during water quality improvement projects with private landowners. This budget item includes engineering services to review easement boundaries and easement amendment requests and creation of GIS mapping of conservation easement; surveys of easement boundaries as needed; equipment and materials to mark boundaries and complete inspections; and Scott SWCD services to secure development agreements and conservation easements, perform easement inspections and resolve identified violations.

Why it is Important: Vegetative buffers reduce the impact of surrounding development and land use on watercourses and wetland functions by stabilizing soil to prevent erosion, filtering sediment from runoff, and moderating water level fluctuations during storms. Buffers also provide essential habitat for wildlife. Requiring buffers recognizes that watercourse and wetland quality and function are related to the surrounding upland. The easement program monitors and enforces existing conservation easements. Compliant easements are monitored on a three-year cycle to ensure compliance and to establish good relationships between landowners and the PLSLWD. The main objective is to achieve voluntary compliance, but to follow through with clear and consistent enforcement procedures when necessary.

How Long in Existence: Mainly since the 2003 Rule revisions, but several were acquired earlier.

2024 Budget: $49,875

2024 Year End Expense: $49,000 (estimate)

2025 Budget: $40,000

Specific activities/projects covered by this budget item include:

Scott SWCD Program Coordination Services	$28,500
Engineering Services	$4,000
Legal Assistance	$3,000
Materials & equipment: signs, posts, recording fees, etc.	$4,500
TOTAL:	**$40,000**

2025 Revenue Source(s):

- Levy: $35,500
- Easement Acquisition/Amendment/Enforcement Fees (estimated): $4,500
  **Fees are reimbursements received from property owners associated with monument sign materials, title work, easement amendment recording costs and associated professional services to facilitate easement acquisition/amendment/enforcement.*

652 - Education and Outreach

Description: The District's Education & Outreach program involves programs and project which educate the public regarding water resources as well as encourage public involvement. Several primary mechanisms for education and outreach are conducted by the District including:

- Required MS4 education components, such as Storm drain stenciling with the City of Prior Lake and lake associations; outreach booths at community events; and participation and collaboration with SCWEP.
- Direct outreach efforts include:
    - Website updates
    - Social media (Facebook and Instagram)
    - Writing news articles and press releases
    - Responding to direct citizen inquiries
- Citizen Advisory Committee meetings and initiatives (CAC)

Why it is important: A watershed district is required to have an education and outreach program, as part of the District's MS4 permit and Water Resource Management plan. The District's education and outreach program provides a crucial means for the District to gain landowner support for projects, improve the public's general understanding of water resources, water quality benefits provided by the District, how each citizen impacts water resources; and to inspire citizens to change their behaviors and habitats to better support water resource health. Upon a comparative study of metro watershed districts, 3% of the total budget is the average and median amount spent on Education and Outreach. The District has been far below this in recent history which impacts reputability, progress and resident relationships.

How Long in Existence: Since the District was created in 1970.

2024 Budget: $38,500

2024 Year End Expense: $29,500 (estimate).

2025 Budget: $27,300

SCWEP (to meet MS4 requirements)	7,325
Educational tours, events & materials	16,975
CAC (meeting costs, initiatives)	3,000
TOTAL:	**$27,300**

2023 Revenue Source(s):

- Levy: $18,800
- Budget Reserve: $8,500

Reduce Flooding Projects

550 - District-wide Hydraulic & Hydrologic Model

Description: The H&H model is updated as needed to support District planning and project implementation.

Why it is important: In order to develop feasible and realistic implementation projects. Hydraulic and hydrologic conditions must reflect existing conditions to the extent possible.

2024 Budget: $5,000

2024 Year End Expense: $0 (estimate).

2025 Budget: $4,000

Specific activities/projects covered by this budget item include:

Modeling update as needed to update to current hydraulic and hydrologic conditions to support flood reduction and upper watershed projects.	$4,000
TOTAL:	**$4,000**

2025 Revenue Source(s):

- Levy: $4,000

626 – Comprehensive Wetland Plan Update

Description: The District's current Comprehensive Wetland Plan was adopted by the Board in 2012 that was based on numerous high-level assumptions with no ground truthing of assumptions used. Since the plan's adoption, better mapping information (e.g., County's new LIDAR) should be coming available to help the District better assess and categorize wetlands as good candidates for either flood reduction or water quality improvements. Staff expected the LIDAR data to be available in 2024, but its availability has been delayed and is now expected in 2025.

The new data will also assist the District's effort to estimate potential flood storage available. For wetlands that appear to be good candidates for flood reduction of water quality enhancements, ground truthing of outlet control elevations can be performed, which will provide enhanced understanding of potential flood reduction of water quality benefits.

Why it is important: In pursuit of wetland restoration projects that address water quality and flood reduction goals, it is vital that the District have the best information available to select

cost effective projects and to have a good understanding of the wetlands to inform the District's outreach to potential partners and landowners.

2024 Budget: $35,500

2024 Year End Expense: $0 (estimate)

2025 Budget: $35,500

Specific activities/projects covered by this budget item include:

Update the Comprehensive Wetland Plan	$35,500
TOTAL:	**$35,500**

2025 Revenue Source(s):

- Budget Reserves: $35,500

Upper Watershed Flood Reduction

Additional flood reduction projects are included in the Upper Watershed budget item.

Aquatic Invasive Species (AIS)

637 - Aquatic Vegetation Management

Description: Aquatic vegetation surveys during the early spring indicate whether treatment of Curlyleaf Pondweed (CLP) is necessary in Tier 1 lakes. The Aquatic Vegetation Management program includes the initial pre-treatment delineation and post-treatment assessment surveys. The District will request grants funds from Scott County, which has a state AIS grant to cover up to $12,000 annually for management of CLP.

Vegetation surveys assess the distribution, type, and growth density of lake macrophytes (aquatic plants). PLSLWD contracts with a consultant, currently Blue Water Science, to perform in-lake surveys. Summer point intercept surveys are planned to be completed on Tier 1 lakes every other year, Tier 2 lakes every three years, and Tier 3 lakes every five years.

The biobase program maps vegetation density, bathymetry, and bottom hardness in lakes using a Doppler sonar depth finder. This program creates a "heat map" of the location and density (% of water column) of the vegetation. This creates a very accurate and repeatable survey map that allows for consistent year-to-year comparisons.

Why it is important: Curlyleaf Pondweed has negative effects on water quality, and pushes out native vegetation, which is vital to fish and other wildlife. Vegetation and biobased surveys provide data and insights into how the lake is responding to BMPs, alum treatments, carp removals, and other water quality improvement projects. Lake vegetation is a response indicator to nutrients and sunlight availability within the lake. It is important to track these changes over time to be able to assess program goals of increased native plant distribution, diversity, and frequency of occurrence.

2024 Budget: $14,000 (Aquatic Vegetation Management only)

2024 Year End Expense: $14,000 (estimate).

2025 Budget: $30,600
Specific activities/projects covered by this budget item include:

CLP Delineations and Assessments	$7,800
Summer Point Intercept Survey	$11,500
CLP treatments	$10,000
Biobase Subscription	$1,000
Kayak sonar and battery	$300
TOTAL:	**$30,600**

2025 Revenue Source(s):

- Grant(s): $12,000 (Scott County – Lower Prior, Spring and Fish Lakes, as needed)
- Levy: $18,600

637 - Automated Vegetation Monitoring (BioBase)

Description: This program maps vegetation density, bathymetry, and bottom hardness in lakes using a Doppler sonar depth finder. This program creates a "heat map" of the location and density (% of water column) of the vegetation. This creates a very accurate and repeatable survey map that allows for consistent year to year comparisons. Data is recorded and collected on an SD card while on the water and is uploaded to an online account where it is processed by servers automatically.

Why is it Important: Characterize current vegetation locations; track changes over time; assess program goals and assess how water quality supports aquatic vegetation growth and aquatic vegetation treatment.

How Long in Existence: 2013

2024 Budget: $1,300

2024 Year End Expense: $ 1,000 (estimate).

2025 Budget: Starting in 2025, Automated Vegetation Monitoring has been consolidated into 637 - Aquatic Vegetation Management.

637 - Aquatic Vegetation Surveys

Description: Surveys will assess the distribution, type, and growth density of lake macrophytes (aquatic plants). PLSLWD contracts with a consultant, currently Blue Water Science, to perform in-lake surveys. Summer point intercept surveys are planned to be completed on Tier 1 lakes every other year, Tier 2 lakes every three years, and Tier 3 lakes every five years. Surveys conducted for the purpose of AIS management (CLP delineations) are accounted for in the 611 Aquatic Vegetation Management budget.

Why is it Important: Vegetation surveys provide data and insights into how the lake is responding to BMPs, alum treatments, carp removals, and other water quality improvement projects. Our survey datasets have also aided in grant writing and reporting. Lake vegetation is a response indicator to nutrients and sunlight availability within the lake. It is important to track these changes over time to be able to assess program goals of increased native plant distribution, diversity, and frequency of occurrence.

How Long in Existence: ≤1996 Blue Water Science Surveys

2024 Budget: $12,000

2024 Year End Expense: $12,000 (estimate).

2025 Budget: Starting in 2025, Aquatic Vegetation Surveys has been consolidated into 637 - Aquatic Vegetation Management.

637 - Boat Inspections on Spring, Fish, Upper and Lower Prior

Description: The budget for this program funds aquatic invasive species (AIS) inspections. Boat inspections include a contractor to provide in-person boat inspections at boat launches at Tier 1 and potentially other lakes within the District during high boat activity periods during the year.

Why is it Important: Boat inspections are an important step in an effort to prevent the transport of AIS from one waterbody to the next. This program provides in-person and up-close inspection of boats entering and exiting the lakes.

How Long in Existence: 2019 boat inspections

2024 Budget: $34,000

2024 Year End Expense: $34,000 (estimate).

2025 Budget: $34,000

Specific activities/projects covered by this budget item include:

Contract boat inspections on Spring, Fish, Upper Prior, and Lower Prior Lakes	$34,000
TOTAL:	**$34,000**

2025 Revenue Source(s):

- Levy: $19,000
- Grant: $15,000

Other Budget Items

PLOC Restoration, Maintenance & Monitoring

Description: The District is a partner in the management of the Prior Lake Structure and Outlet Channel and shares maintenance expenses with the PLOC Cooperators.

How long in existence: 2006

2024 Budget: $38,981

2024 Year End Expense: $38,981

2025 Budget: $108,125

The PLSLWD was successful in securing state grant funds to help cover approximately 90% of eligible costs to line a 0.4-mile, 36-inch pipe, extending out from the PLOC outlet structure. PLOC allocation includes PLSLWD's proportionate share of the Pipelining local match for the grant and for standard PLOC operations and maintenance.

Specific activities/projects covered by this budget item include:

PLSLWD estimated proportional share of PLOC O&M expenses for 2025	$108,125
TOTAL:	**$108,125**

2025 Revenue Source(s):

- Levy: $108,125

Debt Payment Reserve

Description: In July 2021, the Board of Managers selected six projects from the Upper Watershed Blueprint for near term implementation. Initial analysis indicated that debt issuance may be a feasible approach to finance these planned capital improvements. To avoid a significant spike in the watershed levy in future years, a reserve was established to gradually build up the levy dollar value needed to pay down the new projected debt.

It is possible the District will need to bond during 2025 to cover the cost of the TH 13 Wetland dredging. An estimate of $700,000 was used for the bonding costs. It was assumed the bond would be paid off in 5 years. Bond payments for 2025 were estimated at $81,000. The existing debt payment reserve has adequate funds to cover the bond payments in 2025.

Total Committed Funds: $180,000 (after 2023 commitment)

Bond Payments in 2025: $81,000

Reserve Funds available at 12/31/2025: $99,000

DECEMBER 2024 PROGRAMS AND PROJECTS UPDATE

PROGRAM OR PROJECT	LAST MONTH'S STAFF ACTIVITIES	NEXT STEPS
Upper Watershed Projects **Buck Stream Stabilization, Spring West IESF, MB CD-13 IESF, Swamp IESF, Fish Lake Mgmt Plan, Sutton IESF, Swamp IESF, Buck Chemical Treatment, Potential Flood Storage Projects** *Project Lead: Emily and Danielle*	**Buck Stream Stabilization** • Completed necessary project closeout reporting. • Worked with landowner to discuss bridge replacement. • Sent payment to bank for consent and nondisturbance agreement. • Conducted landowner interviews. **Spring Lake West IESF** • Discussed options for flow backup which is preventing monitoring. • Prepared easement estimates, scenarios for consideration at alternate site. • Followed up with alternate landowner. **MB CD-13 IESF** • On hold for appropriate staff responsiveness capacity. **Swamp IESF** • EOR conducted survey and began field work to inform final design. **Fish Lake Management Plan (FLMP)** • Grid Sampling on Western field to track Phosphorus reduction completed and invoiced. • Lake Ridge Stormwater Pond field surveys completed **Potential Flood Storage Projects** • SWCD began surveying will complete after ice.	**Buck Stream Stabilization** • Obtain recorded consent and nondisturbance from final bank. • Obtain grant reimbursement via Scott SWCD. • Conduct tour in 2025. • Complete site maintenance in 2025/2026. **Spring Lake West IESF** • Monitor two rain events when flow back up is addressed. • Assess ideal and feasible IESF or BMP for implementation. • Follow up with alternate site landowner to assess interest and feasibility of access options. **MB CD-13 IESF** • Understand landowner willingness to proceed in investigation. **Swamp IESF** • Progress design work. **Fish Lake Management Plan** • Progress 200 St Pond design in winter. • Pay out for field nutrient reduction agreement with farmer on West side of Fish Lake. • Review Lake Ridge Pond Maintenance technical memo deliverable **Potential Flood Storage Projects** • Complete survey on Project 10 in winter. Share data with EOR for analysis.
Carp Management ***Rough Fish Management (Class 611)*** *Project Lead: Jeff*	• Preparing winter equipment. Created new thin ice signs. • Checked ice conditions and tracked carp.	• Collaborate with SMSC on carp management • Track radio-tagged carp for removal opportunities • Receive reporting on mark and recapture study on Upper Prior Lake • Complete radio-tagging of 5 carp in Upper Prior Lake. • Update IPM Plan for 2025

DECEMBER 2024 PROGRAMS AND PROJECTS UPDATE

PROGRAM OR PROJECT	LAST MONTH'S STAFF ACTIVITIES	NEXT STEPS
Ferric Chloride System Operations *Project Lead: Jeff and Emily*	• Resumed weekly sampling routine when dosing. Cleared debris from weir • Pumped FeCl as low as possible and shut down pump. • Scheduled feedline winterization. • Completed Industrial Byproducts Report. • Began contracting with building and driveway contractors for site improvements. • Recorded easement adjustment for FeCl access drive. • Work with landowners on easement, construction, and future project items.	• Progress site improvement construction after contracting is complete. • Begin planning Highway 13 wetland excavation project timeline. • Continue working with Highway 13 wetland landowners on project timing, access, and other project details. • Winterize the FeCl system.
Farmer-Led Council *Project Lead: Emily*	• Continued coordination with Scott SWCD. • Planned winter FLC meeting for January 23, 2025.	• Continue to support and review FLC projects. • Plan winter FLC meeting.
Cost Share Incentives *Project Lead: Emily*	• Provided feedback on potential cost share projects. • Review of the 2025 Docket.	• Review cost share applications with Scott SWCD as needed. • Present non-traditional cost share project types for Board approval as applicable. • Present proposed 2025 Docket to Board for approval.
Sutton Lake Outlet and Lake Management Plan *Project Lead: Emily*	**Lake Management Plan** • Completed data analysis of outlet elevations in relation to lake and stream flow.	**Lake Management Plan** • Plan landowner communications. • Analyze drone survey.
Website and Media *Project Lead: Danielle*	**Social Media** • Reminders to keep leaves out of storm drains and use de-icers responsibly • Call for ice-on reporters • Celebrate Outstanding Employee Award • Respond to comments and messages as needed **Website** • Keep calendars and news up to date. Repair issues as they come up.	**Social Media** • Continue updating Facebook and Instagram with relevant topics • Respond to comments and messages as needed **Website** • Update website as needed **Articles** • Write article(s) for Prior Lake Association Newsletter
Citizen Advisory Committee *Project Lead: Danielle*	• Prep for December 19 CAC Meeting	• December 19 CAC Meeting

DECEMBER 2024 PROGRAMS AND PROJECTS UPDATE

PROGRAM OR PROJECT	LAST MONTH'S STAFF ACTIVITIES	NEXT STEPS
Education Program *Project Lead: Danielle*	• See Website and Media section. • Minnesota Watersheds Conference presentation	• Begin planning for 2025 Education and Outreach program
Monitoring Program *Project Lead: Jeff and Zach*	• Data processing in WISKI. • Worked with MPCA on 2025 Surface Water Monitoring Request for upcoming Lower Minnesota River Watershed intensive monitoring. Fish, Spring, Upper Prior, and Lower Prior Lakes chosen for intensive monitoring and Surface Water Assessment Grants. • All loggers have been removed for the winter • Began automating load calculations. • Received and began QA/QC lake monitoring data • Shared data with partners. • Worked on Lake Report Cards	• Continue QA/QC in WISKI. • Sediment analysis and technical memo deliverable by March 2025. • Continue QA/QC of lake monitoring data and analysis.
Aquatic Vegetation Management and Surveys *Project Lead: Jeff*	• Submitted permit follow-up – annual survey data.	• none
AIS *Project Lead: Jeff and Zach*	• None	• Continue coordinating with DNR on CD3 station installation agreement. • Install CD3 station at Sand Point boat launch, once approved.
Rules Revisions *Project Lead: Joni*	• No activity this month.	• Finalize City of Prior Lake equivalency MOA. • Finalize City of Savage interim equivalency agreement. • Finish review of Scott County rule updates to confirm equivalency. Continue working with Scott County to finalize equivalency MOA.

DECEMBER 2024 PROGRAMS AND PROJECTS UPDATE

PROGRAM OR PROJECT	LAST MONTH'S STAFF ACTIVITIES	NEXT STEPS
BMPs & Easements *Project Lead: Joni*	• Continued easement signage installs. • Held monthly coordination meeting with SWCD. • Met with landowners regarding potential development agreement termination and easement amendment.	• Sign and record encroachment agreement. • Address outstanding issues associated with: ○ Development Agreement and Conservation Easement establishment process and document templates. • Continue to resolve outstanding easement violations. • Work to advance easement amendment once official request is received.
Permitting *Project Lead: Joni*	• Provided permit review comments to LGU partners on three projects. • Performed construction inspections on Permit 24.01. • Worked to close old permit (22.02). • Reviewed permit application (24.02)	• Continue construction inspections. • Continue to close out old permits. • Continue to provide permit review comments to LGU partners.
Planning Activities *Project Lead: Joni and Emily*	• Continued compiling a master project spreadsheet to aid in TMDL, website, and future maintenance tracking needs. • Working to schedule meeting with Spring Lake Township regarding land being re-guided.	• Continue to participate in Scott WMO plan update process.
Outlet Channel Projects and Administration *Project Lead: Emily/Jeff*	• Held November Cooperator meeting. • Reinitiated work with WSB on pipelining project. • Scheduled special Cooperator and TAC meeting for January 2025. • Worked with contractor on remaining woody invasives management. • Continue work on 2024 Prior Lake Outlet Channel Annual Report.	• Continue channel inspections and maintenance activities. • Hold PLOC TAC meeting to discuss potential future projects and vegetation management responsibilities. • Hold Special Cooperator meeting to seek authorization to amend consultant contract and to bid the pipelining project.
General Administration *Project Lead: Joni*	• Worked with surveyor on marking property boundaries for district-owned Ducks Unlimited parcel. • Sought estimate to mark District's Spring Lake Demonstration parcel. • Continue to work on file archiving. • Continue to work on cleanup of electronic file organization. • Staff attended the Minnesota Watersheds Annual Conference.	• Install no trespassing signs at select locations for district-owned parcel. • Continue to participate and learn more about potential Scott County coordinated benefits plan. • Update personnel policy (2025). • Develop approach to district parcel maintenance. • Develop electronic file organization protocols.

PLSLWD Board Staff Report
December 11, 2024

Subject |	FeCl System Assessment		
Board Meeting Date |	December 17, 2024	**Item No:**	4.2
Prepared By |	Emily Dick		
Attachments |	FeCl System Assessment Report		
Proposed Action |	Motion to accept the 2024 FeCl System Assessment Report.		

Background

The District's Ferric Chloride Treatment System is an essential part of the District's efforts to reduce phosphorus reaching Spring Lake, and therefore Prior Lake. The District contracted EOR to conduct the Ferric Chloride System Assessment in 2023 in order to recommend system updates, equipment lifetimes, and optimization of the system. Due to drought and no flow into the ferric chloride system, the dosing and chemical analysis could not be completed in 2023. Dosing and chemical analysis has now been completed in 2024, and the Ferric Chloride System Assessment report is complete.

Discussion

EOR will provide a brief summary of the Ferric Chloride Report, particularly the new dosing and chemical analysis, for Board discussion. The Board has previously reviewed the bulk of the report at the September 2023 and February 2024 Board Workshops which resulted in pursuing construction of FeCl site improvements. Since that time, the remaining dosing and alternative chemical analysis has been completed and site improvements are underway.

Recommended Action

Motion to accept the 2024 FeCl System Assessment Report.

Budget Impact

There is not a budget impact associated with this agenda item.

Prepared by: EOR & Purpose Associates
For the Prior Lake - Spring Lake Watershed District

Ferric Chloride Treatment System Assessment and Recommended Updates

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EXECUTIVE SUMMARY

The ferric chloride ($FeCl_3$) dosing system was initially installed in 1997 (Montgomery Watson) to provide a chemical injection to the tributary watershed and adjacent ditch, as the water flowed toward a settling pond, within a wetland, before then discharging to Spring Lake. The system was updated in 2013 (Bolton & Menk) with new operating controls and dosing equipment to move the discharge point of the $FeCl_3$ downstream to where the water is diverted from the ditch into the desiltation pond. Again in 2019 (WSB), the weir near the dosing station/tank was updated as well as fish barrier configuration added.

The $FeCl_3$ facility, i.e., discharge location, the main facilities, the $FeCl_3$ storage tank, secondary concrete containment structure, piping/valves, building, and feeder piping and injection components at the new location near the desiltation pond, has not been replaced or had a major assessment of their condition and expected lifespan.

This report serves as a centralized document to inform future decision making for the ferric chloride system. This report presents a thorough review of each component of the system to provide:

- An evaluation of the current system
- An assessment of the existing access and potential improvements
- A summary of improvements with alternatives and cost assessment
- An evaluation of alternative chemicals for phosphorus removal potential

Table E1 summarizes the age, expected life, deficiencies and recommendations for the equipment described in this report. Several improvements are recommended in the immediate future. These items were sized and selected on a preliminary basis in order to estimate project costs. These improvements include:

- Replace the pump's pressure switch.
    - The existing switch is aged and may possibly malfunction. The switch is a requirement of the MnDOT's right-of-way permit. A replacement switch is relatively low cost.
- Replace the storage tank's ultrasonic level sensor with a radar level detector.
    - The existing level sensor is past its expected service life.
    - A radar level detector can sit outside the tank, extending the detector's life and allowing for easier maintenance, whereas the existing ultrasonic sensor must be inside the tank to work.
    - Radar level detectors on average also have a longer service life than ultrasonic systems.
    - The unit can be purchased directly from the manufacturer to reduce the costs of purchasing through a manufacturer's representative.
- Replace the ultrasonic level sensor and datalogger at the weir.
    - The sensor and data logger of the ultrasonic system have failed. Replacement with a radar system would provide updated equipment and standardization with the radar level detector that is recommended for installation on the chemical storage tank.

- Replace the poly-vinyl chemical feed tubing. Convert most of the poly-vinyl tubing within the building to PVC.
    - The existing tubing is past the manufacturer's recommended life.
    - The tubing inside the building has had multiple leaks with spot repairs.
    - Changing to PVC will avoid requiring frequent future replacement.
    - For any tubing that must remain poly-vinyl to preserve its functional operation (i.e., around the pump), it is recommended to establish a maintenance plan to replace the tubing every 2 years.
- Purchase Personal Protective Equipment (PPE) to be kept at the chemical feed building.
    - This is essential for ensuring all personnel (whether PLSLWD staff or from outside) have access to safety equipment needed for chemical feed systems.
    - This includes an insulated jacket for the existing eyewash system to avoid the potential of freezing in late fall months.

Table E1: Summary of Existing Equipment.

Item	Estimated Age	Typical Life	Deficiencies	Recommendations
Chemical Feed Pump	10 years	8-12 years	Advanced age.	Replace it when the pump fails.
Valves	10-20 years	10-20 years	Advanced age.	Test/exercise valves regularly. Replace when fails or at owner's discretion.
Pressure Switch	Unknown	5-10 years	Advanced age. Reports of possible malfunction.	Replace unit.
Chemical Feed PVC Line	10 years	20-30 years	No significant deficiencies	Continue regular maintenance. Repair as needed. Re-evaluate conditions in the future.
Chemical Feed Flexible Tubing	10 years	2 years	Manufacturers recommend replacing it every 2 years	Replace all. Convert most to PVC inside building. Create regular replacement plan for any remaining tubing.
Chemical Storage Tank and Containment	25 years +	15-30 years	Aged tank. Incompatible Lid. It is difficult to replace it with long delivery times. PVC pipe in pump containment area drains to ditch.	Replace the tank with one of alternatives. Seal PVC pipe in pump containment area. Move chemical fill points to inside containment.
Building	25 years +	25-50 years	Does not allow for ease of replacement of tank. Rodents present.	Modify the building by adding large garage doors and modifying the west wall of containment. Seal holes for rodents.
Weir Level Sensor	10 years	5-7 years	Sensors and datalogger have both failed and are non-functional.	Replace with radar level system and associated controls.
Tank Level Sensor	10 years	5-7 years	Aged. It is installed inside of the tank.	Replace with radar level system (that matches system at weir)
Chemical Feed Culvert Screening	Not Present	N/A	N/A	It can be feasible but involves significant additional maintenance and cost.
Chemical Feed Mixing	Not Present	N/A	N/A	Not recommended from engineering and cost standpoint but can be optionally added based on Owner's preference.

The driveway access to the $FeCl_3$ tank and dosing facility is a gravel drive and relies on coming through a private property, albeit with an easement. The current layout is barely workable, as it is a difficult-to-maneuver turn for the delivery tanker trucks that are used to fill the tank. Four alternatives are presented which range in scope and price. Alternative 1 represents the existing route with proposed stabilization along the driveway. Alternative 2 includes the truck pulling into the private driveway and backing into the access road. Alternative 3 was suggested by the trucking company, based on a desire to minimize maneuvering on Highway 13. Alternative 4 proposes using a single framed truck with no trailer (40 feet length) approaching from East to West on Highway 13.

The existing tank could fail at any time. It also does not currently have a lid that fits. To solve this, two facility alternatives for modifications to the tank and building and drive access were developed and are as follows:

Alternative A:

- Replace the existing tank with a double wall polyethylene tank.
    - This double walled tank provides containment while also allowing the system to continue running if the inner tank fails.
    - A 3,150-gallon tank was preliminarily selected to meet chemical feed needs as well as fit into the existing building.
        - This may cause higher chemical and delivery costs due to being smaller than a full tanker size of 4,000 gallons.
- Install the garage door on the west side of existing building and modify the west wall of the concrete containment.
    - This allows the storage tank to be easily replaced both now and, in the future, in the event that the tank fails. Allowing for replacement of the tank is critical to maintaining the system in the future.
    - The concrete containment can be demolished because the double walled storage tank provides containment. A small curb will remain for small spills.
    - Optional removable waterproof barriers can be used to provide additional containment, if desired.
- Update drive access with Alternative 4 with minimal modification to the driveway.

Alternative B:

- Replacing the existing tank with four single-wall polyethylene tanks
    - The additional number of tanks provides redundancy, allowing for the system to continue running in the event that a tank fails.
    - 1,100 gallons tanks were preliminarily selected to fit into the existing building. The total volume of 4.400 gallons maintains the existing capacity and allows for delivery of a full tanker, potentially reducing chemical and delivery costs.
    - The smaller tanks reduce the required containment volume.
    - This alternative will require more piping and valving within the building as well as additional level sensing equipment. This alternative includes 4 radar level sensors (purchased directly from the manufacturer for a reduced cost).

- Install the garage door on the west side of existing building and modify the west wall of the concrete containment.
    - This allows the storage tanks to be easily replaced both now and, in the future, in the event that a tank fails. Allowing for replacement of the tank is critical to maintaining the system in the future.
    - The smaller tanks can also more easily be brought in and out of the building, over a containment wall, allowing for a short concrete containment wall to remain in place.
- Update drive access using Alternative 1 with proposed stabilization along the driveway.

Equipment costs, installation, general project costs, engineering, legal, and a contingency that is typical of this stage in the project are included in the costs below, Table 22.

To take into account potential differences in operation cost, primarily due to differences in chemical and delivery costs, as well as replacement of level sensors on the tanks, the net present value of Alternatives A and B were calculated to develop Life Cycle Costs, Table 33.

Alternative B provides benefits of redundancy, allowing for system operation in the event of tank failure, and reduced risk during spillage. Alternative B also makes it easier to maintain the required containment and to replace tanks in the future. Therefore, Alternative B is recommended. However, Alternative A is a reasonable option if the district is interested in a simplified singular system rather than redundancy and ease of tank movement.

The hydraulics of the flat system and lake tailwater during higher flow periods do appear to be affecting the performance of the system and bypass of untreated flow. Further detailed investigations into how to address this interference are recommended.

PLSLWD expressed interest in evaluating the potential benefit of utilizing alternative chemicals to ferric chloride (ferric) as well as reviewing the existing dosing and looking to see if optimizing the ferric dosing is possible. Due to drought conditions in 2023, water samples were not representative of typical conditions. The project timeline was extended, and samples were taken in 2024 during flowing conditions. As in the past, there was significant variability in the results and not all samples sent out for jar testing correlated well with the district's monitoring. Nevertheless, some conclusions were drawn from the data available, and a modified dosing curve is suggested that provides seasonal differences, with higher dosing during June to September, when phosphorus concentrations are often higher.

Table E2: Recommended Improvements, Project Cost.

Improvement	Estimated Project Installed Cost*	
	Alt. A	Alt B.
Replace Tank (Including all appurtenances)	$35,400	$40,600
Install Garage Door and Demolish West Wall of Containment	$15,400	$12,100
Replace Tank Ultrasonic Level Sensor with Radar Level Detector(s)	$1,000	$4,000
Replace Ultrasonic Level System at Weir with a Radar Level System and Controls	$10,000	$10,000
Replace Pressure Switch	$300	$300
Replace Chemical Feed Tubing (With Mostly PVC)	$3,600	$3,800
Personal Protective Equipment	$2,100	$2,100
Seal Building Holes from Rodents	$500	$500

Heated, Insulated Eye Wash	$2,000	$2,000
Driveway Improvement	$15,300	$136,600
General (mobilization, demobilization, etc.) (10%)	$8,600	$21,200
Total Construction Cost	$94,200	$233,200
Permits and Legal Fees (10% Construction)	$9,400	$23,300
Design and Construction Engineering (30% Construction)	$28,300	$70,000
Contingency (20% of Construction, P&L, Design & Const. Eng.)	$26,400	$65,300
Total Capital Investment	$158,300	$391,800

*All costs have been rounded up to the nearest $100*Table 3*

*Table E3: Operation and Management Life Cycle Costs.**

Item	Alt. A	Alt. B	
Chemical Cost Calculation			
Cost per Gallon	$3.75	$3.01[1]	$/gallon
Deliveries Per Season	3	2	Deliveries/Year
Gallons Per Delivery	2640	4000	Gallons/Delivery
Fuel, Freight, etc.	$65	$299	$/Delivery
Cost per Delivery	$9,965	$12,339	$/Delivery
Annual Costs			
Annual Chemical Cost	$29,895	$24,678	$/Year
Annual Maintenance Cost (roughly estimated)	$5,000	$5,000	$/Year
Net Present Value Calculation			
Operation Life	20	20	Years
Discount Rate	5%	5%	%
Net Present Value Factor for Annual Cost	12.46	12.46	
Net Present Value of Annual Costs over Lifetime	$434,900	$369,900	$/Lifetime
Replacement Costs			
Tank Level Sensor Replacement (10-year life)	$1,000	$4,000	$/Lifetime
Weir Level Sensor Replacement (10-year life)	$10,000	$10,000	$/Lifetime
Pump Replacement (10-year life)	$5,000	$5,000	$/Lifetime
Valves and Other Sensors Replacement (estimated)	$4,000	$4,000	$/Lifetime
Net Present Value of Annual Costs over Lifetime	$434,900	$369,900	$/Lifetime
Total Replacement Costs	$20,000	$23,000	$/Lifetime
15% Contingency of Replacement and Annual Costs	$68,200	$59,000	$/Lifetime
Total Capital Investment (From Table 3)	$158,300	$391,800	$/Lifetime
Total Net Present Value	$681,400	$843,700	$/Lifetime (Total)

*Note that estimated maintenance and replacement costs were included and that are the same between alternatives to give a more representative estimate of total Net Present value (NPV) costs. NPV is currently the gold standard method for comparing the cost of two alternatives. The total NPV is meant to be a comparative value, primarily to aid in alternative selection, and does not represent a cost the PLSLWD is expected to pay currently.

[1]This is an estimate based on several quotes provided by chemical suppliers. Actual prices could be higher, depending on the supplier selected.

1. EVALUATION OF CURRENT SYSTEM

This section of the report outlines the condition, life cycle and replacement, and future recommendations for each component of the current ferric chloride system. Hydraulic impacts of downstream water levels and how that affects the diversion and high flow bypass on the performance of the system is also discussed. Chemical Feed Pump

1.1 General Description

The existing chemical feed pump is a Watson Marlow Qdos 30, which is a well-known brand of peristaltic pump that is often used in chemical feed systems. The Watson Marlow pump is one of the most commonly used chemical feed pumps and is generally regarded as being reliable and affordable. Because it is commonly used, many suppliers will also keep the most recent model in stock. The Qdos 60 is the most recent model, but differences between the models are typically negligible and a Qdos 60 can easily replace the existing pump if the pump fails at any point.

Pumps can be sold individually or as part of a skid. Skids can vary but typically consist of the pump, a mounting panel, a small chemical catchment, leak sensors, and a variety of other valves and sensors, depending on the system needs. The pump itself contains a small portion of flexible tubing to allow for peristaltic contractions to propel flow. This tubing requires regular replacement, and this work has been contracted to Vessco in recent years. The pump is then connected to the system via flexible or rigid piping (see discussion in section 1.2).

Figure 1: Watson Marlow Qdos 30 Chemical Feed Pump.

1.2 Condition

The existing pump has been in operation for approximately 10 years but is operating adequately. The operators noted that regular maintenance has been performed on the pump, according to

manufacturer recommendations. As long as regular maintenance is continued, the pump can continue in operation until it fails.

1.3 Expected Life and Replacement

The existing pump is estimated to be approximately 10 years old. These chemical feed pumps are expected to last approximately 8-12 years; however, facilities should always be prepared to replace equipment in the event of failure. Under non-optimal service conditions, the lifespan could be as low as 5 to 10 years. Several factors suggest this pump lifespan would be in the lower 5 to 10-year category, including that the pump is located in an unheated, non-air-conditioned building that is subject to wide temperature and moisture fluctuations and that the pump is operating against higher head condition due to the long discharge line.

Any new chemical feed pump should be sized for the design conditions needed and include additional safety features to minimize exposure to chemicals. The pump should be skid mounted to include all piping, calibration chamber, and splash guards. The chemical feed system should be equipped with personal protective equipment (PPE) including a chemical-resistant face shield, chemical-resistant apron, gloves, and a portable eye-wash station and drench hose. An eye wash station is currently present in the chemical feed building, however other PPE should be kept at the building as well. PLSLWD staff noted concern that the eyewash may freeze during later Fall months. To avoid freezing issues, an insulated jacket, purchased from the eyewash manufacturer, can be installed on the eyewash unit.

The pump will require regular maintenance. The pump head is designed to be a replaceable wear piece of the pump. On average, the pump head is replaced annually at approximately $250 per unit. PLSLWD's operational needs put the lifespan at about a year. Trial and error could increase the lifespan of the pump head to about 14 months. Utilizing a maintenance contractor, such as Vessco, for regular maintenance needs is common for many facilities. This is particularly helpful with facilities that have turnover in staff and lose institutional knowledge of equipment maintenance. Furthermore, it can decrease the risk of chemical exposure to PLSLWD staff.

Many facilities choose to install two pumps in parallel to avoid downtime if a pump fails. Alternatively, some facilities keep a second pump as a "shelf spare" so that they can quickly switch out a failed pump. For PLSLWD, continuous operation is less critical, and a few days of down-time may be acceptable. Therefore, installed spare or shelf-spare is likely not necessary. If the pump fails and must be replaced, Vessco, the manufacturer's representative for the Watson Marlow pumps, can be contacted to obtain a replacement. In the unlikely event that Vessco has no pumps in stock, a replacement is likely to take 2-4 weeks to deliver. However, Vessco has noted that they keep 20-30 pumps in stock, so there is no lead time. Therefore, it will typically be easy to purchase a replacement pump in a timely manner.

Due to the age of the pump, it would be suitable to replace the pump at the same time as other construction improvements, to consolidate costs and reduce maintenance/replacement difficulties for PLSLWD staff. However, because of the short time it would likely take to replace the pump, a feasible option is to continue using the existing pump and skid, waiting until failure to replace components. This would spread the costs out over time, but the budget must be set aside for those anticipated costs.

There is currently a pressure switch installed that is mounted to the wall above and to the side of the chemical feed pump. It is designed to shut off the pump if a high pressure set point is exceeded. Current setpoints appear to be 5-13 psi. The pressure switch is an ASHCROFT B424B model (see revised Operation and Maintenance manual). The switch is a requirement of the MnDOT's right-of-way permit. PLSLWD staff noted there may be some evidence the unit may not be working as intended. A technician can test the unit, but replacement at this time is recommended due to its low cost compared to the cost of a technician.

It is not clear when exactly each valve was installed, but the likely age of the valves is 10-20 years. Valves of the size and type in this facility can vary significantly in expected life but can also last 10-20 years. Small valves are relatively low cost (typical costs are $100-$300 per valve). At the owner's and operator's discretion, it is not uncommon to replace valves of advanced age to avoid the inconvenience of failure. The PLSLWD may opt to do that in that case. However, in many cases, valves are replaced after failure. PLSLWD staff should exercise valves on a regular basis (open and close valves) to ensure they operate appropriately and are leak free.

Manufacturers will sell the pump individually or as part of a skid, which can be customized to the system's needs. The cost for individual pumps is currently estimated at approximately $4,500 each. The cost for the pump and a pre-manufactured skid that may meet the PLSLWD's needs is approximately $8,000-$10,000. The cost for custom skids is approximately $12,000-$18,000.

1.4 Summary and Recommendations

The current chemical feed pump is a well-regarded brand, suitable for this application. PLSLWD can opt to replace the pump and valves at the current time or to continue using the pump and skid and replace components as they fail. Replacement of the pressure switch is recommended.

1.5 Chemical Feed Line

1.5.1 General Description

A chemical feed line extends from the chemical feed pump through a long conduit underground to the feed point. This line was installed in approximately 2013 during a construction project to relocate the feed location. The entire line is over 900 feet long. Within the chemical feed building and at the chemical feed point, there is flexible 1/2" tubing that is a poly-vinyl blend. Based on discussions with PLSLWD staff and the construction drawings, this 1/2" tubing connects via adapter to a 1" PVC line, which travels for most of the 900 ft length between the chemical feed building and the chemical feed point. Request For Information files from the construction project (from S. M. Hentges) that ask to specify type of tubing, provide an answer that 1/2" tubing in the shed is connected to the longer 1" line via adapter (though this document is not clear about the piping material). Furthermore, a document titled "Design Considerations – 2013 $FeCl_3$ work" mentions the 1" PVC carrier line as the primary feed line. Therefore, the flexible 1/2" tubing appears to connect to the 1" PVC line with an adapter at both ends of the PVC line. According to original drawings, at certain points in the path, the 1" PVC line was also installed in a 2" PVC casing, such as under the highway and at a gas line crossing. The 1" PVC line was installed during the 2013 construction project using directional drilling technologies to minimize any disturbance on existing land conditions. Portions of the tube that are observable in the field appear to confirm the above information. The conditions of the District's

MnDOT's right-of-way permit require that the feedline have secondary containment, be at an 8 ft of minimum depth below ground in the right-of-way and have no seams or joints within 100 feet of the right-of-way. At this time, we can only assume that these construction requirements were met when the line was installed during the 2013 project. The district does not know the exact location of the chemical feed line. Based on the 2013 Plans and Specifications, it does not appear the underground line was installed with a tracer wire to help locate it. However, it is expected that the line is in the general vicinity of the path shown on the 2013 drawings. If the district needs to locate the line at any point in the future, there are typical methods for locating and verification of utilities in the engineering infrastructure design and construction sector, some with higher accuracy levels and commensurately higher costs to implement. It is anticipated that the ground penetrating radar will be necessary for accurate relocation of the feedline. To do so will require blowing out the line and attempting to feed a wire into the feedline to locate and mark the pipe from the surface. Due to the lack of casing along the length of the feedline, a tracer wire will not be able to be permanently inserted unless an additional boring line is laid parallel to the existing feedline. The feedline will likely not be able to be located under Highway 13 but can be marked where it enters and exits with a metal pin. Excavation and exposing of the feedline in strategic locations is a solution that offers the possibility of adding access ports for future inspections.

1.5.2 Condition

The PVC line appears to be in adequate condition and no leaks or other issues appear to be currently present. Furthermore, the exposed tubing in the chemical feed building as well as at the access manhole at the chemical feed point appear to be in operating condition. However, Vessco has assisted in repairing several leaks in the building piping. The piping within the building also shows evidence of leaking as well as apparent repairs with multiple sections of piping.

1.5.3 Expected Life and Replacement

The PVC line as well as the poly-vinyl was installed with the 2013 construction project. The PVC line has not since been replaced but the poly-vinyl tubing has been replaced in piecemeal portions every 2-4 years.

The PVC line has been in service for approximately 10 years and PVC lines can have long service lives of approximately 20-30 years. Current service procedures, such as cleaning the lines and testing for leaks, should be continued to ensure proper operation of the line. Replacement of the long underground line is not recommended at this time.

The poly-vinyl tubing, however, requires more frequent replacement. The manufacturer's recommendation is to replace the tubing every 2 years, both within the chemical feed building and at the chemical feed point. It is recommended to replace all the poly-vinyl tubing at this time. This will also help ensure a clean, organized, and leak-free environment that does not pose a safety hazard to operators. The majority of the poly-vinyl tubing within the chemical feed building can be replaced with PVC so that frequent replacement will no longer be necessary, reducing the total amount of poly-vinyl tubing to a minimal amount around the pump and a short length inside the chemical feed manhole. Poly-vinyl is necessary to maintain these locations due to the flexibility of the tubing. There are no other cheaper or longer-lasting alternatives to substitute poly-vinyl in these

locations. For the short lengths of poly-vinyl tubing that remain, it is recommended to develop a regular maintenance plan to replace the tubing every 2 years. Replacement of this tube is already a routine practice of ongoing operations and maintenance. The remaining flexible tubing will be quite minimal and therefore likely to be low cost to replace.

1.5.4 Summary and Recommendations

It is recommended to replace the existing poly-vinyl tubing. Inside the chemical feed building, the tubing can nearly all be replaced with PVC to avoid the need for frequent replacement in the future. For the small amount of remaining poly-vinyl tubing, it is recommended to develop a regular maintenance plan to replace the tubing every 2 years.

1.6 Chemical Storage Tank and Containment

1.6.1 General Description

The chemical storage tank is a 4,400-gallon polyethylene tank that is commonly used for chemical storage in chemical feed systems. According to the engineer's report of 1995, the tank was originally sized based roughly on the estimated amount of ferric chloride needed during an entire season, 10% freeboard, and the rough size of a chemical delivery truck. The reasoning was that fewer chemical deliveries would lead to decreased costs. Currently, the PLSLWD estimates that the chemical needed in a typical non-drought year is roughly 6000 gallons.

Currently, Hawkins is a chemical supplier. Beginning in 2023, Hawkins no longer sends full size chemical tanker trucks because of difficulty in accessing the site. However, expected driveway improvements may improve access to the site in the future, allowing full-size tankers, see section 2. Full size tankers typically hold approximately 4,000 gallons of $FeCl_3$, which is based on an approximate maximum weight of 45,000-48,000 lbs per tanker, the density of the chemical (11.25-11.46 lbs/gal for $FeCl_3$), and some required headspace. Deliveries are now made with a smaller freight liner straight truck that have eight 330 gallons totes, which equates to up to 2640 gallons per delivery. Chemical costs are currently at $3.75 per gallon of $FeCl_3$ with Hawkins. Receiving deliveries of less than 4,000 gallons typically incurs a higher cost, due to wasted space in the tanker as well as higher cost for smaller trucks. Furthermore, if the facility does not have the ability to receive full tankers, it can limit the choice of chemical supplier.

Even when a full tanker is provided, the cost of ferric appears to vary significantly depending on the chemical supplier. Quotes from four other chemical suppliers' range in costs from $1.91-$3.64 per gallon for full tanker deliveries. On top of chemical costs, there is a nominal flat-rate delivery fee ranging from $29-$300, depending on the supplier and delivery method. The lower chemical costs, noted above, indicate significant possible savings by allowing full tankers to deliver to the site.

Therefore, while there is risk to store larger volumes of chemical, leading potentially to larger spills, there may be operational cost benefits of ensuring at least 4,000 gallons of chemical storage is available and that full tankers can access the site.

The tank was installed within a concrete chemical containment curb that was designed to contain a chemical spill in the event the tank fails. The curb area is therefore designed to hold the tank and

freeboard volume. There is also a small containment curb around the area where the chemical feed pump is located, to catch spills in that area. A metal building was installed around the tank, but no path of egress was designed to allow for replacement of the tank.

Figure 2: Existing Chemical Storage Tank.

1.6.2 Condition

The tank does not currently have any obvious issues but could potentially fail at any time, based on its age. The most common point of failure of a chemical tank is at the tank sidewall penetration fittings. There are several capped fittings on the tank walls from previous pipes. These fittings typically have gaskets that become dry and brittle which leads to a leak. The lid currently does not fit properly, opening the tank contents to the building, which allows fumes to be present in the air and potentially causing more corrosion in the building.

Within the small containment area around the pump, there is a PVC pipe that carries tubes to the original chemical feed point. However, these tubes are no longer in use. The PVC pipe extends up through the concrete but does not reach as high as the curb walls. Therefore, if there is a large enough chemical spill around the pump, it can unintentionally drain through that pipe to the ditch, resulting in permit violations.

The chemical feed connection point is currently located above the containment wall, allowing any spills during filling to fall outside of containment. It is preferred that the connection couplings should

be moved further inside the containment area so that any spills will be contained. Several additional issues are noted in the section below.

The storage tank is equipped with a PVC pipe that extends out of the building. These pipes serve as a vent and similar vents will be installed with any new or replaced tanks.

1.6.3 Expected Life and Replacement

The tank is approximately 25 years old. Polyethylene tanks of this type are generally expected by their manufacturers to have a service life of 15-20 years; however, many are functional for more than 30 years. There are several options to prepare for anticipated failure: chemical spill containment, reducing downtime of the system, and replacement of the tank. The existing system was built with a concrete chemical containment system in the event of a spill. However, the latter two options cannot easily be met. The system currently has only 1 tank and therefore has no redundancy. If the tank fails, the system will be out of service until a new tank is installed and operational. The lead time for a new tank is currently 8-12 weeks. Furthermore, there is currently no way to easily replace the tank. The building and/or concrete containment system would need to be disassembled or damaged in some way to remove the existing tank and install a tank inside. Therefore, disassembly, demolition, and construction would take additional time and cost to replace the tank. The system may therefore be out of service for potentially several months if the tank fails.

A potential solution to ease replacement of the tanks is to install a new garage door on the west side of the building. The building may require some structural modifications to make installation of the garage door possible and a large door is expected to have higher cost and more difficulty in installation. Garage door selection would be determined during design; however, it is likely it would be a manual, single door, roll-up style. Furthermore, a large tank that is similar in size to the existing tank would not be able to fit through the opening without demolishing the west side of the containment wall. Therefore, part of the wall must be demolished. To reinstall the required containment system, the concrete wall may be either rebuilt or a removable containment alternative could be installed, such as a removable waterproof barrier, to allow for ease of continued replacement in the future. A further option is to utilize a double wall polyethylene tank, which is available from multiple manufacturers, and allow for containment in case the interior tank fails. This double walled tank would need to be smaller than the current tank to fit in the existing building and would be approximately 3,150 gallons in volume (the current tank holds approximately 4,400 gallons). Furthermore, in the event that the inner wall fails, it allows the system to remain in service while a new tank is purchased and installed, reducing system downtime. In comparing a large single wall tank option (where a containment wall is rebuilt) to a large double wall tank option, the cost is approximately equal, but a double walled tank provides the additional benefit of allowing the system to continue operating for a short time if the inner tank fails, until a replacement tank can be installed. If additional conservatism is desired, both a double walled tank and a removable waterproof barrier can be installed.

An alternative to installing the existing tank with one large tank is to replace it with multiple smaller tanks. Installing multiple redundant tanks to avoid downtime is a preferred method of redundancy for many chemical feed systems. The disadvantage of this choice is that it can sometimes require a larger building space, additional piping/tubing and valves, and additional associated cost. However,

there is sufficient space in the existing building for four single-walled tanks of approximately 1,100 gallons each, that could replace the existing tank within the existing building and maintain the total storage volume of 4,400 gallons. This provides significant redundancy, allowing the system to continue operating if a tank fails. Furthermore, it reduces the required volume of the containment area. The smaller tanks can also more easily be brought in and out of the building, allowing for a short concrete wall to remain in place on the west side of the containment. The exact height of the remaining containment wall should be determined during design, but it appears that a 1,100 gallons tank can fit over the wall while allowing for the west containment wall to remain high enough to provide adequate containment. The proposed tank is 64 inches in diameter. If we assume an 8-foot-tall garage door is used, the containment wall may be reduced from 4 feet tall to 2.5 feet tall and would still provide approximately 2900 gallons of containment, assuming 6 inches of freeboard (meaning that only 2 feet of containment height is used instead of the full 2.5 feet). This provides containment for more than two tanks worth of volume. Another advantage of this option is the ease of installation of the relatively small garage door and the fewer structural modifications to the building required. The available space in the existing building allows for easy access to all tanks for filing, operations, and maintenance. The tank system could be designed to refill individual or paired tanks safely using a similar quick connect mechanism as in the existing system. A disadvantage of pairing tanks is that it will require penetration in the side of the tanks, which are typically where tank failure can occur.

A further alternative is to replace the existing 4,400-gallon tank with a double wall tank that is approximately 4,100-4,500 gallons. This would maintain the volume that the current tank can hold (and which delivery tankers typically hold) while also having double wall containment. Double walled tanks are larger and therefore the existing metal building must be replaced with a larger building. This will likely incur significantly more cost. Furthermore, if replacement of the existing building is desired by the PLSLWD, it is recommended to make it large enough to hold two large single-walled tanks, instead of a large double walled tank. This option does not appear to have significant benefit at this time.

1.6.4 Summary and Recommendations

The PVC pipe in the pump containment area should be sealed or extended up above the containment curb height to avoid spills draining out of the building unintentionally.

The chemical feed connection should also be moved further inside the containment area so that small spills during filling will be contained.

Two additional deficiencies of the current system should be addressed: reducing downtime in the case of tank failure and allowing for ease of replacement of the tank. This is likely one of the greatest deficiencies of the existing overall chemical feed system.

There are 2 alternative solutions available:

A) Install a large garage door on the west wall of the building, demolish the west side concrete containment wall, and replace the existing tank with a double wall polyethylene tank of approximately 3,150 gallons. Double wall tanks tend to be larger in size than a single wall tank of the same size. Therefore, a smaller volume tank is required and would

likely reduce the capital costs of tank replacement. However, chemical costs and delivery may be increased as noted above. A small curb will remain on the west side to catch small spills, and a removable waterproof barrier can optionally be installed for added spill protection.

B) Replace the existing tank with four single walled tanks of approximately 1,100 gallons. This allows for the delivery of a full tanker, provides redundancy, reduces the required volume of the containment area, and allows the system to remain operational if a tank fails. The smaller tanks can also more easily be brought in and out of the building, allowing for a short concrete wall to remain in place on the west side of the containment. However, additional piping, valving, and level sensing equipment will be required for the additional tanks.

1.7 Building

1.7.1 General Description

The current chemical feed building is a metal building that is approximately 25 years old. It currently sits close to the flow measurement area and former chemical feed location. However, the chemical feed location was moved downstream in the 2013 construction project. The building is built on a concrete pad and holds the chemical storage tank, concrete chemical spill containment walls, chemical feed pump, chemical flow feed controllers, a Speakman portable eyewash station, and other electrical equipment. The building is not heated and does not have running water.

Figure 3: Existing Building.

1.7.2 Condition

The building contains ferric chloride, which can be very corrosive to metals. The chemical storage tank, however, is vented to the outside and very little exposed chemical should be present inside the building on a typical basis. It should be noted, however, that currently the storage tank lid does not fit properly, and the tank is open to the building (this would be remedied with a tank replacement). Therefore, although the building contains corrosive chemicals and is somewhat advanced in age, it is generally in good condition.

Some corrosion can be observed on the interior metal framing. However, none of the observed corrosion appears significant enough to cause structural collapse or safety issues. The exterior of the building shows virtually no corrosion, with the side and painting being in very good condition.

Staff have noted that mice and other rodents are often inside the building. This can be unsanitary but can also lead to potential damage to system components. The door seals well, but oversized holes for pipe penetrations were observed in several locations around the exterior of the building. It is recommended to seal holes with sturdy materials. For example, spray foam alone is not recommended. Metal mesh along with spray foam can be effective as well as custom cut sheet metal installed over gaps. This work is relatively simple and can be performed by a local contractor or by PLSLWD maintenance staff. The gables also have vent openings. If sealing the exterior wall holes does not resolve the rodent issue, it is recommended to also install durable mesh screens over the vents.

1.1.1 Expected Life and Replacement

Metals buildings of this type may be expected to last 25-50 years. Considering the relatively low corrosion present and its good condition, the building does not currently appear to require replacement.

1.1.2 Summary and Recommendations

The building is in relatively good condition and does not appear to require urgent replacement. However, it is recommended to seal holes in the exterior of the building to prevent rodents from entering.

1.2 Level Sensors

1.2.1 General Description

The stream flow had been measured with a weir and an ultrasonic level sensor, including an ISCO 2110 ultrasonic level sensor and datalogger, which communicated with the chemical feed pump to allow for automated chemical feed dosing.

The volume of chemicals in the storage tank is also measured with a Siemens Ultrasonic level sensor. This detector is inside the chemical storage tank, making it difficult to access. The level sensor was found to be inaccurate when the tank held greater than 4,000 gallons.

Figure 4: Interior ceiling of building showing corrosion (shape distortion from wide-angle lens).

Figure 5: ISCO Ultrasonic Level Sensor and Datalogger.

1.2.2 Condition

Beginning in 2023, the ultrasonic level sensor and datalogger have not functioned. See below for further discussion.

1.2.3 Expected Life and Replacement

The ISCO equipment is approximately 10 years old and has a manufacturer expected life of 5-7 years. The ISCO equipment is currently a discontinued model and the new ISCO models are not backwards compatible. Therefore, if one component fails, it will need to be replaced with an older part or all the ISCO components will need to be replaced.

The datalogger has recently been non-functional and PLSLWD staff replaced it with the same model. However, upon installation of the datalogger the manufacturer's representative for ISCO (Tech Sales) found that the ultrasonic sensor has also failed. Because both the sensor and data logger have failed, it is recommended to replace both with a radar level system and associated controls.

The chemical storage tank is equipped with a Siemens ultrasonic sensor that is approximately 10 years old and is installed inside the tank. Ferric Chloride is corrosive and although the sensor may be considered by the manufacturer to be compatible with the chemical, the service life is expected to be shorter than less corrosive conditions. A radar level detector is a more suitable level measurement device for this application because it can sit above the tank, outside of corrosive conditions. Radar level detectors are also generally estimated to have a longer service life of 8-12 years and are standard industry equipment, similar to the existing ultrasonic sensor. However, radar level detectors have the advantage of being able to detect levels from outside of corrosive conditions. Therefore, when the chemical storage tank is replaced, or when the current level detector fails, it is recommended to replace the Siemens ultrasonic level sensor with a radar level detector. Furthermore, it is recommended that the radar system at the tank matches the manufacturer and model of the radar system installed at the weir, to simplify operations and maintenance. Tank sensors benefit the operator by displaying and recording continuous level data. Level data is used to track chemical usage and to predict future needs. Tank level data is used to verify pump dosing accuracy and for MPCA reporting. Both functions are important to the accurate function and dosing of the system.

To provide a refence of cost comparison (not including engineering, contingency, and other general project costs), the installed cost of one radar sensor is approximately $7,800 when purchased through a manufacturer's representative (4 sensors costing approximately $31,000) and the installed cost of an ultrasonic sensor when purchased through a manufacturer's representative is approximately $4,000 (4 sensors costing approximately $16,000). Typically, equipment must be purchased through a manufacturer's representative. However, in the case of some brands of radar and ultrasonic sensors, it appears the units can be purchased directly at a far cheaper cost. It should be noted that these brands are well known and considered very reliable. If purchased directly by the PLSLWD, the installed cost of a radar sensor (such as the Vegapuls 11) would be approximately $975 each (4 sensors costing $3,900), and an ultrasonic sensor would cost approximately $780 (4 sensors costing $3,120). Therefore, PLSLWD may wish to opt for purchasing these items directly from the manufacturer.

In the case that the existing tank is replaced with multiple smaller tanks, requiring multiple level sensors can incur somewhat high cost, both initially and when the level sensors will need replacement. An alternative to reduce this cost with 4 tanks is to pair the tanks together using piping, so that effectively there are 2 tanks, only requiring 2 level sensors. A disadvantage of this is that it will require penetration in the side of the tanks, which are typically where tank failure can occur. Given the redundancy of tanks, if there is a failure, the system can continue operating until it is replaced. However, when a tank fails, there is a chemical spill that requires cleaning, the pair of tanks require replacement and installation, and significant time/labor is required from operators. These costs and time burdens can offset cost savings from a reduced number of sensors. It is difficult to predict when a tank may fail, but even if a paired set of tanks fails once, the cost would be higher than the two additional radar sensors (the installed cost of 2 additional sensors, without engineering, contingency, and other general project costs is approximately $15,500 when purchased through a representative, or $1,950 if purchased directly by PLSLWD, whereas the cost of a pair of tanks is approximately $20,000. This does not include any costs for chemical cleanup that will be required). Therefore, from an operations and long-term cost perspective, additional radar sensors would be preferable to connecting pairs of tanks.

A further alternative is to avoid installing level sensors on the tank and opt for less expensive, but less accurate options, such as a sight glass, a float level system, or a backlighting system. Likely a combination of methods would be necessary for the system but still would not provide as much information or accuracy as a radar level sensor. To provide a reference for cost comparison, if the radar sensors are purchased directly from the manufacturer, as described above, the cost for four units is approximately $3,900. The estimated cost of a combination of low accuracy methods is estimated to be between $1,500-$3,000, providing minimal cost savings compared to radar. These options would provide a reduced level of accuracy compared to the current operations and are not preferable to the operator. For example, sight glasses can foul over time, particularly because of ferric chloride's orange color, making it quite difficult to see the water level without cleaning the sight glass regularly. Furthermore, cleaning the sight glass puts more work on the operators, requires taking a tank out of service, and increases the likelihood that operators are exposed to chemicals. However, if desired, these options can be further evaluated during the design phase.

1.2.4 Summary and Recommendations

The ISCO level sensing equipment at the weir and associated controls has exceeded its original service life and is a model that is discontinued and not compatible with newer models. The datalogger sensor and datalogger have both failed. Therefore, it is recommended to replace them with a newer radar level system and associated controls.

When the chemical storage tank is replaced, it is recommended to replace the existing Siemens ultrasonic level sensor with a radar level detector that matches the make/model of what is installed at the weir. The accuracy of level detection is important for verification of dosing, chemical supply management and reporting. Therefore, the recommendation is to maintain the level of accuracy of current operations with a radar lever detector which can be seated outside of corrosive conditions.

1.3 Chemical Feed and Mixing

1.3.1 General Description

Currently the chemical is fed at a location over 900 feet from the chemical feed building. The chemical is injected into the top of a 36" diameter concrete culvert. This system was installed during the 2013 project. Note that original drawings show the culvert as being 24" but this was changed to 36" during construction, according to as-built drawings.

Currently no active or passive mixing systems are installed to assist with mixing of the chemical after injection. The design presents several challenges to mixing, including that the pipe is a relatively large 36" diameter. The culvert often flows partially full, it is not desirable to create head inside the pipe and potentially increase water levels upstream, and leaves, sticks, and other debris sometimes passes through the pipe.

Debris passing through the pipe makes it difficult for most types of mixers to be installed. A bar screen or rack can be installed on the upstream side of the culvert. However, the screen would need to be cleaned regularly to allow water to continue to pass through the culvert and so that significant head is not created, leading to higher water levels upstream and potential bypass. The remote location of the culvert would make regular cleaning difficult, but if PLSLWD staff feel that it is feasible, then this can be a reasonable option. Instrumentation, such as level sensors, can be employed to detect if the entrance to the culvert becomes excessively clogged, but there is no power at the injection site so solar panels and batteries would have to be installed, leading to additional cost and maintenance requirements.

There are multiple options for mixing, including both static and dynamic mixers, but each presents a challenge. Static mixers are typically most effective with flow velocities of 5-10 ft/s, which is higher than would typically be seen in the culvert. Static mixers may also cause small debris or sediment to accumulate, even if a screen is upstream. A dynamic or motor-driven mixer would be most appropriate for the application, but no electrical power is present at the feed location. Therefore, a solar power system would likely be required, potentially with a battery system, creating additional costs. A top mounted mixer could be installed in a manhole into the top of the culvert, with multiple impellers to allow mixing at low water levels. Small debris, however, would likely catch on to the impellers, requiring regular cleaning, even if an upstream screen is used. A mixer downstream of and perhaps adjacent to the manhole, within the desiltation pond, could be considered, but it also brings a variety of challenges, including installation and maintenance of the mixer in the pond, and possible interference with solids settling. Therefore, it is not generally recommended for this application. The challenges detailed in the preceding paragraphs would similarly apply to the proposed mixing detailed in the District's Upper Watershed Blueprint report ($FeCl_3$ System Improvements Alternative 1), as well as face additional permitting and land acquisition barriers.

It should be noted that it is difficult to evaluate the mixing effectiveness of the existing system. Furthermore, it is unclear whether providing additional mixing would provide benefit to phosphorus removal, particularly considering the capital cost and maintenance requirements. Further studies could be performed on the mixing, but such studies would likely not provide significant value, considering the cost. If more effective phosphorus removal is desired, alternative chemicals may be a more feasible option, as discussed in future sections.

Figure 6: Interior of Chemical Feed Manhole at Injection Point.

1.3.2 Summary and Recommendations

Screening and mixing can be installed but come with significant disadvantages. The existing system does require some regular maintenance to remove large sticks and debris, but increased maintenance would be required if a screen is installed.

A mixing system may provide some benefit to phosphorus removal, but that benefit may be quite small compared to the additional cost and maintenance. If more effective phosphorus removal is desired, alternative chemicals may be a more feasible option, as discussed in future sections.

The choice of installing a screen and mixing system is difficult to justify from a technical and cost standpoint (see Table 4 for costs of several options for mixer improvements). Therefore, from an engineering and cost standpoint, installing a mixing system is currently not recommended. If at some point in the future, the entire culvert and injection site are overhauled, the addition of mixing would be more cost-effective and should be considered. It should be noted, however, that addition of mixing at this time is possible and it is not uncommon for system owners to select improvements based on preference rather than cost alone. Therefore, the PLSLWD may opt to install it based on preference.

1.4 Hydraulic Performance and Impacts of Backwater

1.4.1 General Description

The location of the FeCl treatment system desiltation pond includes a complex hydraulic situation that negatively impacts the performance of the system arising from high water levels downstream on Spring Lake. The backwater or tailwater in this relatively flat drainage system is a considerable factor. In addition to the natural backwater issues, State agency permitting requirements in the past resulted in a change to the configuration of the dosing location to a culvert going into the pond and using a high flow bypass weir that is directly in the historic ditch route.

The current configuration directs flows to turn west 90-degrees through a 36" culvert, where ferric chloride is added, into the settling or desiltation (desilt) pond for floc removal. In higher flow regimes, the high flows would flow over a sheet pile weir and continue directly down the existing ditch, untreated. This was required and intended to prevent high flows from entering the settling pond area, with the intent of preventing high flows from scouring or resuspending iron-phosphorus floc flushing it out into the ditch and downstream Spring Lake.

It has become apparent that when Spring Lake downstream is high during higher flow periods, often corresponding to when it is ideal to treat the water, it interferes with this intended diversion of water into the treatment system. When the lake is high, backwater/tailwater will in essence back up into the desilt pond causing water to then just flow over the submerged weir and straight down the ditch with no or minimal treatment. This short-circuiting situation of the treatment system prevents even lower and moderate flows from being diverted and treated and negatively impacting the effectiveness of treatment. In the past, additional outlets from the desiltation pond into the adjacent wetland were added to give additional treatment and filtering of the discharging water. Currently those added outlets are negatively impacted by the backwater conditions, as illustrated on the water level graphs.

Plotting of water levels and tailwater conditions shown in the graph illustrates high tailwater downstream that may reduce the effectiveness of diverting flow away from the dosing zone and desiltation pond. The water levels are above the desiltation pond outlet (green line) for long periods of time in most years. This interferes with treated water being directed into the wetland via the two additional outlets in the northwest portion of the pond. As the water levels get near the overflow weir elevation, flow begins to use that overflow path and bypass the treatment, as shown in the photo below. The summary here illustrates a complicated system that changes through time and is not just subject to one storm but varies over multiple storms and time. Modifications to the weir in the main channel at the dosing culvert/desiltation pond junction and/or other changes should be explored further to determine if retrofitting can reduce the bypass of untreated water and thus improve treatment in these periods.

In the graphs below, Figure 9 and Figure 10, it illustrates that during higher flow periods, when more pollutants are being transported, the backwater effects of Spring Lake are interfering with the proper flow routing and performance of the treatment. Figure 9 from 2024 illustrates that during the summer months and higher flows, when concentrations of the pollutant Phosphorus are the highest and most impactful, a portion of the flow appears to be bypassing, untreated, and going directly into the lake.

Figure 7: Water Flowing Untreated Over the Weir, With Tailwater Nearing Weir Level, Spring 2023.

Much of the year shown in the figure has water levels higher than the desiltation pond outlet. The secondary outlets into the wetland for increased removal and filtering that were added in the past, are also being impacted even at lower water levels, such as when water levels exceed the desiltation pond outlet (green line), since they are placed at lower elevations. A brief review of historic desiltation pond records has some indication that the desiltation pond outlet may have been lowered, either by intentional alterations or natural forces, over the years, and should be investigated further. The lower outlet for the desiltation pond results in greater backwater interference into the pond. This assessment identifies the tailwater interference issue. To quantify this bypass and split flows, a more in-depth analysis would be needed. A calibrated and refined hydrologic and hydraulic (H&H) model of this specific area would be needed to quantify the impact of this situation. The model would also allow for testing of potential retrofit ideas that could improve the performance.

Figure 8: Configuration of the Flows in the Treatment System and Overflows.

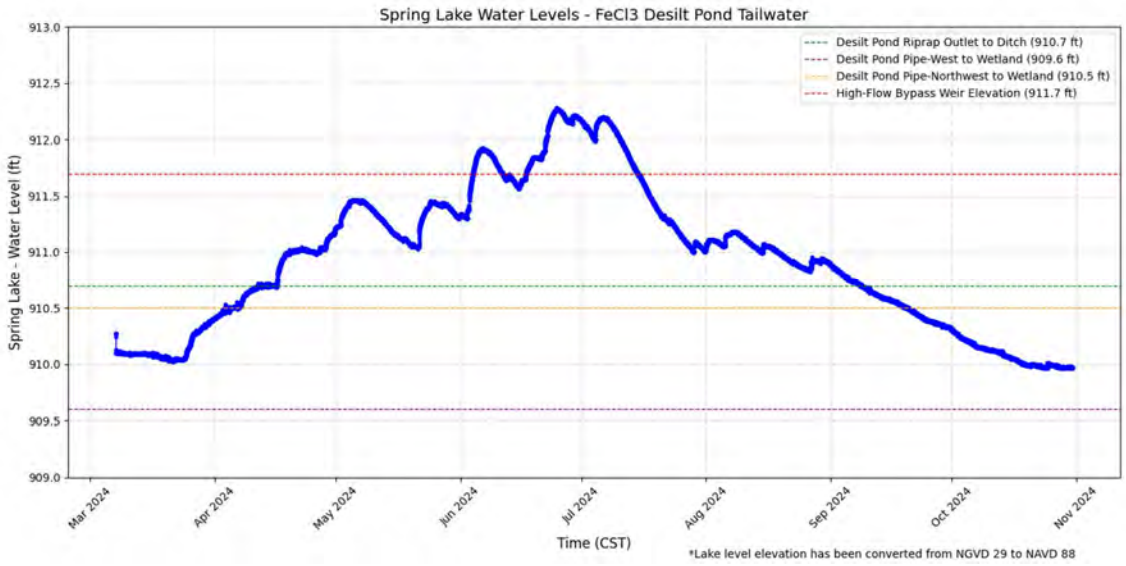


Figure 9: High-Water Levels on Spring Lake Impacting Performance when Near or Exceeding High-Flow Weir – Recent Data from 2024.

Figure 10 below shows that most years, 9 of the last 11 years, have periods when the lake water levels are backing up into the desiltation pond to the point that it exceeds the high flow weir. Given that these higher water levels correspond with higher flow periods in the system, the potential for bypasses of untreated water is greater. In moderate/low flow periods, removal of phosphorus is likely occurring consistently with the system intent, but with the reduced loads of those flow regimes.

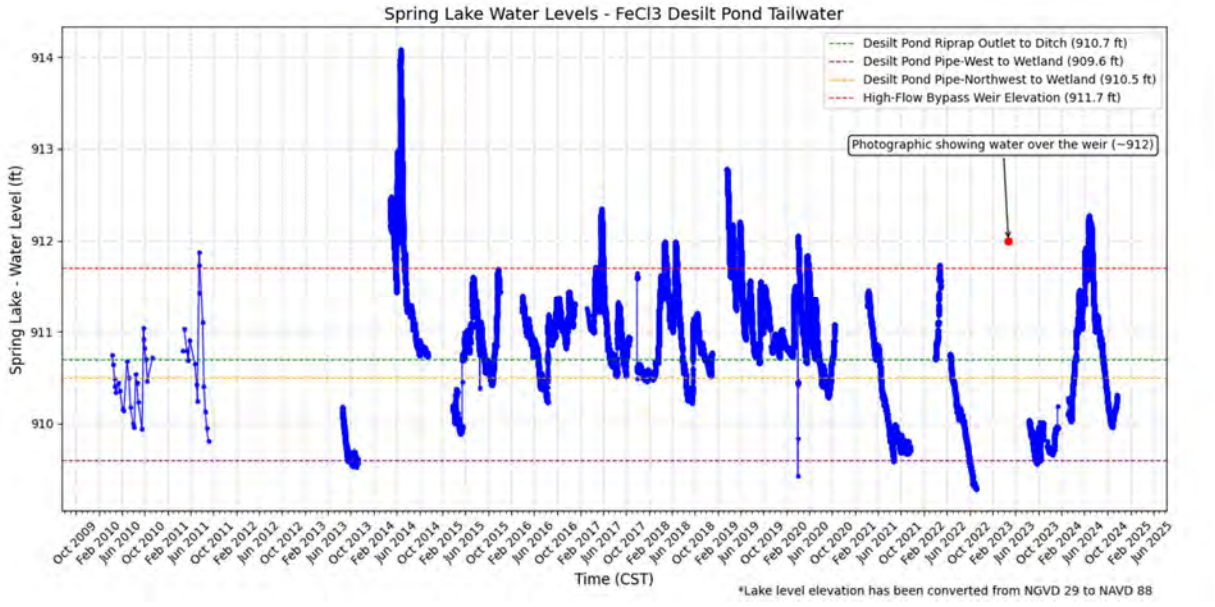


Figure 10: Past Records of High-Water Levels on Spring Lake Impacting Performance – Levels Exceeding High-Flow Weir in 9 of the Past 11 Years.

1.1.1. Summary and Recommendations

From this initial review, it is clear that a more in-depth analysis, using an updated, refined, and calibrated hydrologic and hydraulic (H&H) model will better allow the district to quantify impacts and vet possible retrofit and facility improvements to reduce the bypass of untreated water to Spring Lake. With changing climate and the greater frequency of larger events occurring during summer months, the impacts of the flat hydraulic system and backwater should expect to be both more frequent and higher levels of interference.

2 DRIVE ACCESS ALTERNATIVE ANALYSIS

The driveway access to the ferric chloride ($FeCl_3$) tank and dosing facility is a gravel drive and relies on coming through a private property, albeit with an easement. The current layout is barely workable, as it is a difficult-to-maneuver turn for the delivery of tanker trucks that are sometimes used to fill the tank. In the past, the orientation and size of the access drive has caused a truck to become stuck off the side of the entrance, rutting the adjacent lawn. The truck tanker company has indicated that it can only back down the driveway to the building, which requires the truck to do several maneuvers out in the state highway 13 near a curve. The trucks need to temporarily block both lanes of traffic, which can require police traffic direction and create traffic hazards for the tanker truck and other drivers. In order to remain on good terms with the adjacent landowner and have an appropriate turning configuration for delivery, four alternatives were developed. This summary outlines the four proposed alternatives, along with costs, to make improvements to the entrance to the access lane.

Each alternative includes a summary of the design, estimated quantities, and engineer's cost estimates for an improved access configuration. The work included contacting the trucking delivery company for their feedback on issues and ideas, finding easement information, modeling truck movements with truck turning analysis software for the large tanker trucks, and meeting on-site with the property owners whose driveway is affected.

The preliminary design sheets are included in Appendix A-D.

The designs assumed the following:

- Poor soils on site, to build the pavement subgrade to the standards for tanker trucks. There are no soil borings in the proposed areas of construction, so this is a conservative assumption.
- No topographic survey or geotechnical analysis has been completed.
- Prioritize working within the confines of the existing easement and the county/state right of way. Alternatives 2 and 3 include proposed construction outside of the existing easement and thus would require additional legal access. Based on landowner feedback, concrete would likely be necessary for negotiations of the additional easement.
- The area of disturbance is anticipated to be under 1 acre, but an Erosion Control Supervisor should be required to ensure good practice.
- Trunk turning analysis is based on WB-67 Interstate Semi-Truck (AASHTO 2011) to determine the footprint of the drive surface footprint necessary to complete the proposed route.

    - It is important to note that EOR assumed the largest truck size, at the district's request, to have all options available for deliveries for alternatives 1-3.
    - Though some deliveries have been made with smaller quantities and with smaller trucks, see alternative 4.
- For the pavement design EOR assumed:
    - 26" excavation where the driveway is getting constructed or replaced.
    - 10" granular replacement for stability.
    - 4" surface aggregate.
    - 12" base aggregate.

The engineer's cost estimates include the following assumptions:

- This scoping-level (Class 5, 0 to 2% design completion per ASTM E 2516-06) cost estimate is based on preliminary-level designs, alignments, quantities, and unit prices. Costs will change with further design.
- The total project cost includes construction costs and professional fees.
- The professional fees include:
    - Permits and Legal Fees (10% of Construction Cost)
    - Design and Construction Engineering (30% of Construction Cost)
- Unit prices are based on the current industry prices (2023).
- Time value-of-money escalation costs are not included as a construction schedule is not available at this time.
- A 20% construction contingency. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of completion of design but are not included at this level of project definition.
- A detailed breakdown of each cost estimate is included in Appendix E-H.
- Additional Easements, when needed, are qualified in terms of area, and are demonstrated in each cost estimate where necessary.

All alternative cost estimates also include the following additions based on the district's and landowner's feedback. The landowner expressed concerns about recurring potholes in the driveway up to the easement. EOR included the cost of converting the gravel driveway, from Highway 13 to the easement, to nonerodable concrete pavement to prevent further erosion and maintenance. Asphalt was considered, however, with sharp wheel turning movements of large trucks, asphalt is prone to damage, so a more conservative concrete drive is included here. The district would also like to improve public safety by including a gate at the entrance to the facility access road to prevent unauthorized people from parking in isolated spots down at the end of the drive near the building.

2.1 Alternative 1

Alternative 1 represents the existing route with proposed stabilization along the driveway. The proposed route assumes a truck approaching from East to West on Highway 13. Below is an outline of the proposed truck path for alternative 1.

The required maneuvers for each delivery include:

- Trucks approach from East to West and stop on the shoulder of Highway 13 (purple)

- Trucks back up from the shoulder of Highway 13 to the driveway, including proposed additional stabilization along the driveway (blue).
- After the truck has unloaded, it will pull forward through the driveway crossing into the left lane and then switching to the right lane (red).

The advantages of this alternative are that a) trucks remain within the current easement and b) stabilization of the current driveway which alleviates the rutting issues. The disadvantages of this alternative are that a) the trucks still must back up across lanes of oncoming traffic when entering the site and driveway and b) the delivery drivers have expressed concerns about the current route because of the time required to maneuver on the highway. The cost estimate for this alternative is $229,500. The estimated costs are summarized in Error! Reference source not found.. The details of the estimated quantities and engineer's cost estimate are summarized in Appendix E.

2.2 Alternative 2

This alternative includes the truck pulling into the private driveway and backing into the access road. Below is an outline of the proposed truck path for alternative 2.

The required maneuvers for each delivery include:

- Trucks approach from East to West and turn into the driveway past the easement boundary (purple).
- Trucks back up the driveway to the access road to the $FeCl_3$ building (blue).
- After the truck has unloaded, it will pull forward through the driveway crossing into the left lane and then switching to the right lane (red).

The advantages of this alternative are that a) reduces the time maneuvering on Highway 13 and b) includes stabilization of the current driveway which alleviates the rutting issues. The disadvantages of this alternative are that a) the truck traffic route leaves the easement and enters private property, b) requires stabilization outside of the easement on private property. The cost for this alternative is $310,300. The estimated costs are summarized in Error! Reference source not found.. The details of the estimated quantities and engineer's cost estimate are summarized in the Appendix F.

2.3 Alternative 3

Alternative 3 was suggested by the trucking company, based on a desire to minimize maneuvering on Highway 13. This alternative includes the construction of a truck turnaround in front of the $FeCl_3$ building. Below is an outline of the proposed truck path for alternative 3.

The required maneuvers for each delivery include:

- Trucks approach from East to West and turn into the driveway.
- Trucks can continue moving forward through the access road and around the turn around and unload.
- After a truck has unloaded, it will pull forward through the driveway crossing into the left lane and then switching to the right lane (red).

The advantages of this alternative are that a) reduces the time maneuvering on Highway 13, b) trucks do not have to back up and c) includes stabilization of the current driveway, which alleviates the rutting issues, as in Alternatives 1 & 2. The disadvantages of this alternative are that a) truck traffic route leaves the easement and enters private property and b) requires stabilization outside of the easement on private property. The cost for this alternative is $450,200. The estimated costs are summarized in Error! Reference source not found.. The details of the estimated quantities and engineer's cost estimate are summarized in the Appendix G.

2.4 Alternative 4

Alternative 4 represents the existing route with proposed stabilization along the driveway. The proposed route assumes using a single frame truck with no trailer (40 feet length) approaching from East to West on Highway 13. Below is an outline of the proposed truck path for alternative 4.

The required maneuvers for each delivery include:

- Trucks approach from East to West and stop in the travel lane of Highway 13 (Purple).
- Trucks back up from the travel lane of Highway 13 to the driveway, including proposed additional stabilization along the driveway (red).

The advantages of this alternative are that a) trucks remain within the current easement and b) reduce the amount of stabilization to the current driveway (compared to the other alternatives). The disadvantages of this alternative are that a) the trucks still must back up across lanes of oncoming traffic when entering the site and driveway b) the delivery drivers have expressed concerns about the current route because of the time required to maneuver on the highway and c) since the improved driveway is limited to this alternative only the modeled size truck can utilize the driveway. The estimated cost for this alternative is $25,700. The estimated costs are summarized in Error! Reference source not found.. The details of the estimated quantities and engineer's cost estimate are summarized in the Appendix H.

Table 1: Engineer's Cost Estimate Summary.

Alternative	Construction Cost	Professional Fees	Contingency	Total Capital investment
Alternative 1	$136,600	$54,650	$38,250	$229,500
Alternative 2	$184,700	$73,900	$51,700	$310,300
Alternative 3	$268,000	$107,200	$75,000	$450,200
Alternative 4	$15,300	$6,100	$4,300	$25,700

Alternative 4 is coupled with the facility updates for Alternative A and Alternative 1 is coupled with the facility updates for Alternative B, see Section 3, Table 3.

3 SUMMARY OF RECOMMENDED IMPROVEMENTS - ALTERNATIVES AND COST ASSESSMENT

The table (Table 2) below summarizes the age, expected life, deficiencies and recommendations for the equipment described in the above section. Depending on the item and the district's discretion, some components may be replaced directly by District staff themselves, whereas other items may

be designed and executed by the district engineer, or a hired consultant or contractor. Elements involved in routine maintenance by staff could likely continue in-house.

Table 2: Summary of Existing Equipment.

Item	Estimated Age	Typical Life	Deficiencies	Recommendations
Chemical Feed Pump	10 years	8-12 years	Advanced age.	Replace when the pump fails.
Valves	10-20 years	10-20 years	Advanced age.	Test/exercise valves regularly. Replace when fails or at owner's discretion.
Pressure Switch	Unknown	5-10 years	Advanced age. Reports of possible malfunction.	Replace unit.
Chemical Feed PVC Line	10 years	20-30 years	No significant deficiencies	Continue regular maintenance. Repair as needed. Re-evaluate conditions in the future.
Chemical Feed Flexible Tubing	10 years	2 years	Manufacturers recommend replacing it every 2 years	Replace all. Convert most to PVC inside building. Create regular replacement plan for any remaining tubing.
Chemical Storage Tank and Containment	25 years +	15-30 years	Aged tank. Incompatible Lid. It is difficult to replace it with long delivery times. PVC pipe in pump containment area drains to ditch.	Replace the tank with one of alternatives. Seal PVC pipe in pump containment area. Move chemical fill points to inside containment.
Building	25 years +	25-50 years	Does not allow for ease of replacement of tank. Rodents present.	Modify the building by adding large garage doors and modifying the west wall of containment. Seal holes for rodents.
Weir Level Sensor	10 years	5-7 years	Sensor and Datalogger have both failed and are non-functional.	Replace with radar level System and associated controls.
Tank Level Sensor	10 years	5-7 years	Aged. It is installed inside of the tank.	Replace with radar level system (that matches system at weir)
Chemical Feed Culvert Screening	Not Present	N/A	N/A	It can be feasible but involves significant additional maintenance and cost.
Chemical Feed Mixing	Not Present	N/A	N/A	Not recommended from engineering and cost standpoint but can be optionally added based on Owner's preference.

As discussed in the previous section, several improvements are recommended in the immediate future. These items were sized and selected on a preliminary basis in order to estimate project costs. These improvements include:

- Replace the pump's pressure switch.
    - The existing switch is aged and may possibly malfunction. The switch is a requirement of the MnDOT's right-of-way permit. A replacement switch is relatively low cost.
- Replace the storage tank's ultrasonic level sensor with a radar level detector.
    - The existing level sensor is past its expected service life.
    - A radar level detector can sit outside the tank, extending the detector's life and allowing for easier maintenance, whereas the existing ultrasonic sensor must be inside the tank to work.

  - Radar level detectors on average also have a longer service life than ultrasonic systems.
  - The unit can be purchased directly from the manufacturer to reduce the costs of purchasing through a manufacturer's representative.
- Replace the ultrasonic level sensor and datalogger at the weir.
  - The sensor and data logger of the ultrasonic system have failed. Replacement with a radar system would provide updated equipment and standardization with the radar level detector that is recommended for installation on the chemical storage tank.
- Replace the poly-vinyl chemical feed tubing. Convert most of the poly-vinyl tubing within the building to PVC.
  - The existing tubing is past the manufacturer's recommended life.
  - The tubing inside the building has had multiple leaks with spot repairs.
  - Changing to PVC will avoid requiring frequent future replacement.
  - For any tubing that must remain poly-vinyl to preserve its functional operation (i.e., around the pump), it is recommended to establish a maintenance plan to replace the tubing every 2 years.
- Purchase Personal Protective Equipment (PPE) to be kept at the chemical feed building.
  - This is essential for ensuring all personnel (whether PLSLWD staff or from outside) have access to safety equipment needed for chemical feed systems.
  - This includes an insulated jacket for the existing eyewash system to avoid the potential of freezing in late fall months.

The existing tank could fail at any time. It also does not currently have a lid that fits. To solve this, two alternatives for modifications to the tank and building were developed and are as follows:

3.1 Alternative A

- Replacing the existing tank with a double wall polyethylene tank
  - This double walled tank provides containment while also allowing the system to continue running if the inner tank fails.
  - A 3,150-gallon tank was preliminarily selected to meet chemical feed needs as well as fit into the existing building.
    - This may cause higher chemical and delivery costs due to being smaller than a full tanker size of 4,000 gallons.
- Install Garage Door on west side of existing building and modify the west wall of the concrete containment.
  - This allows the storage tank to be easily replaced both now and, in the future, in the event that the tank fails. Allowing for replacement of the tank is critical to maintaining the system in the future.
  - The concrete containment can be demolished because the double walled storage tank provides containment. A small curb will remain for small spills.
  - Optional removable waterproof barriers can be used to provide additional containment, if desired.
- Update drive access with Alternative 4, see section 2.4.

3.2 Alternative B

- Replacing the existing tank with four single-wall polyethylene tanks
  - The additional number of tanks provides redundancy, allowing for the system to continue running in the event that a tank fails.
  - 1,100 gallons tanks were preliminarily selected to fit into the existing building. The total volume of 4.400 gallons maintains the existing capacity and allows for delivery of a full tanker, potentially reducing chemical and delivery costs.
  - The smaller tanks reduce the required containment volume.
  - This alternative will require more piping and valving within the building as well as additional level sensing equipment. This alternative includes 4 radar level sensors (purchased directly from the manufacturer for a reduced cost).
- Install Garage Door on west side of existing building and modify the west wall of the concrete containment.
  - This allows the storage tanks to be easily replaced both now and, in the future, in the event that a tank fails. Allowing for replacement of the tank is critical to maintaining the system in the future.
  - The smaller tanks can also more easily be brought in and out of the building, over a containment wall, allowing for a short concrete containment wall to remain in place.
- Update drive access with Alternative 1, see section 2.1.

Equipment costs, installation, general project costs, engineering, permitting, legal, and a contingency that is typical of this stage in the project are included in the costs below, Table 3.

To take into account potential differences in operation cost, primarily due to differences in chemical and delivery costs, as well as, replacement of level sensors on the tanks, the net present value of Alternatives A and B were calculated to develop Life Cycle Costs, Table 4.

Estimated chemical costs from multiple chemical suppliers were obtained comparing the cost when a full tanker can be received as compared to when delivery of a full tanker is not possible. Based on preliminary cost numbers from Hawkins Chemical, Hydrite, Wausau, Univar, and Harcros, it is estimated that a full tanker delivery would reduce average costs from $3.75 per gallon to approximately $1.91-3.64 per gallon, depending on the supplier. An estimated average of $3.01 per gallon is used for the life cycle cost comparison.

Table 3: Recommended Improvements, Project Cost.

Improvement	Estimated Project Installed Cost*	
	Alt. A	Alt B.
Replace Tank (Including all appurtenances)	$35,400	$40,600
Install Garage Door and Demolish West Wall of Containment	$15,400	$12,100
Replace Tank Ultrasonic Level Sensor with Radar Level Detector(s)	$1,000	$4,000
Replace Ultrasonic Level System at Weir with a Radar Level System and Controls	$10,000	$10,000
Replace Pressure Switch	$300	$300
Replace Chemical Feed Tubing (With Mostly PVC)	$3,600	$3,800
Personal Protective Equipment	$2,100	$2,100
Seal Building Holes from Rodents	$500	$500
Heated, Insulated Eye Wash	$2,000	$2,000
Driveway Improvement	$15,300	$136,600
General (mobilization, demobilization, etc.) (10%)	$8,600	$21,200
Total Construction Cost	$94,200	$233,200

Permits and Legal Fees (10% Construction)	$9,400	$23,300
Design and Construction Engineering (30% Construction)	$28,300	$70,000
Contingency (20% of Construction, P&L, Design & Const. Eng.)	$26,400	$65,300
Total Capital Investment	$158,300	$391,800

**All costs have been rounded up to the nearest $100.*

*Table 4: Operation and Maintenance Life Cycle Costs.**

Item	Alt. A	Alt. B	
Chemical Cost Calculation			
Cost per Gallon	$3.75	$3.01[1]	$/gallon
Deliveries Per Season	3	2	Deliveries/Year
Gallons Per Delivery	2640	4000	Gallons/Delivery
Fuel, Freight, etc.	$65	$299	$/Delivery
Cost per Delivery	$9,965	$12,339	$/Delivery
Annual Costs			
Annual Chemical Cost	$29,895	$24,678	$/Year
Annual Maintenance Cost (roughly estimated)	$5,000	$5,000	$/Year
Net Present Value Calculation			
Operation Life	20	20	Years
Discount Rate	5%	5%	%
Net Present Value Factor for Annual Cost	12.46	12.46	
Net Present Value of Annual Costs over Lifetime	$434,900	$369,900	$/Lifetime
Replacement Costs			
Tank Level Sensor Replacement (10-year life)	$1,000	$4,000	$/Lifetime
Weir Level Sensor Replacement (10-year life)	$10,000	$10,000	$/Lifetime
Pump Replacement (10-year life)	$5,000	$5,000	$/Lifetime
Valves and Other Sensors Replacement (estimated)	$4,000	$4,000	$/Lifetime
Net Present Value of Annual Costs over Lifetime	$434,900	$369,900	$/Lifetime
Total Replacement Costs	$20,000	$23,000	$/Lifetime
15% Contingency of Replacement and Annual Costs	$68,200	$59,000	$/Lifetime
Total Capital Investment (From Table 3)	$158,300	$391,800	$/Lifetime
Total Net Present Value	$681,400	$843,700	$/Lifetime (Total)

**Note that estimated maintenance and replacement costs were included and that are the same between alternatives to give a more representative estimate of total Net Present value (NPV) costs. NPV is currently the gold standard method for comparing the cost of two alternatives. The total NPV is meant to be a comparative value, primarily to aid in alternative selection, and does not represent a cost the PLSLWD is expected to pay at this time.*

[1]This is an estimate based on several quotes provided by chemical suppliers. Actual prices could be higher, depending on the supplier selected.

As shown in Tables 3 and Table 4, Alternative A is less expensive, from a capital and life cycle perspective, primarily because of the cost of driveway improvements. Furthermore, although alternative B provides benefits of redundancy, reduced risk during spillage, and greater ease of tank replacement, Alternative A is somewhat simpler, requiring only one tank. Therefore, Alternative A appears to be the preferred alternative.

3.3 Optional Improvement Options and Cost

Note that although the following improvements are not currently recommended, the PLSLWD may wish to pursue optional improvements, such as replacing the existing chemical feed pump, chemical feed building or adding mixing at the chemical feed point. Although these additional improvements are not recommended, they are also not discouraged and may be implemented at the discretion of PLSLWD. Therefore, the estimated cost of these improvements is provided for the sake of information.

- Screening for culvert upstream of chemical feed point
    - A simple bar screen can be installed upstream of the culvert.
    - Installation of a screen will require additional maintenance to ensure the screen does not become clogged.
    - Instrumentation can optionally be installed to monitor water levels upstream and downstream of the screen. Note however, that power is not currently present at the feed point. Therefore, solar with battery storage (for nighttime alarms) would likely be the best option for power. Furthermore, cellular signal alarms would be necessary for communicating to operators so that the screen is clogged.
- A motor driven mixer within the culvert, downstream of the chemical feed point
    - As noted in the previous section, a dynamic (motor driven) mixer would likely be the most appropriate mixing option, given the current chemical feed design.
    - Note that installing a mixer would also require installation of the upstream screen as well as solar with battery storage.
- Installing a 4,500-gallon double wall tank
    - A larger double wall tank will allow for larger deliveries but will require a larger building. This option is likely not necessary because Alternative B provides the same advantages without the need for a larger building.
- Replacing the existing metal building
    - Although the existing building is in good working condition, replacement may be preferred by PLSLWD.
- For Alternative A, adding a removable waterproof barrier to the west side of the chemical containment area to replace the demolished wall, but still allow for tank replacement.
    - This can add additional peace of mind to chemical containment, providing a tertiary containment contingency to the double wall tank.
- Replacing chemical feed pump skid
    - The existing pump is advanced in age, and replacement can be performed at this time to consolidate costs and reduce maintenance/replacement difficulty for PLSLWD staff.

The estimated costs of these optional improvements are shown in Table 5 below.

Table 5: Estimated Costs for Optional Improvements.

Option Number	Optional Improvement	Estimated Project Installed Cost*
1A	Screen Only, Upstream of Chemical Feed Culvert	$13,900
1B	Screen with Instrumentation/Alarms for Cleaning (Includes Screen, Level detectors, Solar, Battery, and Cellular system)	$58,300
1C	Mixer System (Includes Screen, Solar, Battery, and Mixer. Does not include Instrumentation/Alarms, Cellular)	$44,400
1D	Mixer System with Screen Alarms (Includes Mixer, Screen, Solar, Battery, Instrumentation/Alarms, Cellular) (Most comprehensive option)	$74,700
2	4500 Gallon Double Wall Tank	$84,400
3	Demolish Existing Metal Building and Construct Larger Building	$88,900
4	Removable Waterproof Barrier for Additional Containment	$10,000
5	Chemical Feed Pump Skid	$13,600

**Includes Install, Contingency (20%), Permits and legal fees (10%), and Engineering (30%).*

3.4 Potential Permits and Funding Options

3.4.1 Permits

PLSLWD will be required to submit engineered plans and specifications to the MPCA for any major construction or changes to the feedline (this excludes minor changes to the existing system of general maintenance). The MPCA's technical review and approval process for treatment facilities confirms that proposed projects will comply with state permits/rules and recognized engineering practices and meet reliability criteria. The items below provide a list of the required submittals.

- Plan and Specification Submittal/Approval
- New Construction Stormwater Permit if there is more than 1 acre of land disturbance planned.

The NPDES permit will also be updated if there are construction updates or significant changes to chemical application. The district is meeting with the MPCA to discuss possible permitting requirements and hurdles for changing the chemical classification at the facility. The permitting requirements will be included in the final report. From experience with re-permitting the $FeCl_3$ facility, EOR expects the district will have to perform rigorous monitoring to ensure that the discharge requirements of the permit are met.

Note that the current NPDES permit (MN0067377) expires August 31, 2025. A permit application will need to be submitted 6 months before that date to renew the NPDES permit. That form can be found here: https://www.pca.state.mn.us/business-with-us/wastewater-permit-forms

3.4.2 Funding

Infrastructure improvements in the PLSLWD may be eligible to receive financial assistance in the form of grants or loans for the project through the Minnesota State Revolving Fund (SRF). The Minnesota SRF funds stormwater projects with low-interest loans called Clean Water Revolving Fund (CWRF) loans. The district may be eligible if the project meets the following requirements:

- The project addresses water quality needs (ponds for water quality may also include associated flood control benefits).
- The project consists of permanent stormwater treatment structures.
- The project is based on accepted engineering practices that result in water quality benefits. The determination as to acceptability will be based on reasonable assurance of providing water quality benefits.
- The applicant must be a local government such as a city, county, township, sanitary district, watershed district, or other governmental subdivision.
- The applicant must demonstrate the financial capacity to repay the loan, and that complete financing of the project is in place.

It appears the PLSLWD meets these eligibility requirements. There may also be an opportunity for principal forgiveness (grant) of up to 25% of the loan up to a maximum of $1 million through the Green Project Reserve (GPR). To be eligible for GPR principal forgiveness, the project must address green

infrastructure, water or energy efficiency, or other environmentally innovative activities. Only the project costs associated with advancing these four categories will be eligible for 25% principal forgiveness. The list below provides a guideline for applying for funding through the CWRF program.

1. Apply to MPCA for placement on the Project Priority List - Due March 1, 2024
2. Submit Project Plan to MPCA for placement on Intended Use Plan (IUP) – Due March 1, 2024
3. Submit project Plans and Specifications to MPCA – September 2024

An additional funding option is the Point Source Implementation Grant (PSIG) program also administered by MPCA. PSIG grants are provided to local governments through CWLF that can cover up to 80% of your project costs with a maximum of $7 million. In order to be eligible for a PSIG, a stormwater project must contribute towards meeting waste load reductions prescribed under a total maximum daily load (TMDL) plan required by Section 303(d) of the federal Clean Water Act. The district would only be eligible if the upgrades increased the load reduction from current operations. In order to have the required waste load allocation under a TMDL, a facility must be a permitted Municipal Separate Storm Sewer System (MS4). Additionally, the project must be located within the bounds of the MS4. The district is only an MS4 for a section of the Prior Lake Outlet Channel and would need to partner with Spring Lake Township for this funding source.

It should be kept in mind that pursuing grants or other funding can require significant time investment. For projects of a smaller size, the cost of pursuing grants can sometimes offset the benefit they can provide. The threshold at which grants become more cost effective depends on the percentage of the project covered, the cost of the project, and cost of staffing/labor to pursue the grant and submit appropriate paperwork. As an example, in some cases where less than 30% of a project is covered by a grant, the project cost may need to exceed approximately $500,000 for the benefits to exceed the cost. Therefore, in many cases a low interest loan may be preferable for smaller projects.

4 EVALUATION OF ALTERNATIVE CHEMICALS & DOSING

PLSLWD expressed interest in reviewing the existing dosing and evaluating the potential benefit of utilizing alternative chemicals to ferric chloride (ferric). Ferric has been used since the system started up approximately 25 years ago; however, there are several new chemicals that have assumed relatively widespread use since that time. Some chemicals are merely mixtures of ferric and other chemicals, with polymers added to improve removal and settling. Other chemicals are alternative compounds that can potentially perform better than ferric.

Flow data, orthophosphate, and total phosphorus data were evaluated from PLSLWD's Discharge Monitoring Reports (DMRs) for the past 7 years (since 2016) to evaluate if high flows typically lead to higher P concentrations and compare typical P concentrations to the existing concentration upstream of the weir.

The past data shows that flow is not correlated highly with total phosphorus (P) concentrations. However, the P concentrations do show a clear seasonal trend, with higher concentrations in the summertime, as shown in Figure 11 below. This can be most clearly seen in 2016-2020, when there

wasn't significant drought and measurements were taken monthly. In 2023, due to a drought, there was no flow over the weir after June 6, 2023. Due to no flow over the weir at Hwy 13, water samples from the wetland would not be representative of typical water quality and phosphorus (P) concentrations.

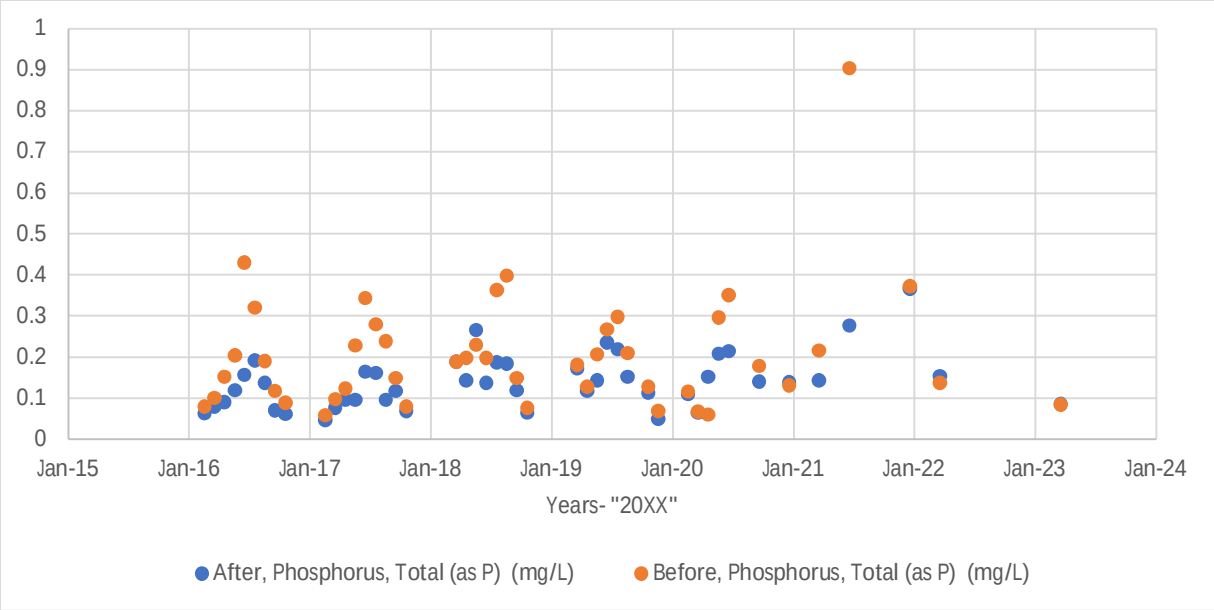


Figure 11: Total Phosphorus Before and After Treatment from 2016-2023.

4.1 Alternative Chemicals Evaluation

The PLSLWD wishes to evaluate alternative chemicals to ferric chloride to ensure it stays in line with best practices for phosphorus removal in case these have changed over time. Potential alternative chemicals included ferric/polymer blends, Alum/polymer blends, Rare Earth, as well as a variety of Polyaluminum Chloride / Polyaluminum Chlorohydrate (PAC) options.

Alum (aluminum sulfate) stands out as a candidate because it is used in similar applications for phosphorus removal. However, alum will congeal (gel) in low temperatures and the facility often operates late into the fall with cold temperatures. Therefore, while use of alum is possible, it would require heating/insulation of the building as well as heat-tracing/insulating the chemical feed line, which would be very costly and require significant construction. Alum also has issues with pH swings and buffering that make monitoring and intervention more intensive to manage. Alum is therefore not recommended.

Polyaluminum-based chemicals (Polyaluminum Chloride / Polyaluminum Chlorohydrate) are also a promising alternative. They are typically known for providing better removal of the mass of chemicals used, but they are also typically more expensive on a per mass basis. Therefore, the higher cost would need to be balanced or exceeded by higher removal. Furthermore, any change will have costs

and logistical requirements associated with changing operation, permits, and maintenance to a new chemical.

Any change in chemical could have unintended consequences, even when existing data show it to be safe. Therefore, caution is encouraged in selecting a different chemical. Note that high doses of some PAC type chemicals, such as AH15667, are sometimes used as a disinfectant to kill unwanted bacterial life in some wastewater facilities. This does not necessarily mean that it is unsafe at low concentrations, but further investigation is needed to ensure it will be safe. Therefore, negative effects to the ecosystem may be possible and we do not have sufficient data to ensure that no negative effects would be caused.

Some other considerations for changing from ferric chloride to another chemical are health and safety hazards, potential gases, potential toxicity to wildlife, and effects on flora/fauna in the natural water body. While alternative chemicals are typically considered safe at the concentrations being considered, there are always possible unknowns when dealing with natural water systems. A further consideration is that of public perception. While alternative chemicals may indeed be safe, they may still create public perception concerns and do not have the track record of ferric chloride. Any current concerns may be quelled because ferric chloride has been used for over 25 years without incident. Changing the chemical can open up potential new concerns from the public, whether they have merit or not. Therefore, changing to an alternative chemical has some risk in this regard. Additionally, the uncertainty of permit approvals with alternative chemicals increases risk and burden substantially. Upon initial investigation from PLSLWD staff, the MPCA does not require review of Ferric chloride and Aluminum sulfate but would require review of the other alternatives (March 2019 Chemical Additive Review Guidance).

Regarding concerns with remaining with ferric chloride, there does not appear to be any significant issues the system is facing due to ferric chloride use. Therefore, there is not a strong driver to move to an alternative chemical. While gases from the ferric chloride can be corrosive, the system has not experienced significant issues because of it. Furthermore, some planned design modifications (such as ensuring the storage tank has a lid that closes completely) should further reduce these issues. The potential alternative chemicals generally all have their own chemical handling requirements which do not stand out as being significantly preferable to ferric chloride for this system.

A concern raised by the PLSLWD is the possibility of phosphorus re-release under anaerobic conditions in the settling pond. Anaerobic re-release with ferric chloride is possible and if anaerobic conditions are present along with disruption of the settled solids, this may be a concern. In most natural water bodies, especially shallower waterbodies, dissolved oxygen levels stay high enough to avoid this. Furthermore, the settled solids are not likely to be disturbed. The solids will also be removed periodically by the PLSLWD, according to their permit requirements. Therefore, phosphorus re-release is not likely, but if it remains a concern, additional testing downstream of the settling pond and/or monitoring dissolved oxygen profiles in the pond in a variety of conditions, are recommended to confirm whether or not it is occurring.

As noted in this report, some initial jar tests were completed on approximately 14 alternative chemicals. The tests found that three alternative chemicals show promise as an alternative to ferric (Table 6). These initial tests do indicate that a polyaluminum-based chemical can likely provide higher phosphorus removal with potentially less chemical usage, however, as noted, the cost of the

chemical is higher on a mass basis. Therefore, the cost per % of Phosphorus removed is approximately similar.

Table 6: Comparison of Several Chemicals Evaluated in Jar Tests.

Dosing Chemicals	Cost ($/gallon)	Percent Removal of Phosphorus in Test	Cost per Percent Removal ($/ % Removal)
Ferric Chloride (Current)	3.75	40%	9.29
Aqua Hawk 104	7.1	69%	10.25
Aqua Hawk 217	7.18	76%	9.46
Aqua Hawk 15667	6.75	78%	8.62

In summary, there does not appear to be a clear alternative chemical that would be a better choice than ferric chloride at the current time. Ferric chloride has not presented significant challenges to its use and therefore there are no strong drivers to move to an alternative. The risks of changing to a new chemical, such as potential issues of public perception, logistical requirements, and costs, appear to outweigh potential benefits, which at present appear to be minimal. Unless new information comes to light, it is recommended to continue using ferric chloride. If the PLSLWD does pursue alternative chemicals further, a polyaluminum-based chemical is likely to be a strong candidate and additional jar testing is recommended to better identify appropriate dosing for the alternative chemical and allow for more accurate cost comparison between ferric chloride and the alternative.

4.2 $FeCl_3$ Dosing Evaluation

The P concentration of the 2023 sample used for jar testing was compared to historical data for the water upstream of the weir and it currently shows P concentrations that are approximately 8 times higher than typical, which led to extending the project into 2024. The sampling and jar testing in 2024 is discussed in further detail in Appendix I. While two chemical suppliers performed testing, the results from Hawkins were more consistent with the PLSLWD's monitoring station phosphorus values and were considered the more reliable of the results and are summarized in Table 7 below. PO_4 removal efficiency reached 57-65% at a dose of 0.5-58.1 mg/L $FeCl_3$. The Hawkins results did not measure the TSS level in the sampled water, so drawing any correlations due to TSS interference to evaluate its impact on Premoval is not addressed here.

Based on the seasonal increase in influent phosphorus concentrations it is recommended using two different dosing strategies based on the time of year. This summary is during flow periods, and when flow is present, and not when the system is intentionally idled over the winter months of December through February.

- March–May and October–November: Maintain the current $FeCl_3$ dosing of 2.33 mg/L (3.77 gph) for a flow rate of 33 cfs (0.5 m weir level).
- June–September: Increase $FeCl_3$ dosing to 4.0 mg/L (9 gph) to manage elevated phosphorus concentrations effectively.

The anticipated outcomes for dosing optimization included: (A) identifying opportunities to reduce dosing during certain times of the year or flow conditions to lower material costs, and (B) increasing dosing during specific periods or conditions to offset the effects of competing substances that bind $FeCl_3$, thereby enhancing phosphorus removal.

Table 7: Jar tests results summary from Hawkins.

Sample Date	Chemical dosing	Dose $FeCl_3$ (mg/L)	Testing Lab	pH	EC (µS/cm)	Turbidity (NTU)	PO_4 as P* (mg/L)	PO_4 Removal efficiency (%)
05 June 2024	$FeCl_3$	1.5-58	Hawkins	7.82	-	-	0.47	57-65

**PO_4 concentrations were converted to PO_4 as P*

There is still a fair amount of uncertainty in the assessment that have become apparent as the data was analyzed and flow and concentration correlations were not strong nor consistent. There are likely multiple variables affecting the chemistry and removal performance beyond just flow and phosphorus concentration. The seasonal variability and likely presence of competing or interfering substances of the water chemistry that are not constant through time nor season, indicate a complicated treatment setting.

The natural variability of the CD-2 system and system monitoring data and the variable jar test results reinforce the need to monitor the benefits of the proposed changes to the system and be open to additional changes. If changes are implemented and the system is still not operating at good efficiency, further testing across diverse water quality constituents to refine dosing strategies may be warranted. Upgrades could also potentially include smart, real-time automated systems that are sensing real-time differences in water chemistry and flow conditions and would adjust dosing.

APPENDIX A. PRELIMINARY DESIGN FOR DRIVE ACCESS ALTERNATIVE 1

ANTHONY C DERHAAG
REVOCABLE TRUST

LEVIN, TERRI

FINK, ALLEN C & LINNEA

Co. Rd.
13

LANGFORD BLVD

WB-67 - Interstate Semi-Trailer

30

935

940

940

935

930

925

920

EXISTING FENCE

HOUSE

BUSCH, DEBORA MARY

EXISTING FeCl BUILDING

KLOTZ FAMILY LTD PTNSHP NO 1
& C/O GLENN & DARLENE KLOTZ

N

0 20 40 Feet

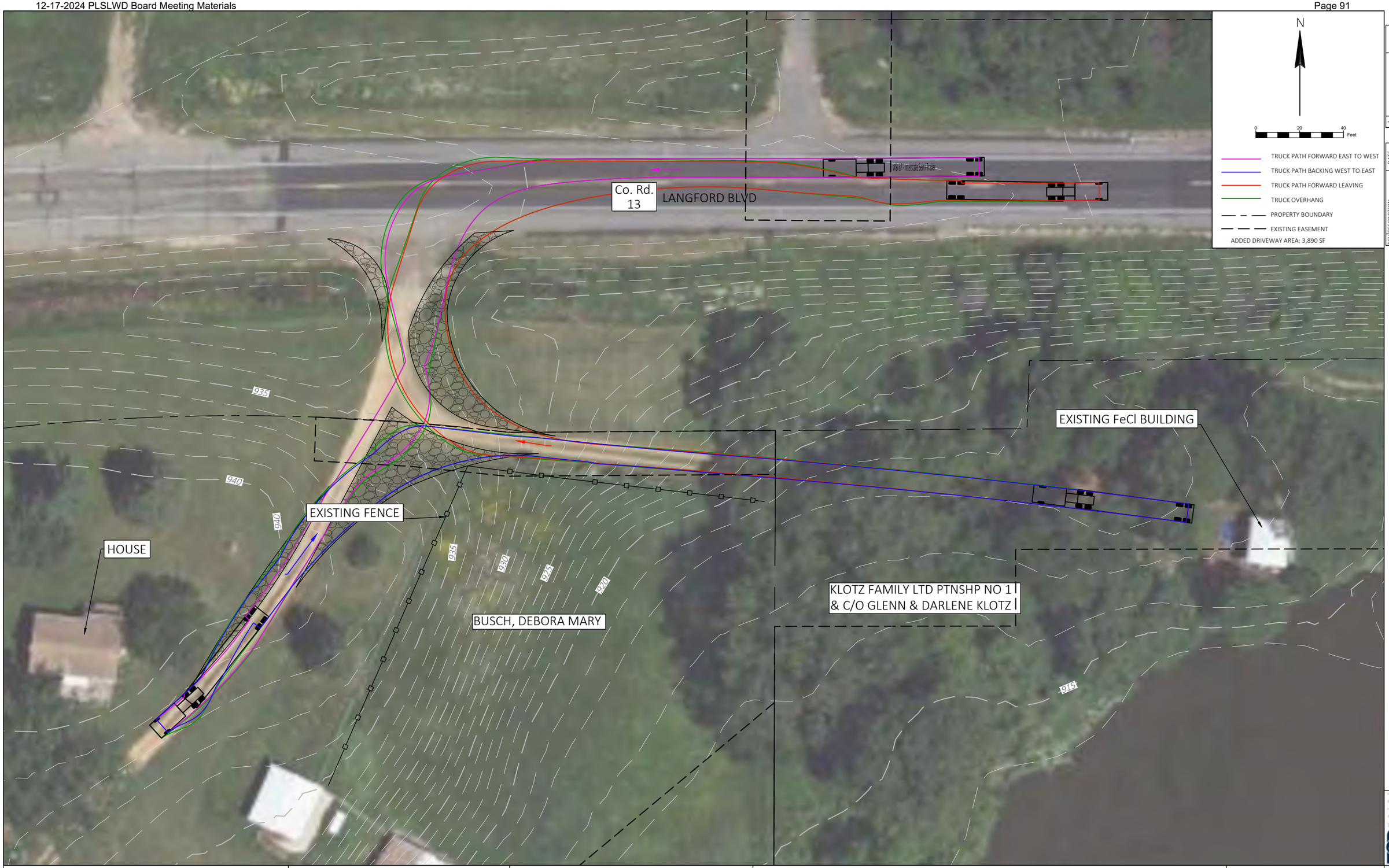
TRUCK PATH FORWARD EAST TO WEST
TRUCK PATH BACKING WEST TO EAST
TRUCK PATH FORWARD LEAVING
TRUCK OVERHANG
PROPERTY BOUNDARY
EXISTING EASEMENT
ADDED DRIVEWAY AREA: 2,150 SF

NO	DESCRIPTION	DATE
1		
2		

PROJECT: FERRIC CHLORIDE SYSTEM ASSESSMENT	CLIENT: PLSLWD	STREET: LANGFORD BLVD	DRAFT Option 1	DATE: 09-08-2023

FILE NAME : X:\CLIENTS_WD\00758_PLSLWD\0168_FERRIC_CHLORIDE_SYSTEM_ASSESSMENT\09_GIMS\DWG\DESIGN\TRUCK TURNING.DWG PLOT DATE : 9/8/2023 9:54 AM PLOT BY : NATALIE MCCRAW PLOT NAME :

APPENDIX B. PRELIMINARY DESIGN FOR DRIVE ACCESS ALTERNATIVE 2



PROJECT: FERRIC CHLORIDE SYSTEM ASSESSMENT	CLIENT: PLSLWD	STREET: LANGFORD BLVD	DRAFT Option 2	DATE: 09-08-2023

FILE NAME : X:\CLIENTS_WD\00758_PLSLWD\0168_FERRIC_CHLORIDE_SYSTEM_ASSESSMENT\09_GIMS\DWG\DESIGN\TRUCK TURNING.DWG PLOT DATE : 9/8/2023 9:54 AM PLOT BY : NATALIE MCCRAW PLOT NAME :

APPENDIX C. PRELIMINARY DESIGN FOR DRIVE ACCESS ALTERNATIVE 3

ANTHONY C DERHAAG REVOCABLE TRUST

LEVIN, TERRI

FINK, ALLEN C & LINNEA

Co. Rd. 13

LANGFORD BLVD

WB-67 - Interstate Semi-Trailer

29

935

940

940

EXISTING FENCE

HOUSE

935

930

925

920

BUSCH, DEBORA MARY

EXISTING FeCl BUILDING

KLOTZ FAMILY LTD PTNSHP NO 1
& C/O GLENN & DARLENE KLOTZ

N

0 20 40 Feet

TRUCK PATH FORWARD

TRUCK OVERHANG

TRUCK PATH FORWARD LEAVING

TRUCK OVERHANG

PROPERTY BOUNDARY

EXISTING EASEMENT

ADDED DRIVEWAY AREA: 14,400 SF

NO	DESCRIPTION	DATE
1		
2		

PROJECT: FERRIC CHLORIDE SYSTEM ASSESSMENT	CLIENT: PLSLWD	STREET: LANGFORD BLVD	DRAFT Option 3	DATE: 11-06-2023

FILE NAME : X:\CLIENTS_WD\00758_PLSLWD\0168_FERRIC_CHLORIDE_SYSTEM_ASSESSMENT\09_GIMS\DWG\DESIGN\TRUCK TURNING.DWG PLOT DATE : 11/6/2023 3:34 PM PLOT BY : TIFFANY MUELLER PLOT NAME :

APPENDIX D. PRELIMINARY DESIGN FOR DRIVE ACCESS ALTERNATIVE 4

ANTHONY C DERHAAG
REVOCABLE TRUST

LEVIN, TERRI

FINK, ALLEN C & LINNEA

Co. Rd.
13

LANGFORD BLVD

SU-40 - Single Unit Truck

EXISTING FeCl BUILDING

HOUSE

EXISTING FENCE

KLOTZ FAMILY LTD PTNSHP NO 1
& C/O GLENN & DARLENE KLOTZ

BUSCH, DEBORA MARY

935
940
940
935
930
925
920

N

0 20 40 Feet

TRUCK PATH FORWARD
TRUCK OVERHANG
TRUCK PATH REVERSE
TRUCK OVERHANG
PROPERTY BOUNDARY
EXISTING EASEMENT
ADDED DRIVEWAY AREA: 900 SF

NO	DESCRIPTION	DATE
1		
2		

PROJECT: FERRIC CHLORIDE SYSTEM ASSESSMENT	CLIENT: PLSLWD	STREET: LANGFORD BLVD	DRAFT Option 4	DATE: 01/09/2024

FILE NAME : X:\CLIENTS_WD\00758_PLSLWD\0168_FERRIC_CHLORIDE_SYSTEM_ASSESSMENT\09_GIMS\DWG\DESIGN\TRUCK TURNING_R1_20240108.DWG PLOT DATE : 1/11/2024 2:09 PM PLOT BY : TIFFANY MUELLER PLOT NAME :

APPENDIX E. ENGINEER'S COST ESTIMATE FOR DRIVE ACCESS ALTERNATIVE 1

Appendix A. Engineer's Opinion of Probable Cost for Alternative 1

ENGINEER'S OPINION OF PROBABLE COST (EOPC)	
FeCl System Assessment & Recommendation Updates: Alternative 1	
PREPARED BY EMMONS & OLIVIER RESOURCES, INC.	
EOR JOB NO.	00758-0168
DATE PREPARED	1/8/2024

POND OUTLET MODIFICATION

Item Description	MnDOT Reference #	Unit	Quantity	Unit Cost	Total Cost	Notes
Mobilization	2021.501	LS	1	$ 13,000.00	$ 13,000.00	
Clearing	2101.505	ACRE	0.19	$ 10,000.00	$ 1,928.15	
Grubbing	2101.505	ACRE	0.19	$ 10,000.00	$ 1,928.15	
Salvage Chain Link Fence	2104.503	LF	0	$ 25.00	$ -	Not required for this Option.
Excavation Common	2106.507	CY	463	$ 40.00	$ 18,527.41	Assume 26" excavation where driveway is getting placed or replaced
Granular Borrow (CV)	2105.607	CY	178	$ 50.00	$ 8,907.41	Assume 10" granular replacement for stability
Aggregate Surfacing Class V	2118.509	TON	128	$ 65.00	$ 8,337.33	Assume 4" surface aggregate
Aggregate Base Class V	2211.509	TON	385	$ 55.00	$ 21,164.00	Assume 12" base aggregate
Concrete Pavement 8"	2301.504	SY	143	$ 150.00	$ 21,466.67	Assume 8" Thick
24" RC Pipe Culvert Class III	2501.503	LF	55	$ 100.00	$ 5,500.00	
24" RC Pipe Apron	2501.502	EA	2	$ 2,500.00	$ 5,000.00	
Geotextile Filter Type V	2511.504	SY	641	$ 8.00	$ 5,130.67	Assume this is placed for stabilization where driveway is getting placed or replaced
Random Riprap Class III	2511.507	CY	20	$ 155.00	$ 3,100.00	
Install Chain Link Fence	2557.603	LF	0	$ 25.00	$ -	Not required for this Option.
Sediment Control Log Type Wood Fiber -- 9" Diameter	2573.503	LF	112	$ 20.00	$ 2,248.00	
Silt Fence - Type HI	2573.503	LF	562	$ 7.00	$ 3,934.00	
Rolled Erosion Prevention Category 25	2575.504	SY	933	$ 7.00	$ 6,532.56	
Seeding	2575.505	ACRE	0.19	$ 12,000.00	$ 2,313.77	
Hydraulic Bonded Fiber Matrix	2575.508	LB	675	$ 5.25	$ 3,542.97	Assume 3500 #/acre
Seed Mixture 25-141	2575.508	LB	11	$ 50.00	$ 568.80	Assume 59 PLS Rate
Steel Gate	Special	EA	1	$ 3,500.00	$ 3,500.00	Placed at wooded entrance.

CONSTRUCTION COST (2023)		**$**	**136,629.87**
PERMITS AND LEGAL FEES	10.00%	$	13,662.99
DESIGN AND CONSTRUCTION ENGINEERING	30.00%	$	40,988.96
PROFESSIONAL FEES TOTAL		**$**	**54,651.95**
CONSTRUCTION AND PROFESSIONAL FEES TOTAL		**$**	**191,281.82**
CONSTRUCTION CONTINGENCY	**20.00%**	**$**	**38,256.36**
TOTAL CAPITAL INVESTMENT		**$**	**229,538.18**
ESTIMATED ACCURACY RANGE* **	**-25.00%**	**$**	**172,153.64**
	40.00%	**$**	**321,353.46**
2023 LAND VALUE (SCOTT GIS) ($/ACRE)		$	-
EASEMENT AREA		$	-
LANDOWNER COMPENSATION		**$**	**-**

Notes

[1] 2% Design Work Completed

[2] Quantities are based on 5% Design

[3] Unit Prices are based on Current Industry Prices (2023)

[4] No topographic survey or geotechnical analysis has been completed

[5] This scoping-**level (Class 5, 0 to 2% design completion per ASTM E 2516-06)** cost estimate is based on preliminary-level designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of completion of design, but are not included at this level of project definition. **The estimated accuracy range for the Total Project Cost as the project is defined is -25.00% to +40.00%.** The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. **The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency.** Operation and Maintenance costs are not included.

[6] Area of Disturbance anticipated under 1 acre but an Erosion Control Supervisor should be required to ensure good practices

[7] Includes: Topographic Survey, GSOC Utility Investigation, and Wetland Desktop Review

PARAMETERS FOR ACCURACY RANGE

ESTIMATE CLASS	LEVEL OF PROJECT DEFINITION (% ENGINEERING Complete)	ACCURACY RANGE		
5	0% to 2%	-25.00%	TO	40.00%
4	1% to 15%	-15.00%	TO	25.00%
3	10% to 40%	-10.00%	TO	15.00%
2	30% to 70%	-7.50%	TO	7.50%
1	50% to 100%	-4.00%	TO	6.50%

***THIS PROJECT PHASE

APPENDIX F. ENGINEER'S COST ESTIMATE FOR DRIVE ACCESS ALTERNATIVE 2

Appendix 2. Engineer's Opinion of Probable Cost for Alternative 2

ENGINEER'S OPINION OF PROBABLE COST (EOPC)	
FeCl System Assessment & Recommendation Updates: Alternative 2	
PREPARED BY EMMONS & OLIVIER RESOURCES, INC.	
EOR JOB NO.	00758-0168
DATE PREPARED	1/8/2024

POND OUTLET MODIFICATION

Item Description	MnDOT Reference #	Unit	Quantity	Unit Cost	Total Cost	Notes
Mobilization	2021.501	LS	1	$ 17,000.00	$ 17,000.00	
Clearing	2101.505	ACRE	0.19	$ 10,000.00	$ 1,880.17	
Grubbing	2101.505	ACRE	0.19	$ 10,000.00	$ 1,880.17	
Salvage Chain Link Fence	2104.503	LF	50	$ 25.00	$ 1,250.00	
Excavation Common	2106.507	CY	743	$ 35.00	$ 26,010.83	Assume 26" excavation where driveway is getting placed or replaced
Granular Borrow (CV)	2105.607	CY	286	$ 50.00	$ 14,291.67	Assume 10" granular replacement for stability
Aggregate Surfacing Class V	2118.509	TON	206	$ 65.00	$ 13,377.00	Assume 4" surface aggregate
Aggregate Base Class V	2211.509	TON	617	$ 55.00	$ 33,957.00	Assume 12" base aggregate
Concrete Pavement 8"	2301.504	SY	143	$ 150.00	$ 21,466.67	Assume 8" Thick
24" RC Pipe Culvert Class III	2501.503	LF	55	$ 100.00	$ 5,500.00	
24" RC Pipe Apron	2501.502	EA	2	$ 2,500.00	$ 5,000.00	
Geotextile Filter Type V	2511.504	SY	1029	$ 7.00	$ 7,203.00	Assume this is placed for stabilization where driveway is getting placed or replaced
Random Riprap Class III	2511.507	CY	20	$ 155.00	$ 3,100.00	
Install Chain Link Fence	2557.603	LF	50	$ 25.00	$ 1,250.00	
Sediment Control Log Type Wood Fiber -- 9" Diameter	2573.503	LF	164	$ 20.00	$ 3,276.00	
Silt Fence - Type HI	2573.503	LF	819	$ 5.00	$ 4,095.00	
Rolled Erosion Prevention Category 25	2575.504	SY	1820	$ 5.00	$ 9,100.00	
Seeding	2575.505	ACRE	0.38	$ 12,000.00	$ 4,512.40	
Hydraulic Bonded Fiber Matrix	2575.508	LB	1316	$ 4.50	$ 5,922.52	
Seed Mixture 25-141	2575.508	LB	22	$ 50.00	$ 1,109.30	
Steel Gate	Special	EA	1	$ 3,500.00	$ 3,500.00	Placed at wooded entrance.
CONSTRUCTION COST (2023)				**$**	**184,681.71**	
PERMITS AND LEGAL FEES			10.00%	$	18,468.17	
DESIGN AND CONSTRUCTION ENGINEERING			30.00%	$	55,404.51	
PROFESSIONAL FEES TOTAL				**$**	**73,872.68**	
CONSTRUCTION AND PROFESSIONAL FEES TOTAL				**$**	**258,554.40**	
CONSTRUCTION CONTINGENCY			**20.00%**	**$**	**51,710.88**	
TOTAL CAPITAL INVESTMENT				**$**	**310,265.28**	
ESTIMATED ACCURACY RANGE* **			**-25.00%**	**$**	**232,698.96**	
			40.00%	**$**	**434,371.39**	
2023 LAND VALUE (SCOTT GIS) ($/ACRE)				$	8,364.00	Busch Property
EASEMENT AREA (ACRE)				$	0.092	Busch Property
LANDOWNER COMPENSATION				**$**	**768.04**	

Notes

[1] 2% Design Work Completed

[2] Quantities are based on 5% Design

[3] Unit Prices are based on Current Industry Prices (2023)

[4] No topographic survey or geotechnical analysis has been completed

[5] This scoping-**level (Class 5, 0 to 2% design completion per ASTM E 2516-06)** cost estimate is based on preliminary-level designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of completion of design, but are not included at this level of project definition. **The estimated accuracy range for the Total Project Cost as the project is defined is -25.00% to +40.00%.** The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. **The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency.** Operation and Maintenance costs are not included.

[6] Area of Disturbance anticipated under 1 acre but an Erosion Control Supervisor should be required to ensure good practices

[7] Includes: Topographic Survey, GSOC Utility Investigation, and Wetland Desktop Review

PARAMETERS FOR ACCURACY RANGE

ESTIMATE CLASS	LEVEL OF PROJECT DEFINITION (% ENGINEERING Complete)	ACCURACY RANGE		
5	0% to 2%	-25.00%	TO	40.00%
4	1% to 15%	-15.00%	TO	25.00%
3	10% to 40%	-10.00%	TO	15.00%
2	30% to 70%	-7.50%	TO	7.50%
1	50% to 100%	-4.00%	TO	6.50%

***THIS PROJECT PHASE

APPENDIX G. ENGINEER'S COST ESTIMATE FOR DRIVE ACCESS ALTERNATIVE 3

Appendix 3. Engineer's Opinion of Probable Cost for Alternative 3

ENGINEER'S OPINION OF PROBABLE COST (EOPC)	
FeCl System Assessment & Recommendation Updates: Alternative 3	
PREPARED BY EMMONS & OLIVIER RESOURCES, INC.	
EOR JOB NO.	00758-0168
DATE PREPARED	1/8/2024

POND OUTLET MODIFICATION

Item Description	MnDOT Reference #	Unit	Quantity	Unit Cost	Total Cost	Notes
Mobilization	2021.501	LS	1	$ 20,000.00	$ 20,000.00	
Clearing	2101.505	ACRE	0.40	$ 10,000.00	$ 4,000.00	
Grubbing	2101.505	ACRE	0.40	$ 10,000.00	$ 4,000.00	
Salvage Chain Link Fence	2104.503	LF	50	$ 25.00	$ 1,250.00	
Excavation Common	2106.507	CY	1400	$ 30.00	$ 42,000.00	Assume 26" excavation where driveway is getting placed or replaced
Granular Borrow (CV)	2105.607	CY	540	$ 50.00	$ 27,000.00	Assume 10" granular replacement for stability
Aggregate Surfacing Class V	2118.509	TON	435	$ 60.00	$ 26,100.00	Assume 4" surface aggregate
Aggregate Base Class V	2211.509	TON	1400	$ 50.00	$ 70,000.00	Assume 12" base aggregate
Concrete Pavement 8"	2301.504	SY	143	$ 150.00	$ 21,466.67	Assume 8" Thick
24" RC Pipe Culvert Class III	2501.503	LF	55	$ 100.00	$ 5,500.00	
24" RC Pipe Apron	2501.502	EA	2	$ 2,500.00	$ 5,000.00	
Geotextile Filter Type V	2511.504	SY	1950	$ 5.00	$ 9,750.00	Assume this is placed for stabilization where driveway is getting placed or replaced
Random Riprap Class III	2511.507	CY	20	$ 155.00	$ 3,100.00	
Install Chain Link Fence	2557.603	LF	50	$ 25.00	$ 1,250.00	
Sediment Control Log Type Wood Fiber -- 9" Diameter	2573.503	LF	208	$ 20.00	$ 4,160.00	
Silt Fence - Type HI	2573.503	LF	1040	$ 5.00	$ 5,200.00	
Rolled Erosion Prevention Category 25	2575.504	SY	1840	$ 3.50	$ 6,440.00	
Seeding	2575.505	ACRE	0.40	$ 10,000.00	$ 4,000.00	
Hydraulic Bonded Fiber Matrix	2575.508	LB	1330	$ 2.25	$ 2,992.50	
Seed Mixture 25-141	2575.508	LB	25	$ 50.00	$ 1,250.00	
Steel Gate	Special	EA	1	$ 3,500.00	$ 3,500.00	Placed at wooded entrance.
CONSTRUCTION COST (2023)					**$ 267,959.17**	
PERMITS AND LEGAL FEES			10.00%		$ 26,795.92	
DESIGN AND CONSTRUCTION ENGINEERING			30.00%		$ 80,387.75	
PROFESSIONAL FEES TOTAL					**$ 107,183.67**	
CONSTRUCTION AND PROFESSIONAL FEES TOTAL					**$ 375,142.83**	
CONSTRUCTION CONTINGENCY			**20.00%**		**$ 75,028.57**	
TOTAL CAPITAL INVESTMENT					**$ 450,171.40**	
ESTIMATED ACCURACY RANGE* **			**-25.00%**		**$ 337,628.55**	
			40.00%		**$ 630,239.96**	
2023 LAND VALUE (SCOTT GIS) ($/ACRE)					$ 8,364.00	Busch Property
EASEMENT AREA (ACRE)					$ 0.011	Busch Property
2023 LAND VALUE (SCOTT GIS) ($/ACRE)					$ 9,822.67	Klotz Property

EASEMENT AREA (ACRE)	$ -	Klotz Property
LANDOWNER COMPENSATION	**$ 96.01**	

Notes

[1] 2% Design Work Completed

[2] Quantities are based on 5% Design

[3] Unit Prices are based on Current Industry Prices (2023)

[4] No topographic survey or geotechnical analysis has been completed

[5] This scoping-**level (Class 5, 0 to 2% design completion per ASTM E 2516-06)** cost estimate is based on preliminary-level designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of completion of design, but are not included at this level of project definition. **The estimated accuracy range for the Total Project Cost as the project is defined is -25.00% to +40.00%.** The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. **The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency.** Operation and Maintenance costs are not included.

[6] Area of Disturbance anticipated under 1 acre but an Erosion Control Supervisor should be required to ensure good practices

[7] Includes: Topographic Survey, GSOC Utility Investigation, and Wetland Desktop Review

PARAMETERS FOR ACCURACY RANGE

ESTIMATE CLASS	LEVEL OF PROJECT DEFINITION (% ENGINEERING Complete)	ACCURACY RANGE		
5	0% to 2%	-25.00%	TO	40.00%
4	1% to 15%	-15.00%	TO	25.00%
3	10% to 40%	-10.00%	TO	15.00%
2	30% to 70%	-7.50%	TO	7.50%
1	50% to 100%	-4.00%	TO	6.50%

***THIS PROJECT PHASE

APPENDIX H. ENGINEER'S COST ESTIMATE FOR DRIVE ACCESS ALTERNATIVE 4

Appendix A. Engineer's Opinion of Probable Cost for Alternative 4

ENGINEER'S OPINION OF PROBABLE COST (EOPC)	
FeCl System Assessment & Recommendation Updates: Alternative 4	
PREPARED BY EMMONS & OLIVIER RESOURCES, INC.	
EOR JOB NO.	00758-0168
DATE PREPARED	1/8/2024

POND OUTLET MODIFICATION

Item Description	MnDOT Reference #	Unit	Quantity	Unit Cost	Total Cost	Notes
Mobilization	2021.501	LS	1	$ 2,000.00	$ 2,000.00	
Clearing	2101.505	ACRE	0.00	$ 10,000.00	$ -	Not required for this Option.
Grubbing	2101.505	ACRE	0.00	$ 10,000.00	$ -	Not required for this Option.
Salvage Chain Link Fence	2104.503	LF	0	$ 25.00	$ -	Not required for this Option.
Excavation Common	2106.507	CY	44	$ 40.00	$ 1,777.78	Assume 26" excavation where driveway is getting placed or replaced
Granular Borrow (CV)	2105.607	CY	0	$ 50.00	$ -	Not required for this Option.
Aggregate Surfacing Class V	2118.509	TON	22	$ 65.00	$ 1,444.44	Assume 4" surface aggregate
Aggregate Base Class V	2211.509	TON	67	$ 55.00	$ 3,666.67	Assume 12" base aggregate
Concrete Pavement 8"	2301.504	SY	0	$ 150.00	$ -	Not required for this Option.
24" RC Pipe Culvert Class III	2501.503	LF	0	$ 100.00	$ -	Not required for this Option.
24" RC Pipe Apron	2501.502	EA	0	$ 2,500.00	$ -	Not required for this Option.
Geotextile Filter Type V	2511.504	SY	0	$ 8.00	$ -	Not required for this Option.
Random Riprap Class III	2511.507	CY	0	$ 155.00	$ -	Not required for this Option.
Install Chain Link Fence	2557.603	LF	0	$ 25.00	$ -	Not required for this Option.
Sediment Control Log Type Wood Fiber -- 9" Diameter	2573.503	LF	112	$ 20.00	$ 2,240.00	
Silt Fence - Type HI	2573.503	LF	0	$ 7.00	$ -	Not required for this Option.
Rolled Erosion Prevention Category 25	2575.504	SY	0	$ 7.00	$ -	Not required for this Option.
Seeding	2575.505	ACRE	0.02	$ 12,000.00	$ 247.93	
Hydraulic Bonded Fiber Matrix	2575.508	LB	72	$ 5.25	$ 379.65	Assume 3500 #/acre
Seed Mixture 25-141	2575.508	LB	1	$ 50.00	$ 60.95	Assume 59 PLS Rate
Steel Gate	Special	EA	1	$ 3,500.00	$ 3,500.00	Placed at wooded entrance.

CONSTRUCTION COST (2023)		**$**	**15,317.42**
PERMITS AND LEGAL FEES	10.00%	$	1,531.74
DESIGN AND CONSTRUCTION ENGINEERING	30.00%	$	4,595.23
PROFESSIONAL FEES TOTAL		**$**	**6,126.97**
CONSTRUCTION AND PROFESSIONAL FEES TOTAL		**$**	**21,444.39**
CONSTRUCTION CONTINGENCY	**20.00%**	**$**	**4,288.88**
TOTAL CAPITAL INVESTMENT		**$**	**25,733.27**
ESTIMATED ACCURACY RANGE* **	**-25.00%**	**$**	**19,299.95**
	40.00%	**$**	**36,026.58**
2023 LAND VALUE (SCOTT GIS) ($/ACRE)		$	-
EASEMENT AREA		$	-
LANDOWNER COMPENSATION		**$**	**-**

Notes

[1] 2% Design Work Completed

[2] Quantities are based on 5% Design

[3] Unit Prices are based on Current Industry Prices (2023)

[4] No topographic survey or geotechnical analysis has been completed

[5] This scoping-**level (Class 5, 0 to 2% design completion per ASTM E 2516-06)** cost estimate is based on preliminary-level designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of completion of design, but are not included at this level of project definition. **The estimated accuracy range for the Total Project Cost as the project is defined is -25.00% to +40.00%.** The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. **The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency.** Operation and Maintenance costs are not included.

[6] Area of Disturbance anticipated under 1 acre but an Erosion Control Supervisor should be required to ensure good practices

[7] Includes: Topographic Survey, GSOC Utility Investigation, and Wetland Desktop Review

PARAMETERS FOR ACCURACY RANGE

ESTIMATE CLASS	LEVEL OF PROJECT DEFINITION (% ENGINEERING Complete)	ACCURACY RANGE		
5	0% to 2%	-25.00%	TO	40.00%
4	1% to 15%	-15.00%	TO	25.00%
3	10% to 40%	-10.00%	TO	15.00%
2	30% to 70%	-7.50%	TO	7.50%
1	50% to 100%	-4.00%	TO	6.50%
***THIS PROJECT PHASE				

PARAMETERS FOR CONSTRUCTION CONTINGENCY

PHASE OF PROJECT	PERCENTAGE ENGINEERING COMPLETED	APPLICABLE CONSTRUCTION CONTINGENCY PERCENTAGE (%)
FUNDING, SCOPE AND BUDGET	0 TO 5%	30.00%
SCHEMATIC DESIGN	5% TO 15%	25.00%
PRELIMINARY	15% TO 60%	20.00%
FINAL	60% TO 100%	10.00%
CONSTRUCTION	100%	5.00%
***THIS PROJECT PHASE		

APPENDIX I. MEMO ON JAR TESTS AND DOSING REVIEW

technical memo

Project Name |	Ferric Chloride System Assessment & Recommendation Updates	**Date** |	11 December 2024
To / Contact info |	Emily Dick (edick@plslwd.org); Jeff Anderson (janderson@plslwd.org)		
Cc / Contact info |			
From / Contact info |	Brett Emmons (bemmons@eorinc.com) Anne Wilkinson (awilkinson@eorinc.com) Kajol Annaduzzaman (Kannaduzzaman@eorinc.com) Carl Almer (calmer@eorinc.com)		
Regarding |	PLSLWD_Ferric Chloride ($FeCl_3$) Jar Tests and Dosing Review		

1. OVERVIEW

This report evaluates the use of ferric chloride ($FeCl_3$) for orthophosphate (PO4) removal in water samples collected from the south tributary to Spring Lake where the existing $FeCl_3$ dosing system is installed in the Prior Lake-Spring Lake Watershed District (PLSLWD). The assessment involved jar tests conducted by two laboratories, referred to as Harcros and Hawkins. The objective was to review the past dosing curve and identify variables that could affect optimal dosing strategies for $FeCl_3$ to enhance PO4 removal and support long-term water quality improvements in the downstream of the watershed. The results may find that conditions and technologies have not changed and simply confirm the past dosing levels or make management recommendations based on those variables.

2. METHODOLOGY

Multiple jar tests were performed by two different chemical suppliers to evaluate phosphate (PO_4) removal efficiency across a range of $FeCl_3$ dosing strategies. Water samples for the tests were initially planned for 2023, but that was a historically dry year the system was not flowing. One sample was taken from the wetland in 2023, and while the plan was to collect another sample later, no flow occurred the remainder of 2023. It was decided to extend this portion of the project into 2024, a year later than planned, to collect spring flow samples. Samples were collected in April and June in 2024.

Given the dry conditions in 2023, the sample was collected from the wetland itself. This sample was subsequently deemed unrepresentative of typical CD-13 water chemistry because it was collected from the wetland itself and under no-flow condition. Therefore, the results from July 2023 jar test were deemed unreliable and are not discussed further in this report. To address this gap, the project was extended into 2024 and additional jar testing was conducted under more typical flow conditions at the weir located at CD-2 just upstream of Highway 13. The rainfall data and the PLSLWD's sampling station flow records for 2024 are illustrated in Figure 1. Pre-test water quality parameters, including PO_4 and turbidity, were measured prior to starting the jar tests, as shown in Table 1.

Jar Test Purpose and Procedures

Jar tests are standard laboratory assessments for determining chemical dosages in water and wastewater treatment. They are also sometimes referred to as benchtop studies, since they are somewhat simple tests that can be conducted in the lab. The process simulates three key steps of any chemical addition and removal in water treatment: mixing, floc formation, and sedimentation. It

simulates coagulation and flocculation of a given target substance, in our case phosphorus, on a reduced scale to enhance removal efficacy. Initially, fill jars or beakers with water of equal volume.

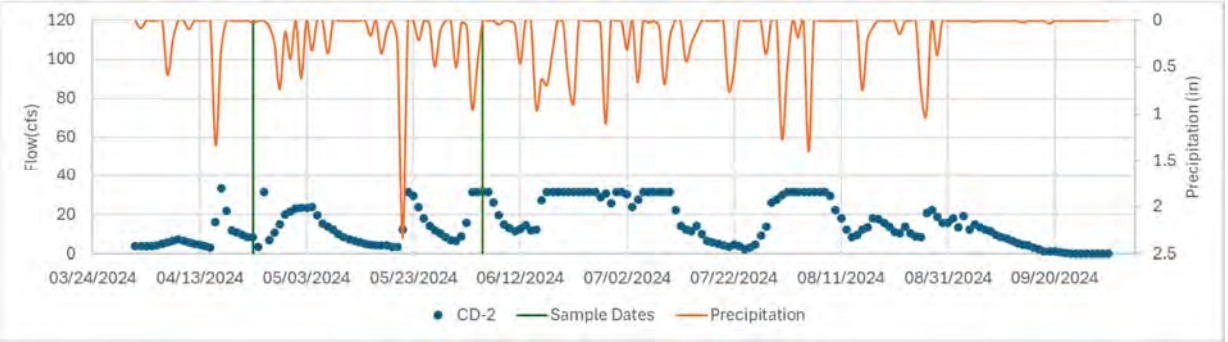


Figure 1: 2024 Flow and Precipitation summary. The orange line represents the precipitation, the blue dots represent the daily flow, and the green lines represent the sampling dates.

Table 1: Jar tests details from Hawkins and Harcros laboratories

Sample Date	Chemical dosing	Dose $FeCl_3$ (mg/L)	Testing Lab	pH	EC (µS/cm)	Turbidity (NTU)	PO_4 as P* (mg/L)	PO_4 Removal efficiency (%)
22 April 2024	$FeCl_3$	5-35	Harcros	8.26	804.5	8.5	0.68	68-76
06 June 2024	$FeCl_3$	1.5-58	Harcros	7.38	616	16.5	0.54	30-37
05 June 2024	$FeCl_3$	1.5-58	Hawkins	7.82	-	-	0.47	57-65

**PO_4 concentrations were converted to P.*

Coagulants, in this case Ferric Chloride ($FeCl_3$) are introduced into each jar at varying levels for comparative analysis. A paddle-equipped jar rapidly agitates water to replicate the intentional fast mixing step that facilitate the chemicals coming into contact. To replicate the next stage of flocculation formation, which creates more dense clumping and aids in settling, the paddles are decelerated to enhance particle collisions and facilitate floc formation. To facilitate the settling of flocs, jars are allowed to remain undisturbed during the sedimentation process, in this case 24 hours/overnight.

Water samples from the surface of each jar are analyzed for turbidity, pH, and other critical factors. The optimal dosage is contingent upon water quality. The performed Jar tests followed the following sequence:

- Raw water samples were collected on-site in clean, labeled containers. The samples were transported to the desired lab for testing.
- Coagulant $FeCl_3$ solutions were prepared at various concentrations for the experiments.
- A series of jars or beakers filled with equal volumes of raw water, and injected $FeCl_3$ solutions of desired concentrations
- The pre-set paddle in the jars were agitated at a speed of 200 rpm for 10 minutes to simulate flash mixing and disperse chemicals. Followed by a slow mixing with 30 rpm for 30 minutes to increase particle contact and flocculation. Finally, the jars were left undisturbed for 24 hours or overnight to settle flocs.

After 24 hours of settling, water samples (collected from 1-2" below surface level) were tested for total phosphorus (TP), ortho-phosphate (Ortho-P), and iron. Phosphate removal efficiency was

determined by measuring PO_4 concentrations in unfiltered samples. Ferric chloride (35-38% concentrated) was used across all jar tests to evaluate its effectiveness in removing PO4 under varying dosing strategies. In April 2024, the dosing was based on the total $FeCl_3$ concentration added, ranging from 5 mg/L to 35 mg/L. However, in the June 2024 tests, the lab reported dosing results based on elemental iron (Fe) concentrations, ranging from 1.5 mg/L (equivalent to 0.5 mg Fe/L) to 58 mg/L (equivalent to 20 mg Fe/L) of $FeCl_3$. To ensure consistency in this report, all dosing data have been converted (Table 2) and presented in terms of $FeCl_3$ concentration.

Table 2: Laboratory Jar Tests $FeCl_3$ Dosing Concentration Ranges and P Removal Efficiencies.

Harcros Tests				Hawkins Tests	
Sample Date	22 April, 2024	Sample Date	06 June, 2024	Sample Date	05 June, 2024
Analysis Report	01 May, 2024	Analysis Report	14 June, 2024	Analysis Report	08 July, 2024
Raw Water PO_4 (mg/L)	2.1	Raw Water PO4 (mg/L)	1.65	Raw Water PO4 (mg/L)	1.03
Raw Water P (mg/L)	0.68	Raw Water P (mg/L)	0.54	Raw Water P (mg/L)	0.47
$FeCl_3$ Dose	P Removal	$FeCl_3$ Dose*	P Removal	$FeCl_3$ Dose*	P Removal
mg/L	%	mg/L	%	mg/L	%
5.0	68	1.5	30	1.5	57
10.0	71	2.9	35	2.9	57
15.0	75	5.9	37	5.9	59
20.0	72	8.8	37	8.8	60
25.0	74	11.8	44	11.8	59
30.0	74	14.7	50	14.7	59
35.0	76	29.4	80	29.4	61
		44.1	57	44.1	63
		58.8	37	58.8	65

**The sample was tested with the Fe chemical form, which was converted to $FeCl_3$ for equivalent comparison in the analysis.*

3. RESULTS AND DISCUSSIONS

Jar Test Results

Jar tests were conducted during April 2024 and June 2024. Samples from April 2024 were sent to both Hawkins and Harcros laboratories for testing with $FeCl_3$ dosing. However, due to personnel constraints, no results were obtained from Hawkins for the April 2024 samples. Similarly, the June 2024 samples were submitted to Harcros and Hawkins, respectively, focusing on evaluating dosing strategies based on elemental iron concentrations.

While the May and June 2024 samples provided valuable data to refine the jar testing methodology, discrepancies were noted between the PO_4 concentrations reported by Harcros and those measured during PLSLWD's CD-2 monitoring station data at the same time and location (Figure 2). Harcros reported PO_4 concentrations exceeding the total phosphorus (TP) levels observed at CD-2, raising questions about the accuracy or consistency between different analytical testing methods, and thus the results. In contrast, Hawkins' June 2024 results were more consistent with the CD-2 data, suggesting greater consistency despite methodological differences between the laboratories.

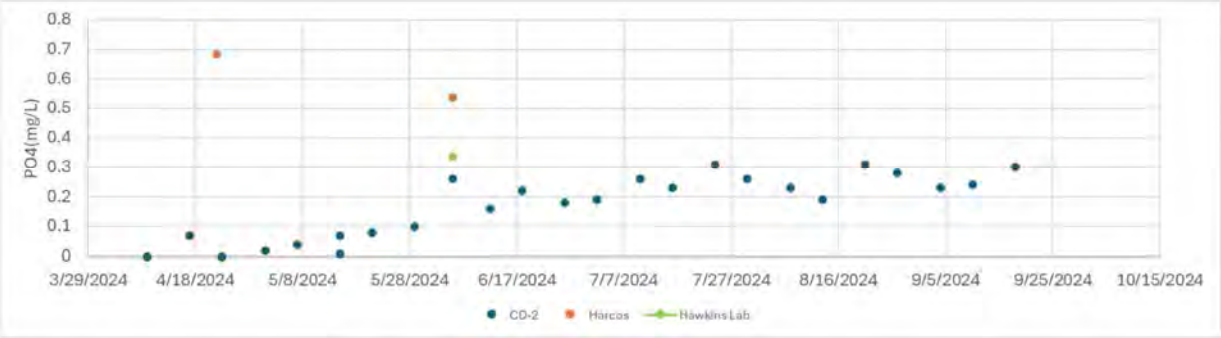


Figure 2: 2024 PO_4 Time Series. The blue dots represent the results from PLSLWD's monitoring station at CD-2, the orange dots represent the Harcros result, and green dot represents the Hawkins result.

The $FeCl_3$ dosing profile at the facility currently applies 2.33 mg/L of 35% $FeCl_3$ (3.77gph) to treat a flow rate of 33 cubic feet per second (cfs) at a 0.5 m weir level. This dosing rate is consistent with the dosing ranges tested in the jar tests.

Results Summary

- April 2024 (Harcros): Significant PO_4 removal (68–76%) was observed across $FeCl_3$ doses of 5–35 mg/L, with lower turbidity potentially contributing to the higher efficiency.
- June 2024 (Harcros): Removal efficiencies ranged from 30–37% across $FeCl_3$ doses of 1.5–58.1 mg/L, with higher turbidity in the June sample likely reducing efficiency. Harcros data indicated diminishing returns beyond 29 mg/L $FeCl_3$, highlighting an efficiency plateau.
- June 2024 (Hawkins): PO_4 removal efficiency reached 57-65% at a dose of 0.5-58.1 mg/L $FeCl_3$ (Appendix A). Importantly, Hawkins did not measure the Total Suspended Solids (TSS) level in the sampled water to evaluate its impact on PO_4 removal.

Preliminary findings indicate that hydraulic factors, such as water flow and settling time, significantly influence $FeCl_3$ dosing effectiveness. The current dosing rate of 2.33 mg/L at 33 cfs effectively manages flow and dosing consistency under the tested conditions. However, increased turbidity or shorter settling times could reduce PO_4 removal efficiency. Additionally, affects of sediment resuspension and, consequently, Fe floc stability, could impact removal results. These findings suggest that controlling TSS in the system would help optimize settling conditions and improve long-term phosphorus removal performance.

Although the results highlight significant variability, they provide valuable insights into $FeCl_3$ dosing impacts on PO_4 removal. Addressing discrepancies and other water chemistry factors such as TSS and others discussed in the subsequent section will refine system performance and enhance dosing reliability. Figure 2 also illustrates PO_4 concentration trends across labs and monitoring timeframes, emphasizing the need for consistent analytical methods to validate results.

The dosing/mixing process is important for forming iron (Fe) flocs that can further aggregate and grow larger and increase in quantity over time, both enhancing phosphate (PO_4) binding and improving sedimentation removal efficiency (dense, large floc settle better). The jar test follows a standard laboratory procedure, but the onsite dosing system at PLSLWD is not operating under ideal conditions. Water flows from the dosing point into the settling pond at a similar elevation, limiting rapid mixing and relying mainly on slow mixing for particle collision and flocculation. The system includes a settling pond with an extended settling period, allowing sufficient time for Fe-PO_4 flocs to

settle. The jar tests achieved 50-70% phosphate removal compared to approximately 40% in the field. This performance discrepancy could be partially due to lack of a rapid mixing stage. Since the mixing stage serves to enhance particle interaction, floc formation, and overall phosphate removal efficiency, this could be a contributing factor to suboptimal removal. While ideally one would address these mixing challenges, from the practical standpoint, this system's configuration would make it logistically difficult and potentially quite costly to add mixing. Due to the challenges of this site, it is better to pursue other more efficient avenues first.

Seasonality Discussion

Water chemistry at the weir is monitored weekly by the PLSLWD to meet permitting requirements for the facility. Influent water chemistry exhibits significant variability, with seasonal patterns in phosphorus content, total phosphorus (TP), and orthophosphate (OP). These seasonal trends, first noted in a 2008 report, remain consistent with data from 2017–2024 (Figure 3).

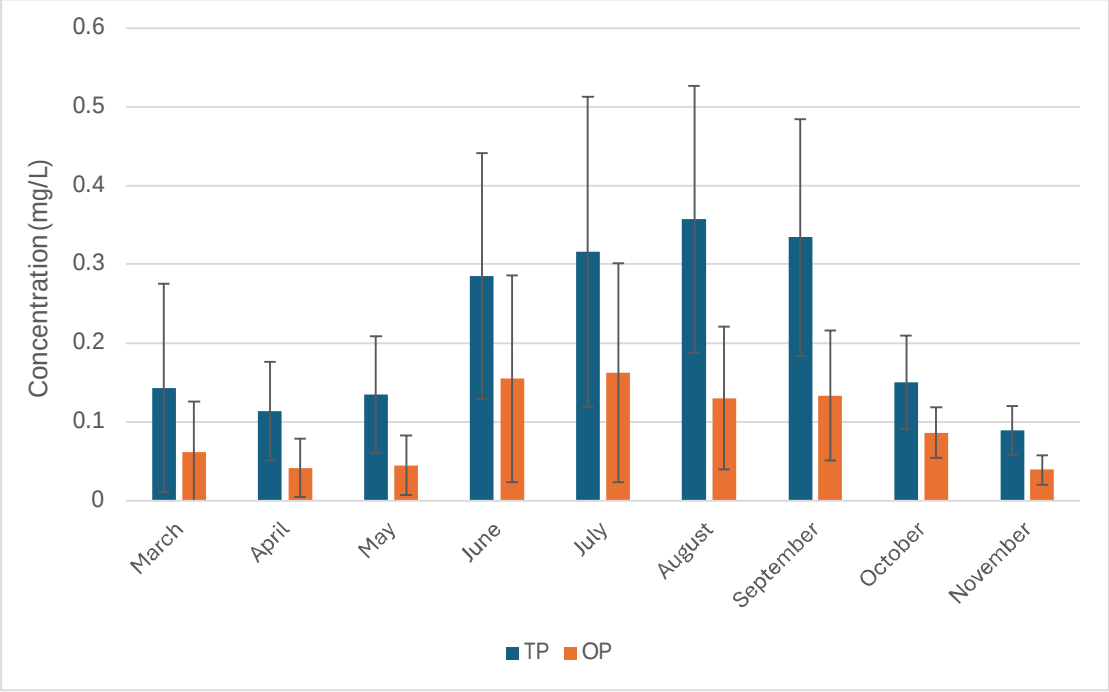


Figure 3: Monthly Phosphorus Concentrations 2017-2024. The blue bars represent the monthly average total phosphorus concentration. The orange bar represents the monthly average orthophosphate concentration. The error bars represent the standard deviation.

Seasonal fluctuations in phosphorus concentrations, in addition to changes in other water chemistry parameters such as nitrate+nitrite, pH, hardness, chloride, total Kjeldahl nitrogen, total suspended solids, and iron (Table 2), could influence the efficiency of phosphorus removal. However, no significant correlation between individual water quality parameters and phosphorus removal efficiency has been tested. The primary factors affecting facility performance appear to be flow and influent phosphorus levels, indicating the need for a more tailored approach to dosing based on these factors.

Current Dosing and Seasonal Challenges

The current dosing strategy, which is based solely on flow, applies 2.33 mg/L of $FeCl_3$ (3.77 gph) to treat a flow rate of 33 cfs to obtain a treatment concentration of 0.8 mg/L Fe (0.5 m weir level). While this approach is effective during the spring and fall months, it does not fully address the elevated phosphorus concentrations observed during the summer.

To optimize phosphorus removal while staying within the permitted effluent iron limit of 1.0 mg/L annual average, a seasonal dosing adjustment is recommended. Based on 2024 Hawkins jar test results, a dose of 10 mg/L $FeCl_3$ would be optimal for peak summer phosphorus levels but might exceed the regulatory annual average iron discharge limit of 1.0 mg/L. Instead, $FeCl_3$ dosing can be safely increased to 3.8–4.0 mg/L (9 gph) for the summer months, and based on standard water chemistry ratios, maintaining compliance with effluent iron limits. While this calculation is linear, please note that actual variations in the effluent iron concentration may occur due to changes in water quality and environmental factors within the distillation pond. Under existing dosing conditions:

- Raw Water (CD2) Iron Concentration (Annual Ave.): 0.62 mg/L
    - Effluent (CD3) Iron Concentration (Annual Ave.): 0.85 mg/L after dosing 0.8 mg/L of Fe
- This indicates that the current dosing contributes only 0.23 mg/L of iron increase in the effluent (CD3).
- The facility currently doses 142.2 lbs/day of Fe (2.33 mg/L $FeCl_3$), of which 100 lbs/day accumulate in the pond, and only 42 lbs/day are released into the lake.

To stay within the maximum allowable effluent annual average iron concentration of 1.0 mg/L, the Fe dose should be able to be increased to 1.32 mg/L, which corresponds to approximately 3.8–4.0 mg/L of 35% $FeCl_3$ (21 gpd). These calculations are based on a constant and maximum flow condition (0.5 m weir level, or 33 cfs). In order to provide an actionable dosing strategy for the facility operator, this logic was applied to modify the flow-based dosing curve, Figure 4.

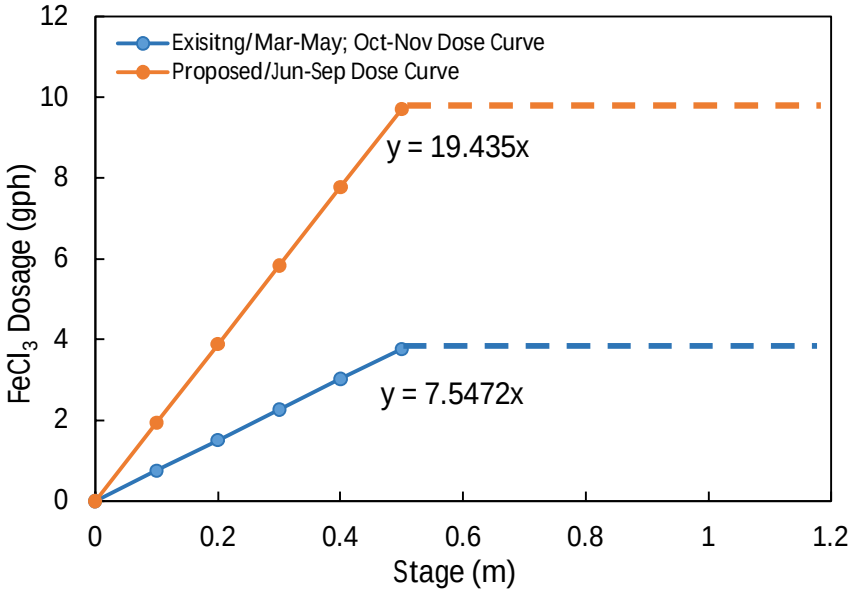


Figure 4: Existing and proposed dosing curve based on stage/water level in the weir.

All of the calculations and data analyzed here are still subject to the considerable environmental variability present in this natural system. There is no guarantee that iron discharges will stay within limits and follow up monitoring and adaptive management may be needed, depending on in-situ conditions and performance.

Based on the seasonal increase in influent phosphorus concentrations we recommend using two different dosing strategies and monitoring the response.

1. March–May and October–November: Maintain the current $FeCl_3$ dosing of 2.33 mg/L (3.77 gph) for a flow rate of 33 cfs (0.5 m weir level).
2. June–September: Increase $FeCl_3$ dosing to 4.0 mg/L (9 gph) to manage elevated phosphorus concentrations effectively.

This covers the Spring, Summer, and Fall, periods of the year when the system would operate, and does not pertain to December through February. The anticipated outcomes for dosing optimization included: (A) identifying opportunities to reduce dosing during certain times of the year or flow conditions to lower material costs, and (B) increasing dosing during specific periods or conditions to offset the effects of competing substances that bind $FeCl_3$, thereby enhancing phosphorus removal.

There is still a fair amount of uncertainty in the assessment that have become apparent as the data was analyzed and flow and concentration correlations were not strong nor consistent. There are likely multiple variables affecting the chemistry and removal performance beyond just flow and phosphorus concentration. There were also some inherent constraints with the current study's data due to limitations in the dataset and methodological constraints, such as:

- *Seasonal Variability:* The available data lacked sufficient granularity to accurately capture seasonal trends in competing substances or their impact on $FeCl_3$ performance.
- *Competing Substances:* While competing substances were recognized as a potential factor, the study did not include targeted measurements or experiments to quantify their influence on $FeCl_3$ binding efficiency.
- *Flow-Based Variations:* Flow dynamics and potential flow bypass are affected by downstream tailwater that is not well understood or accounted for in system operation, and may affect outflow monitoring.

To address the data gaps and further refine dosing strategies, the following steps are recommended:

- *Expanded Monitoring:* Conducting more comprehensive seasonal monitoring of water quality parameters such as organic matter and competing ions will enhance the understanding of their interactions with $FeCl_3$ and interference with phosphorus removal
- *Controlled Experiments:* Designing targeted jar tests or pilot studies to isolate and measure the impact of specific substances on phosphorus removal would provide valuable insights.
- *Dynamic Flow Analysis:* Expanding testing (piloting) to include a wider range of flow conditions would help refine dosing strategies and ensure better generalizability of results.

This study primarily provides an initial evaluation of the current $FeCl_3$ dosing regime and further, multi-variable detailed optimization analysis could be conducted. Future studies based on these findings will be better positioned to deliver additional refined dosing strategies, potentially including smart, automated systems that can adjust dosing to real-time differences in water chemistry and flow conditions.

4. CONCLUSION

The jar test findings provide some insights into the effectiveness of ferric chloride ($FeCl_3$) for PO4 removal, despite the uncertainty on the influence of water quality parameters like turbidity, hardness, and other competing compounds on removal efficiency. The discrepancies observed between PLSLWD's CD-2 and some of the jar test lab results, such as Harcros data, highlight the uncertainty included in the recommended changes. The Hawkins results may be more reliable, but this study only included one sample (June 2024) and does not show the effect of changing water chemistry on FeCl3 efficiency.

Additionally, the PO4 removal efficiency from the PLSLWD Ferric Chloride Water Treatment Facility 2022 Annual Report cited 43-72% removal efficiency from 2011-2022, which is higher than that achieved by the jar tests at similar doses. Thus, there may be various water quality parameters effecting binding or better mixing conditions within the system or influent water chemistry than represented in the jar tests. Jar testing is always considered a first step and an approximation and starting point for developing or modifying dosing regimes and must be followed up with field monitoring to confirm or adjust the dosing.

The variability of the CD-2 system monitoring data and the variable jar test results demonstrate the need monitor the benefits of changes to the system and be open to additional changes. If changes are implemented and the system is still not operating at good efficiency, further testing across diverse water quality scenarios to refine dosing strategies may be warranted. Future jar tests/studies should prioritize collection of water throughout an entire growing season, across different flow rates, and be consistent with the analytical methods used for the CD-2 monitoring to provide more consistent results. The comprehensive jar testing should be designed to identify competing contaminants, evaluate treatment efficacy under varying seasonal, and flow conditions to optimize treatment effectiveness.

Depending on these factors, the district should be able to further optimize their dosing using historical trends and/or real-time monitoring to increase efficiency. Limitations in this study, such as insufficient seasonal testing and no-flow conditions during the study, meant challenges in dosing optimization. Future research/investigation, including expanded monitoring, controlled experiments, and dynamic flow analysis, will help bridge these gaps and enable more accurate dosing recommendations.

5. APPENDICES

Hawkins Jar Test Results

Harcros Jar Test Results

July 8, 2024

Customer: Prior Lake, MN – Spring Lake
Topic: Phosphorus Removal Study

Author: Eric Sorenson

Purpose and Background

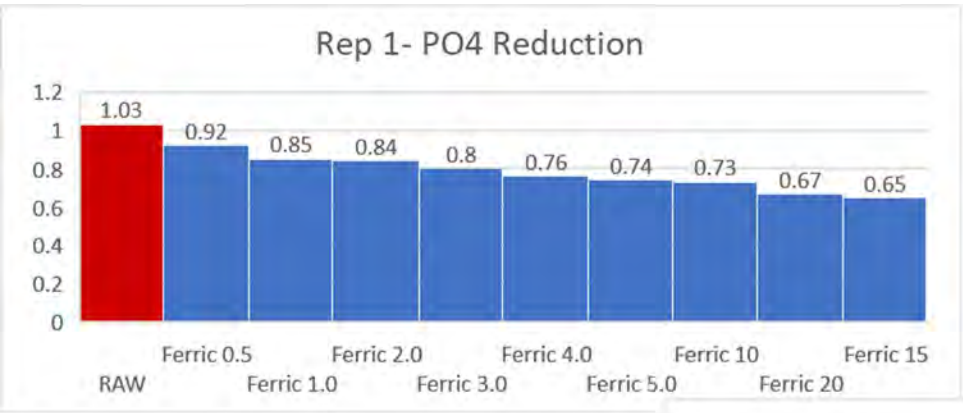
This study was conducted to investigate the use of current coagulant, Ferric Chloride, for P removal and dosage optimization.

Sample Collection, Testing and Data

Raw water sample was taken by EOR from the site and delivered to Hawkins the next day. Testing commenced on the day water was delivered to the lab. Stock solutions were prepared at 1% by weight using DI water. Each test used 1000 mL of water that was; treated with prepared products in duplicate, stirred at 200 rpm for 10 minutes, reduced to 30 rpm to 30 minutes and allowed to settle for 24 hours. Sample was drawn slowly from 1-2 inches from the surface and PO4 measured with a HACH DR900, total P measured with Agilent 5110 ICP-OES.

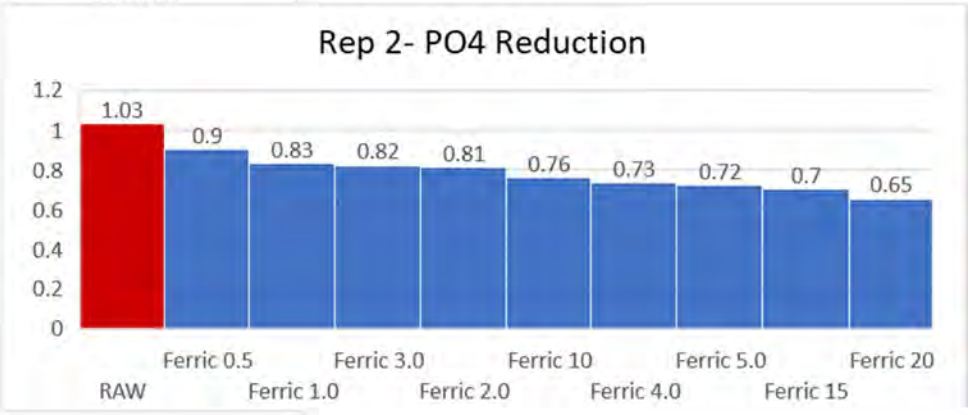
RAW Data

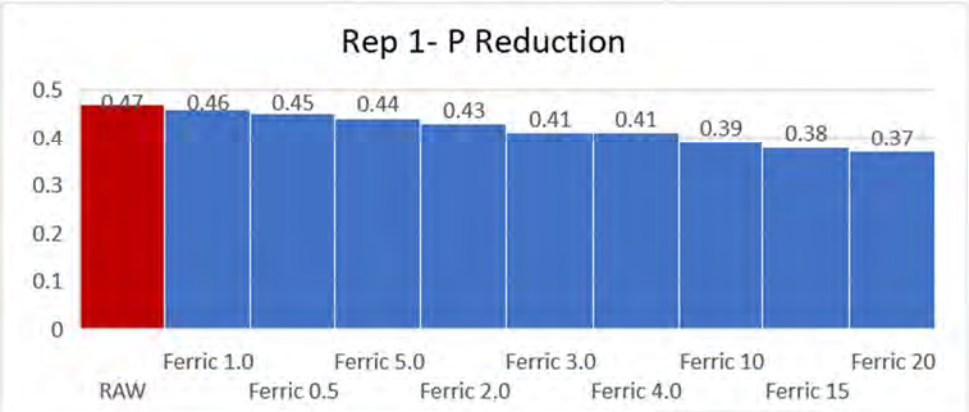
	pH – 10 min	pH – 30 min	pH – 24 hr	OP	TP	Fe
RAW	7.82	7.82	7.82	1.03	0.47	0.15
Ferric 0.5 - 1	7.75	7.78	7.75	0.92	0.45	0.36
Ferric 0.5 - 2	7.75	7.76	7.73	0.90	0.44	0.35
Ferric 1.0 - 1	7.76	7.72	7.72	0.85	0.46	0.45
Ferric 1.0 - 2	7.78	7.74	7.75	0.83	0.42	0.45
Ferric 2.0 - 1	7.71	7.69	7.68	0.84	0.43	0.58
Ferric 2.0 - 2	7.73	7.70	7.71	0.81	0.40	0.58
Ferric 3.0 - 1	7.70	7.67	7.70	0.80	0.41	0.72
Ferric 3.0 - 2	7.73	7.69	7.68	0.82	0.41	0.72
Ferric 4.0 - 1	7.74	7.75	7.73	0.76	0.42	0.87
Ferric 4.0 - 2	7.72	7.71	7.75	0.73	0.43	0.87
Ferric 5.0 - 1	7.73	7.72	7.71	0.74	0.44	0.96
Ferric 5.0 - 2	7.75	7.75	7.74	0.72	0.40	0.98
Ferric 10 - 1	7.70	7.70	7.69	0.73	0.39	1.61
Ferric 10 - 2	7.67	7.68	7.65	0.76	0.40	1.61
Ferric 15 - 1	7.66	7.66	7.65	0.65	0.38	2.27
Ferric 15 - 2	7.62	7.62	7.60	0.70	0.39	2.36
Ferric 20 - 1	7.42	7.40	7.41	0.67	0.37	2.95
Ferric 20 - 2	7.40	7.37	7.35	0.65	0.36	2.95



Compiled orthophosphate Results from replicate #1 taken by HACH DR900

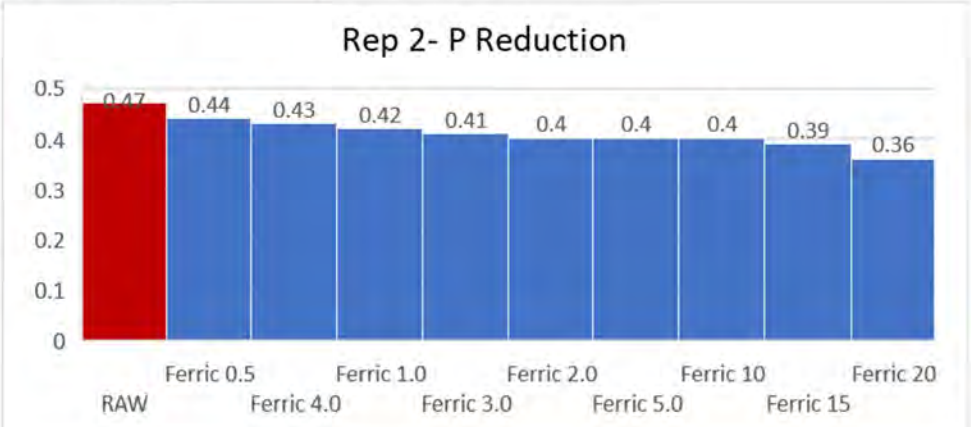
Compiled orthophosphate Results from replicate #2 taken by HACH DR900





Compiled phosphorus Results from replicate #1 taken by Agilent 5110 ICP-OES

Compiled phosphorus Results from replicate #1 taken by Agilent 5110 ICP-OES



Your Hawkins route sales representative – Lee Ryan will provide pricing and availability.

Please coordinate and place product order with your Hawkins WTG technical Route Sales Representative – Lee Ryan

For any questions concerning this testing report or Hawkins product recommendation, I can be reached at eric.sorenson@hawkinsinc.com or cell 715-271-1438
Thank you for considering Hawkins WTG products and services.

Prior Lake – Spring Lake Watershed District
Phosphorous Removal Bench Testing
5/1/2024

Summary:

- Samples were evaluated with various coagulants to determine phosphorous removal effectiveness.
- A sufficient sample was received to evaluate two coagulant types at the requested doses. The coagulants evaluated were ferric chloride and a 50:50 blend of ferric chloride and aluminum chloride.
- Both coagulants were effective at removing phosphorous. The 50:50 blend of ferric chloride and aluminum chloride provided slightly better results.

Sample Information:

- Sample ID: PLSLWD
- Sample taken: 4-22-24, 16:00
- Sample quantity: 2 gallons
- Sample handling: The sample was shipped overnight in an insulated container with an ice pack. The sample was kept refrigerated in the lab until testing occurred. Samples were adjusted to 15 - 16°C for testing.

Treatment Procedure:

- Samples were heated to 15 - 16°C prior to testing.
- Because of limited sample quantities, 500 ml samples were used for each coagulant dosage.
- Samples were treated at 5, 10, 15, 20, 25, 30, and 35 mg/L coagulant doses.
- An A&F jar mixer was used to prepare samples.
- The following treatment scheme was used:
    - Fast mix – 200 rpm for 10 minutes
    - Slow mix – 30 rpm for 30 minutes
    - Settle – 24 hours prior to testing
- After settling, samples were taken 1-2 inches below the top surface of the water.

Analytical Methods Used:

- Orthophosphate: Hach Method 8178: Phosphorous, Reactive (Orthophosphate), amino acid method
- Iron: Hach Method 8008: Iron, Total, USEPA FerroVer® Method

Untreated Water Data:

Parameter	Value	Units
pH	8.26	
Turbidity	8.5	NTU
Conductivity	804.5	µS/cm
Phosphate	2.1	mg/L as PO4
Phosphorous	0.68	mg/L as P
Iron	0.05	mg/L as Fe

Treated Sample Video Links:

Ferric chloride samples: https://youtube.com/shorts/L5oVf0CCu0o

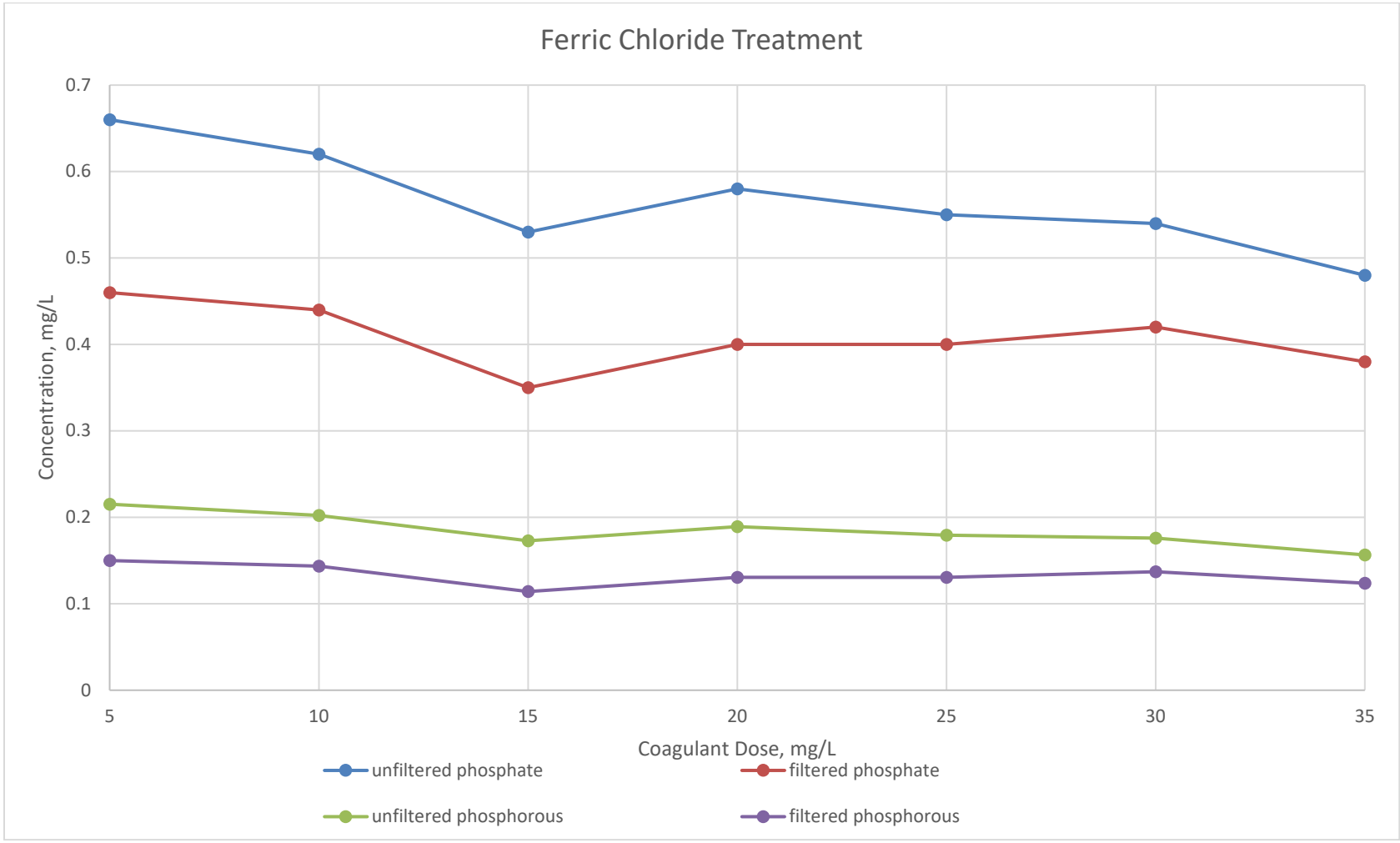
50:50 ferric chloride/aluminum chloride: https://youtube.com/shorts/UmzpMZqRvpo

Treated Water Data with Ferric Chloride:

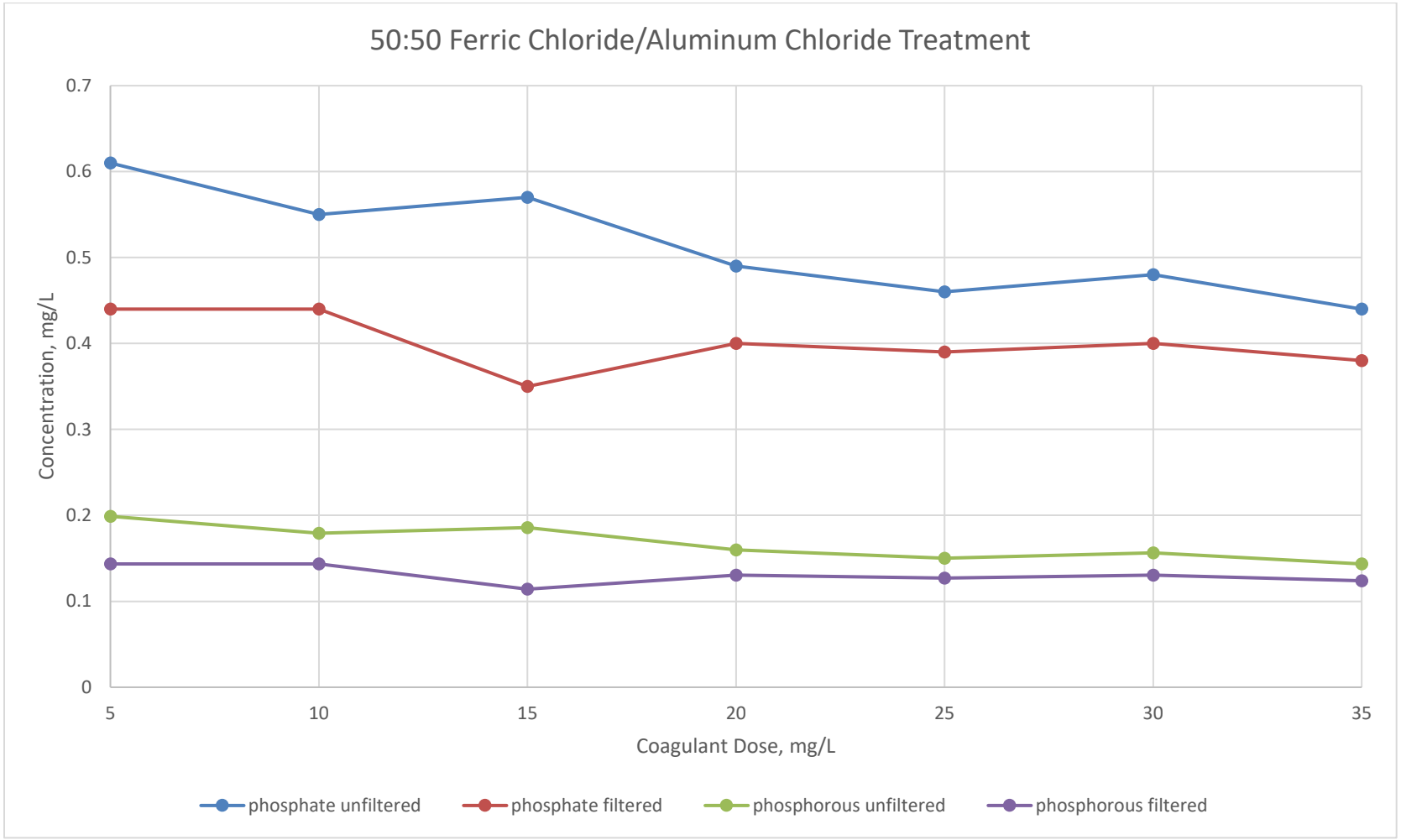
Dose, mg/L	pH after treatment	phosphate (mg/L), unfiltered	phosphate (mg/l), filtered	phosphorous (mg/L), unfiltered	phosphorous (mg/L), filtered	iron (mg/L), unfiltered	iron (mg/L), filtered	temperature, degrees C
5	8.19	0.66	0.46	0.22	0.15	0.38	0.02	15.5
10	8.12	0.62	0.44	0.20	0.14	0.46	0.02	15.5
15	8.07	0.53	0.35	0.17	0.11	0.48	0.02	15.5
20	8.02	0.58	0.40	0.19	0.13	0.46	0.02	15.5
25	7.90	0.55	0.40	0.18	0.13	0.48	0.03	15.5
30	7.84	0.54	0.42	0.18	0.14	0.54	0.03	15.5
35	7.80	0.48	0.38	0.16	0.12	0.57	0.03	15.5

Treated Water Data with 50:50 Blend of Ferric Chloride and Aluminum Chloride:

Dose, mg/L	pH after treatment	phosphate (mg/L), unfiltered	phosphate (mg/l), filtered	phosphorous (mg/L), unfiltered	phosphorous (mg/L), filtered	iron (mg/L), unfiltered	iron (mg/L), filtered	temperature, degrees C
5	8.18	0.61	0.44	0.20	0.14	0.11	0.02	16
10	8.11	0.55	0.44	0.18	0.14	0.17	0.02	16
15	8.06	0.57	0.35	0.19	0.11	0.21	0.02	16
20	8.02	0.49	0.40	0.16	0.13	0.26	0.02	16
25	7.90	0.46	0.39	0.15	0.13	0.27	0.02	16
30	7.82	0.48	0.40	0.16	0.13	0.29	0.03	16
35	7.79	0.44	0.38	0.14	0.12	0.33	0.03	16


Ferric Chloride Treatment
Concentration, mg/L
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5
10
15
20
25
30
35
Coagulant Dose, mg/L
unfiltered phosphate
filtered phosphate
unfiltered phosphorous
filtered phosphorous

HARCROS


50:50 Ferric Chloride/Aluminum Chloride Treatment
Concentration, mg/L
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5
10
15
20
25
30
35
Coagulant Dose, mg/L
phosphate unfiltered
phosphate filtered
phosphorous unfiltered
phosphorous filtered

Prior Lake – Spring Lake Watershed District
Phosphorous Removal Bench Testing
6/14/2024

Summary:

- Samples were evaluated to determine phosphorous removal effectiveness.
- Ferric chloride was evaluated in this test set. The product was dosed based on iron content, not ferric chloride content.
- Ferric chloride was effective at removing phosphorous. Best results were achieved at a dose of 10 mg/L as Fe.

Sample Information:

- Sample ID: PLSLWD
- Sample taken: 6/5/24
- Sample received: 6/7/24
- Sample quantity: 4.5 gallons
- Sample handling: The sample was shipped overnight in insulated containers with ice packs. The sample was kept refrigerated in the lab until testing occurred. Samples were adjusted to 18°C for testing.

Treatment Procedure:

- Samples were heated to 18°C prior to testing.
- 1,000 ml samples were used for each coagulant dosage.
- Samples were treated at 0.5, 1, 2, 3, 4, 5, 10, 15, 20 mg/L as Fe coagulant doses.
- An A&F jar mixer was used to prepare samples.
- The following treatment scheme was used:
    - Fast mix – 200 rpm for 10 minutes
    - Slow mix – 30 rpm for 30 minutes
    - Settle – 24 hours prior to testing
- After settling, samples were taken 1.5 inches below the top surface of the water.

Analytical Methods Used:

- Orthophosphate: Hach Method 8178: Phosphorous, Reactive (Orthophosphate), amino acid method.
- Iron: Hach Method 8008: Iron, Total, USEPA FerroVer® Method.
- Analytical methods documents will be included with this report.

Untreated Water Data:

Parameter	Value	Units
pH	7.38	
Turbidity	16.5	NTU
Conductivity	616	µS/cm
Phosphate	1.65	mg/L as PO_4
Phosphorous	0.54	mg/L as P
Iron, total	0.16	mg/L as Fe

Videos and photos:

Ferric chloride samples, floc characteristics, 0.5 through 3.0 mg/L: https://youtube.com/shorts/zJdiaUH6v5w

Ferric chloride samples, floc characteristics, 4.0 through 15 mg/L: https://youtube.com/shorts/tIpewSo9_ZM

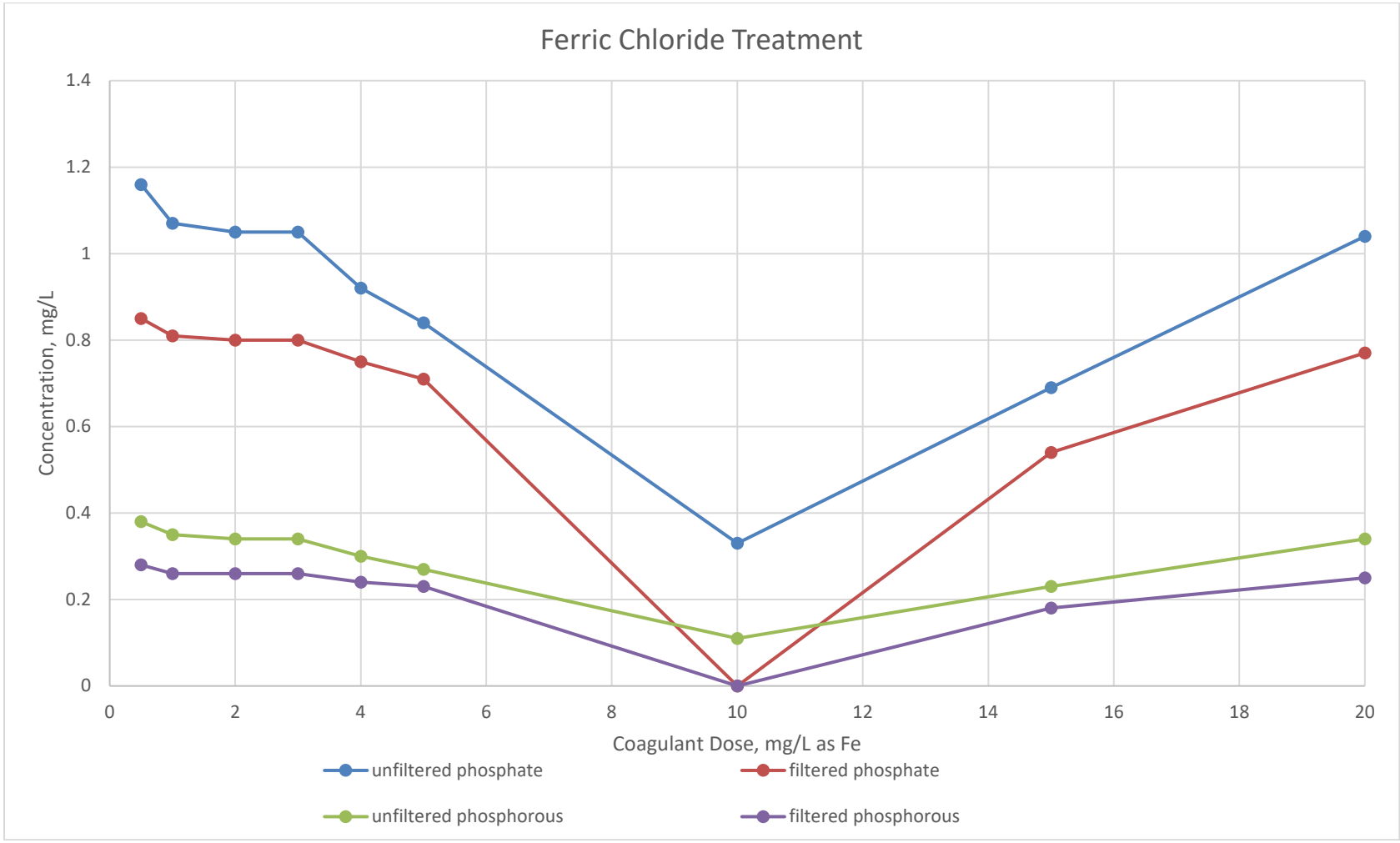
Settled sample photos appear on pages 5 – 7.

Treated Water Data with Ferric Chloride:

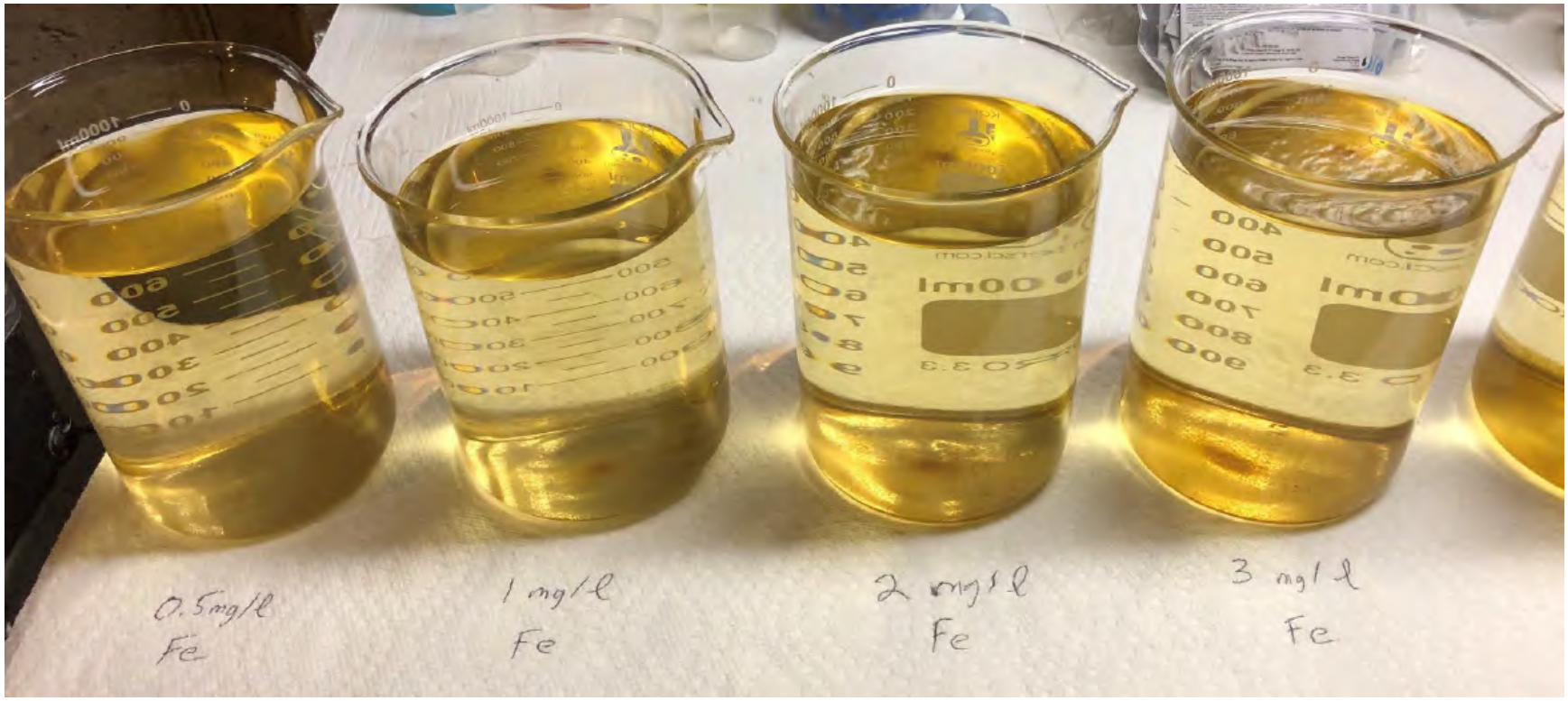
Dose, mg/L as Fe	pH after treatment	phosphate (mg/L), unfiltered	phosphate (mg/l), filtered*	phosphorous (mg/L), unfiltered	phosphorous (mg/L), filtered*	iron (mg/L), unfiltered	iron (mg/L), filtered*	temperature, degrees C
0.5	7.34	1.16	0.85	0.38	0.28	0.15	0.02	18
1	7.31	1.07	0.81	0.35	0.26	0.20	0.03	18
2	7.27	1.05	0.80	0.34	0.26	0.32	0.04	18
3	7.25	1.05	0.80	0.34	0.26	0.35	0.05	18
4	7.23	0.92	0.75	0.30	0.24	0.30	0.05	18
5	7.21	0.84	0.71	0.27	0.23	0.32	0.05	18
10	7.17	0.33	< 0.1	0.11	< 0.1	0.47	0.09	18
15	7.15	0.69	0.54	0.23	0.18	0.69	0.11	18
20	7.11	1.04	0.77	0.34	0.25	1.87	0.24	18

* A 0.45 µm filter was used for all filtered samples

HARCROS

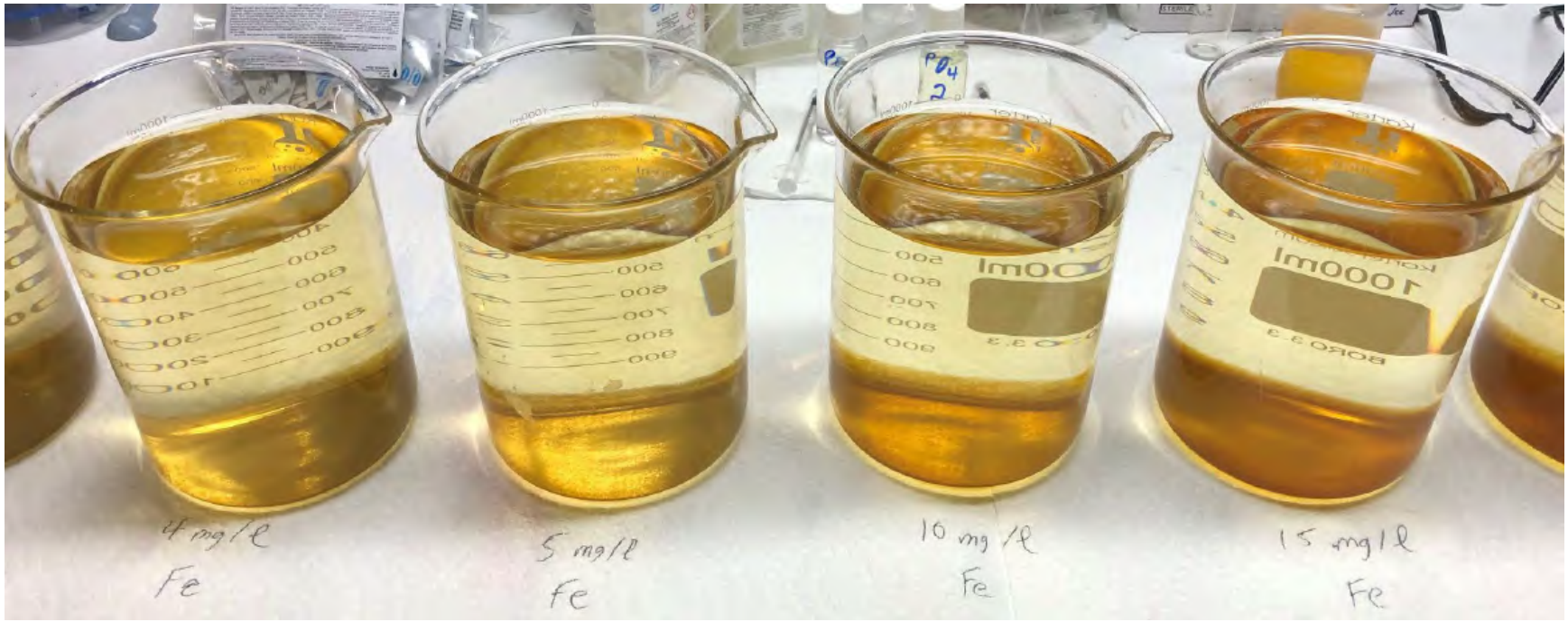

Ferric Chloride Treatment
Concentration, mg/L
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
18
20
Coagulant Dose, mg/L as Fe
unfiltered phosphate
filtered phosphate
unfiltered phosphorous
filtered phosphorous

HARCROS



Settled Samples

HARCROS

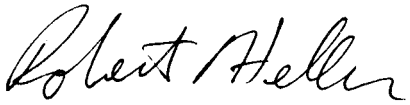


Settled Samples

HARCROS

Settled Sample

Report Completed By:



Robert Heller
Market Manager Water Treatment
530.263.5448
rheller@harcros.com

PLSLWD Board Staff Report
December 11, 2024

Subject |	Permit Application No. 24.02 TH 13 Trail- City of Prior Lake
Board Meeting Date |	December 17, 2024 **Item No:** 4.3
Prepared By |	Joe Hale, Scott Soil and Water Conservation District
Attachments |	a) Project Location Map b) Permit Application and Staff Review Comments c) Construction Plans
Proposed Action |	Staff Recommends Board approval of the permit application for the TH 13 Trail project subject to conditions noted in the Permit Application and Staff Review Comments

Introduction

The proposed project area is located along the west side of TH 13 starting from Oakland Beach Ave SE and extending north to CSAH 42. The City of Prior Lake (the "City") is leading the project, which includes the construction of a 10-foot wide, bituminous multi-use trail. The trail will be 4,525 linear feet in length and the total project area will be 4.53 acres.

The following District rules apply to the project: Rule C- General Standards, Rule D- Stormwater Management, Rule E- Erosion and Sediment Control, and Rule G- Wetland Alteration.

Note to Permit Applicant

This report is not a permit. If the District Board approves the project, the applicant must then obtain a permit through District Staff.

Watershed District Board Decision

The complete permit application was received November 21st, 2024. To meet the procedural requirements of Rule B and Minnesota Statutes Section 15.99 regarding time deadlines for Board action, the Board must decide to either:

1) Approve or deny the permit application by January 20, 2025 (60-day period)

-or-

2) Provide written notice to the applicant of an extension of the 60-day period and state the reasons for the extension and its anticipated length, which may not exceed 60 days unless approved by the applicant.

Options for Action

1) Approve the application for the TH 13 Trail subject to conditions noted in the Permit Application and Staff Review Comments.

2) Table the item, extend the application until a future specified date, and provide the applicant with direction on the issues that have been discussed.
3) Deny the application, stating the reasons for denial.

Staff Recommendation

Staff recommends Option 1, Board approval of the permit application for the TH 13 Trail subject to conditions noted in the Permit Application and Staff Review Comments.

PRIOR LAKE SPRING LAKE WATERSHED DISTRICT

AERIAL MAP
Permit 24.02
TH 13 Trail

PRIOR LAKE-SPRING LAKE WATERSHED DISTRICT

Prior Lake - Spring Lake Watershed District (PLSLWD)

4646 Dakota Street SE, Prior Lake, MN 55372, 952-447-4166

PERMIT APPLICATION, PAGE 1 OF 2

Note to Applicant: use this as the cover sheet for your application materials.

PROJECT NAME
TH 13 TRAIL

APPLICATION #: (to be assigned)

Name of Owner - Applicant **Phone #:**
CITY OF PRIOR LAKE **Email:**

Address of Owner - Applicant (Street, City, State, Zip Code)
4646 DAKOTA ST SE, PRIOR LAKE, MN 55372

Owner's Agent/Engineer:
Name Earth Evans
Phone 612-437-5629
E-mail eevans@wsbeng.com

Project Location (Township, Range, Section), PIDs, and Address
TH 13 FROM OAKLAND BEACH AVE TO CSAH 42

Project size (acres) 4.53

Owner's Contact:
Name
Phone
E-mail

PERMIT CATEGORY (check applicable type(s))

- ☑ Land Disturbance (C)
- ☑ Stormwater Mgt (D)
- ☑ Erosion & Sediment Ctrl (E)
- ☑ Floodplain Alteration (F)
- ☑ Wetland Alteration (G)
- ☐ Bridge & Culvert Crossings (H)
- ☐ Drainage Alteration (I)
- ☐ Buffer Strips (J)
- ☐ Other:_____

PROJECT DESCRIPTION
CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING & TRAIL, RETAINING WALL, AND ADA IMPROVEMENT.

GENERAL CONDITIONS

1. The Permittee grants to the District, and its agents, employees, officers and contractors, a license to enter the Project to perform any inspections or work authorized by the Permit or any applicable law. This license shall expire after acceptance of the work by the District and issuance of a Certificate of Completion.

2. The Permittee shall indemnify, defend and hold the District and its agents, employees and officers harmless for all claims made by itself and third parties for damages or loss sustained or costs incurred, including engineering and attorneys' fees, as a result of issuance of the Permit or construction of the Project.

3. The Permittee shall provide the District with a Permit Fee Deposit in accordance with District requirements (see page 2). The Permit Fee Deposit will be held in escrow and used by the District to pay the actual costs incurred by the District, including engineering and legal fees, to process and review the Permit Application, to inspect and monitor the activities authorized by the Permit, and to ensure compliance with the District's rules. The Permittee shall fully pay all bills submitted to it by the District within seven days of receipt. Bills not so paid shall accrue interest at the rate of 8% per year.

4. The Permittee shall obtain such easements as may be required for construction of the Project and provide in the final plat for the Project utility and drainage easements acceptable to the District to protect all hydrologic features within the Project and to provide access for the maintenance of the stormwater management facilities to be constructed pursuant to the Permit.

5. To assure full compliance with the terms of the Permit, the Permittee shall deposit with the District a cash security or irrevocable letter of credit in a form and from a surety satisfactory to the District, in the amount specified under the Special Conditions of the Permit, once issued.

6. By acceptance of the Permit, Permittee acknowledges and agrees to perform and be bound by all general and special terms and conditions of the Permit.

CONTINUED ON NEXT PAGE

PRIOR LAKE-SPRING LAKE WATERSHED DISTRICT

PERMIT APPLICATION, PAGE 2 OF 2

Prior Lake - Spring Lake Watershed District (PLSLWD)

4646 Dakota Street SE, Prior Lake, MN 55372, 952-447-4166

PROJECT NAME	APPLICATION #: (to be assigned)
TH 13 TRAIL	

Permit Fee Deposit - to be paid with your application:

Instructions: Calculate the required Permit Fee Deposit by totaling the amounts from items A through D below (as applicable). Include the Permit Fee Deposit with your application. Checks may be payable to the Prior Lake-Spring Lake Watershed District.

				Fill in amount here:
A) Grading or Alteration:				
less than one acre	$500			
1.0 to 4.99 acres	$1,000			
5.0 to 19.9 acres	$1,500			
20 acres or more	$2,000			
B) Projects with Wetland or Flood Plain Areas	$1,000		+	
C) Bridge or Culvert Crossing of a Waterbody or Ditch	$1,500	per crossing	+	
D) Drainage Alterations	$1,500		+	
Total Permit Fee Deposit due with application			=	$ 0.00

Permit Fee Deposit information and conditions:

1. The Permit Fee Deposit will be held in escrow and used to pay the District's costs for reviewing the application and administering the permit (if approved), including staff costs, and engineering and legal fees.

2. If at any time the Permit Fee Deposit falls below 25% of the original amount, the District shall notify the applicant to replenish the fee deposit to the original amount.

3. Upon application approval, a separate permit security escrow shall be required from the applicant prior to permit issuance.

4. Upon final completion of the project and the issuance of a Certificate of Completion by the District, the District shall return any unspent balance in the Permit Fee Deposit to the applicant, less a $10 application fee. The District does not pay interest on escrow deposits.

I hereby apply under District Rule B for a permit to complete the proposed project in accordance with the information submitted with this Application and the District's Rules, and I agree to the conditions on page one and two of this application.

Signature of Owner - Applicant	Your Name - please print	Date Submitted

Application Received	Permit Fee Deposit Amt	Received (y/n)	District Representative

Engineer's Report prepared by EOR, Inc. for:

Prior Lake-Spring Lake Watershed District Permit Application Number: 24.02

Applicant:	Nick Monserud City of Prior Lake 952-447-9834 nmonserud@priorlakemn.gov	Agent:	Earth Evans WSB 612-437-5629 eevans@wsbeng.com

Purpose: Construction of 4,525-lf of a 10-ft wide, bituminous multi-use trail along the west side of TH 13.

Location: West of TH 13 from Oakland Beach Ave SE north to CR 42.

District Rule: C, D, E, F & G

Recommendation: **Conditional Approval** pending receipt of the following items:

Stormwater Management

1. Revised Construction Plan Sheets identifying location of proposed ditch checks for BMP 1 from Stations 100+00 to 111+00.

2. Earthwork calculations for BMPs 3 and 4 supporting the stated stormwater storage volume claimed.

Erosion & Sediment Control

3. Revised erosion control plan including inlet control for Structures 5004 and 5006.

Administrative

4. Performance security from the construction contractor in the amount of $8,900 ($2,000/acre of land disturbance).

5. Final signed construction plans.

6. Signed permit application.

Conditions:

1. The permittee shall provide contact information for the responsible erosion and sediment control contractor prior to initiating work.

2. The permittee shall invite District permit inspector to the preconstruction meeting and weekly progress meetings.

3. The permittee shall obtain all other required permits and approvals.

4. The permittee is responsible for the stabilization and maintenance of the adjacent areas disturbed by the construction.

5. The permittee shall supply an as-built survey of stormwater management BMPs within 60 days of project substantial completion. The District shall review this survey as a part of the certificate of completion for the project to validate volume credits constructed.

Exhibits:

1. Permit Application received 11/21/24.

2. Permit application narrative prepared by WSB, dated 11/26/24, received 11/21/24.

3. 60% Plans (114 Sheets) prepared by WSB, undated, received 11/21/24.

4. Geotechnical Report prepared by WSB, dated 10/14/24, received 11/21/24.

5. Impervious layout prepared by WSB, dated August 2024, received 11/21/24.

6. MIDS Spreadsheet prepared by WSB, received 11/21/24.

Findings:

1. Description – This project includes construction of 4,525 linear feet of 10-ft trail including grading, bituminous surface, retaining wall, curb and gutter, ADA improvements, and grassed swales for stormwater management.

2. Stormwater Management – This project results in 1.23-acres of new and reconstructed impervious surface, a net increase of 1.15-acres. Of this, 0.75-acres is exempt from stormwater volume control requirements per Rule D.8(d) – linear trails no more than 10-ft wide, bordered downgradient by greenspace at least 5-ft wide. The remaining regulated 0.48-acres of impervious surface requires a minimum of 1,742-cf of stormwater volume control. The plan includes five (5) areas of proposed stormwater management control as

summarized in the table below. These areas appear to exceed minimum requirements. Additional information for BMPs 1, 3 and 4 is required to confirm stated storage provided.

BMP ID	Location [Stations]	Description	Volume [CF]	Comment
1	100-111	4-ft ditch with check dams	947	Ditch checks must be identified on plans for credit.
2	200-206	Impervious Disconnect	0	Not applicable
3	211-213	6-in depression	1,500	Provide supporting earthwork calculations
4	303-305	6-in depression	1,000	Provide supporting earthwork calculations
5	305-314	2-ft ditch	153	
		TOTAL	**3,600**	

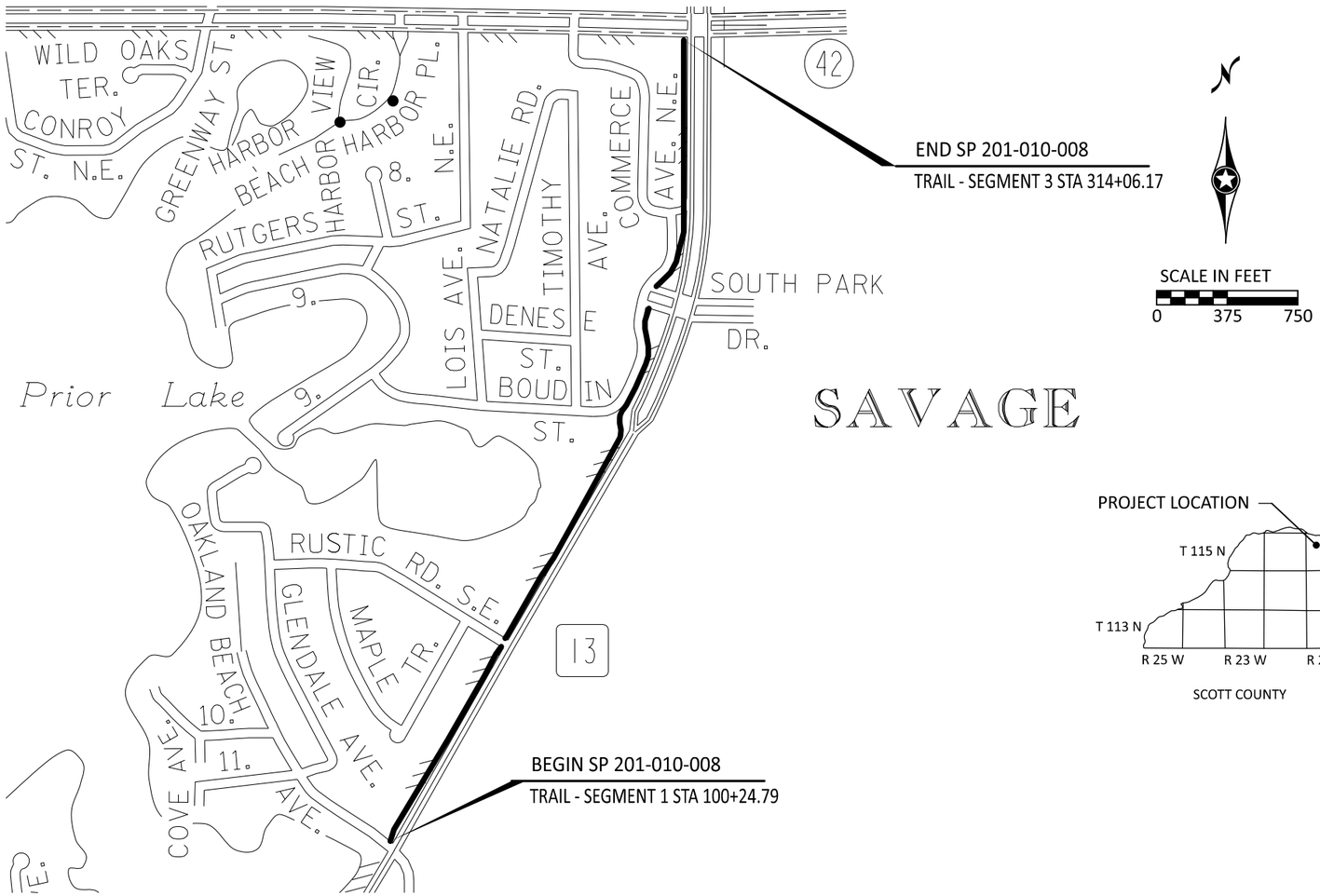
3. Erosion & Sediment Control – The proposed erosion control plan includes silt fence or biologs downgradient of disturbed areas, storm inlet protection, appropriate seeding specifications, Category 25 (natural net) rolled erosion control or hydraulic stabilized fiber matrix for soil cover, and construction sequencing notes. Structures 5004 and 5006 require inlet control.

4. Floodplain Alteration – The proposed plan includes 178-CY of Prior Lake floodplain fill, which has been minimized with the incorporation of a retaining wall. This fill is exempt per Rule F.5 since the FEMA-approved floodplain modeling for Prior Lake assumes all flood fringe has been filled.

5. Wetland Alteration – There is temporary and possibly as small amount of permanent wetland impact associated with construction of the retaining wall along Lower Prior Lake from Stations 205+50 to 206+75. This alteration is regulated by the WCA LGU (City of Prior Lake).

MINNESOTA DEPARTMENT OF TRANSPORTATION
CITY OF PRIOR LAKE

CONSTRUCTION PLAN FOR GRADING, BITUMINOUS SURFACING & TRAIL, CURB & GUTTER, AND ADA IMPROVEMENTS
LOCATED ON TH 13 FROM OAKLAND BEACH AVE TO CSAH 42 (EGAN DRIVE)



PROJECT LOCATION

SCOTT COUNTY

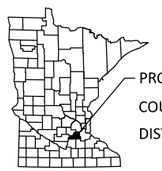
DESIGN DESIGNATION
TRAIL

DESIGN SPEED 20 MPH
BASED ON STOPPING SIGHT DISTANCE
HEIGHT OF EYE 4.5 HEIGHT OF OBJECT 0.0
DESIGN SPEED NOT ACHIEVED AT: ROAD INTERSECTIONS
STA. 200+11 TO STA. 200+62 (STOP CONDITION)
STA. 219+54 TO STA. 220+14 (STOP CONDITION)
STA. 300+00 TO STA. 300+59 (STOP CONDITION)

TRAIL

GROSS LENGTH	4,524.07	ft	0.857	miles
BRIDGES-LENGTH		ft		miles
EXCEPTIONS-LENGTH		ft		miles
NET LENGTH	4,524.07	ft	0.857	miles

FROM REF POINT XX TO REF POINT XX



PROJECT LOCATION
COUNTY: SCOTT
DISTRICT: METRO

PLAN REVISIONS		
DATE	SHEET NO.	APPROVER

MINN. PROJ. NO. XXXXXXXX

GOVERNING SPECIFICATIONS
THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST EDITION OF THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

THIS PLAN CONTAINS 114 SHEETS

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITHIN THE CONSTRUCTION OF THIS PROJECT.

wsb

SIGNATURE: _____ TYPED OR PRINTED NAME: MARCUS VANDERBRUG, PE

DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: $SIGNDATE$ LICENSE NUMBER 56164

_____ DATE _____
APPROVED: CITY OF PRIOR LAKE ENGINEER

_____ DATE _____
APPROVED: DISTRICT TRANSPORTATION ENGINEER

_____ DATE _____
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE AND FEDERAL AID RULES/POLICY

_____ DATE _____
FOR STATE AID ENGINEER: APPROVED FOR STATE AND FEDERAL AID FUNDING

S.P. 201-010-008

SHEET NO. 1 OF 86 SHEETS

Date Printed: 10/7/2024
WSB Filename: c:\bms\wsbeng-pw-0h\d0170877\025697-000-l001sh-00l.dgn

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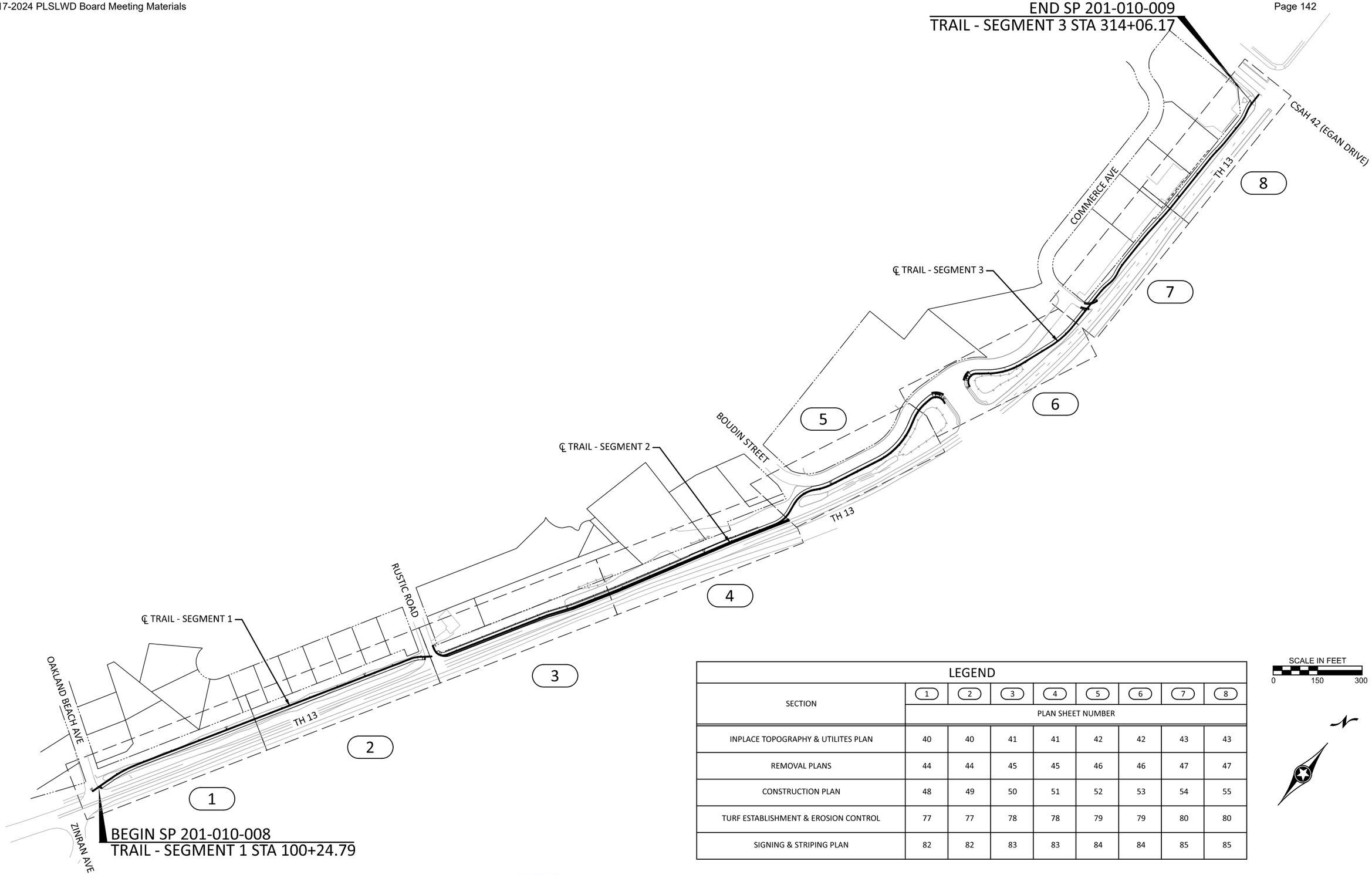

BEGIN SP 201-010-008
TRAIL - SEGMENT 1 STA 100+24.79

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SECTION	1	2	3	4	5	6	7	8
	PLAN SHEET NUMBER							
INPLACE TOPOGRAPHY & UTILITES PLAN	40	40	41	41	42	42	43	43
REMOVAL PLANS	44	44	45	45	46	46	47	47
CONSTRUCTION PLAN	48	49	50	51	52	53	54	55
TURF ESTABLISHMENT & EROSION CONTROL	77	77	78	78	79	79	80	80
SIGNING & STRIPING PLAN	82	82	83	83	84	84	85	85

SCALE IN FEET
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DRAWN BY: MKV
DESIGNED BY: MKV
CHECKED BY: KH

I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE:
PRINTED NAME: MARCUS VANDERBRUG, P.E.
DATE: 10/7/2024 LIC. NO. 56164

wsb

City of Prior Lake
TH 13 Trail
Prior Lake, Minnesota

GENERAL LAYOUT

SP 201-010-008
Sheet No. 2 of 86 Sheets

DATE: 10/7/2024 TIME: 10:53:29 AM
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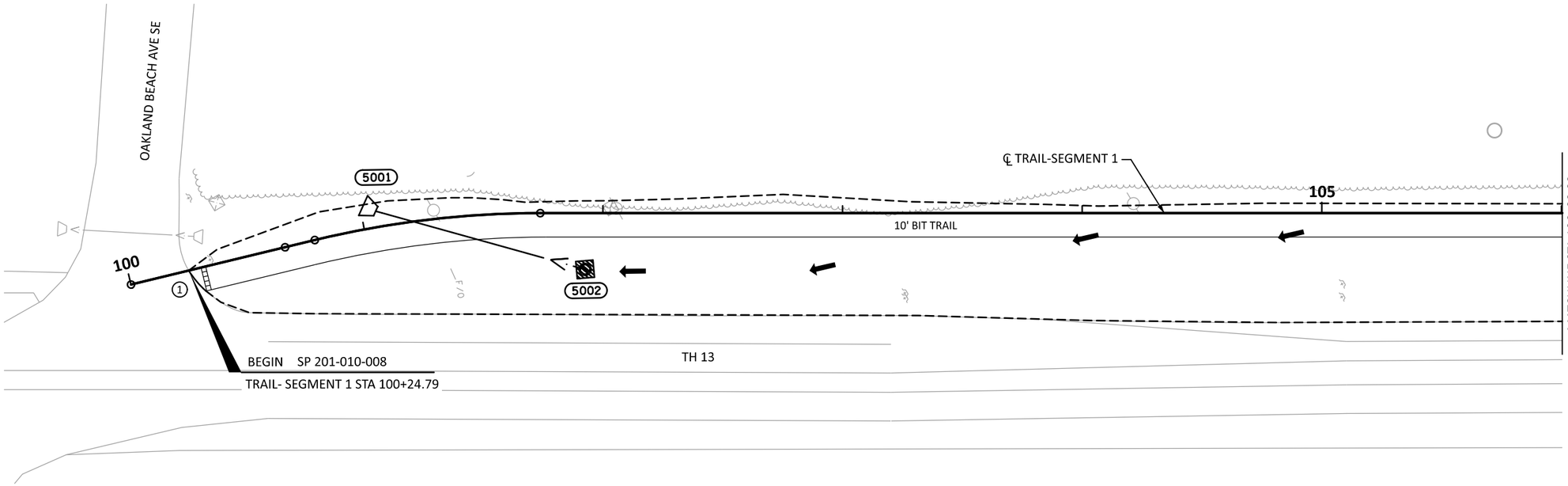
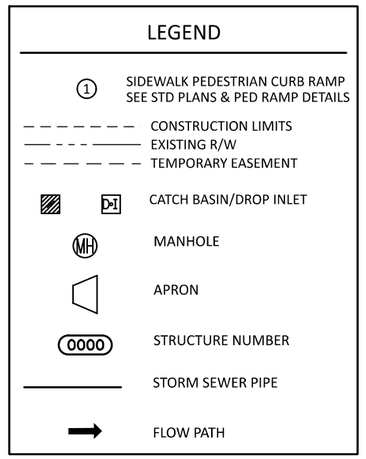
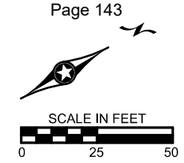
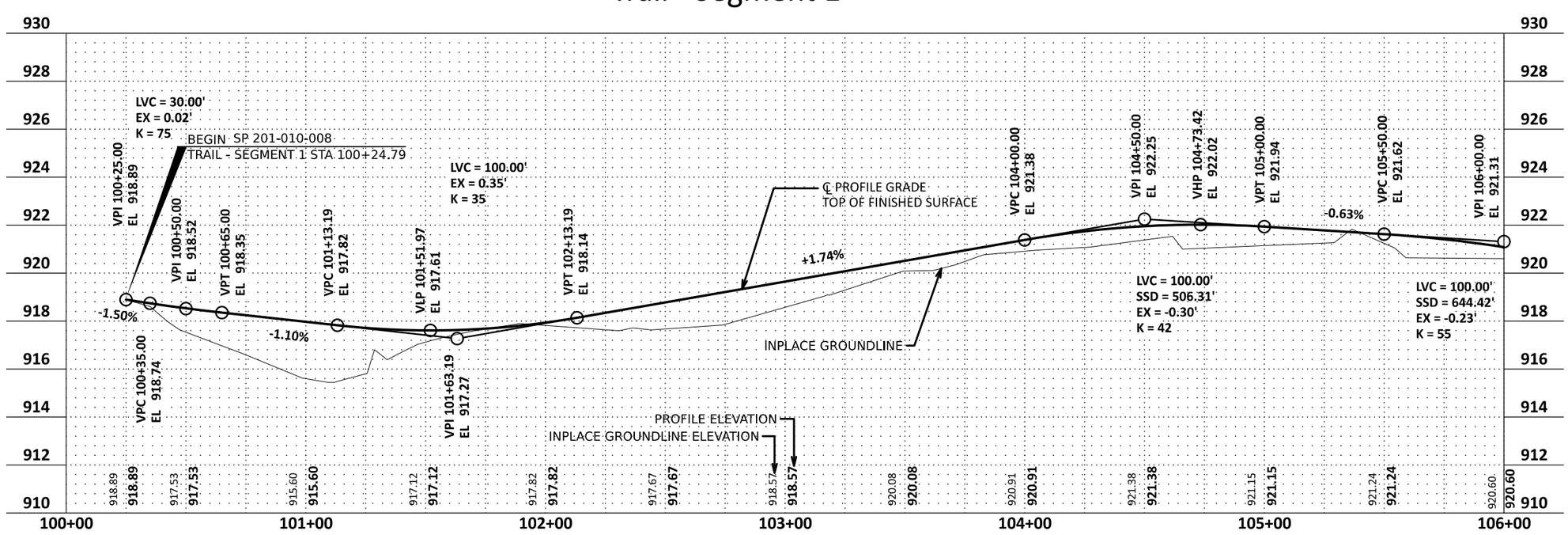






Trail - Segment 1



DRAWN BY:	MKV
DESIGNED BY:	MKV
CHECKED BY:	KH

I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE:

PRINTED NAME: MARCUS VANDERBRUG, P.E.

DATE: 10/7/2024 LIC. NO. 56164

wsb

City of Prior Lake

TH 13 Trail

Prior Lake, Minnesota

CONSTRUCTION PLAN & PROFILE

SP 201-010-008

Sheet No. 48 of 86 Sheets

DATE: 10/7/2024 TIME: 10:57:08 AM

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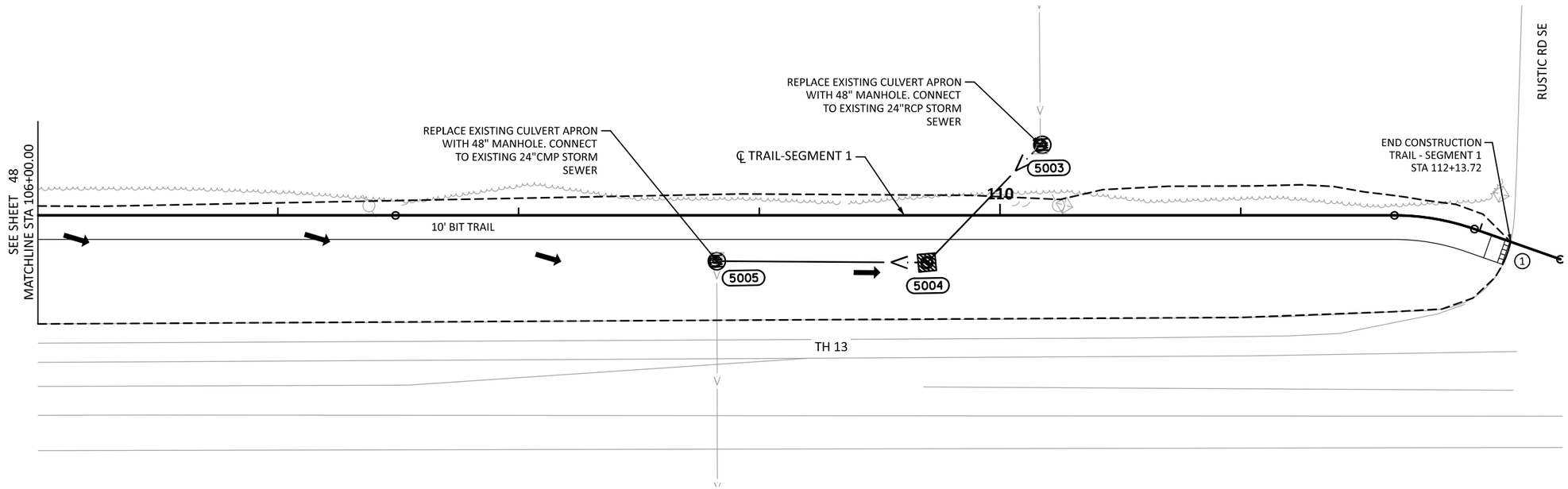

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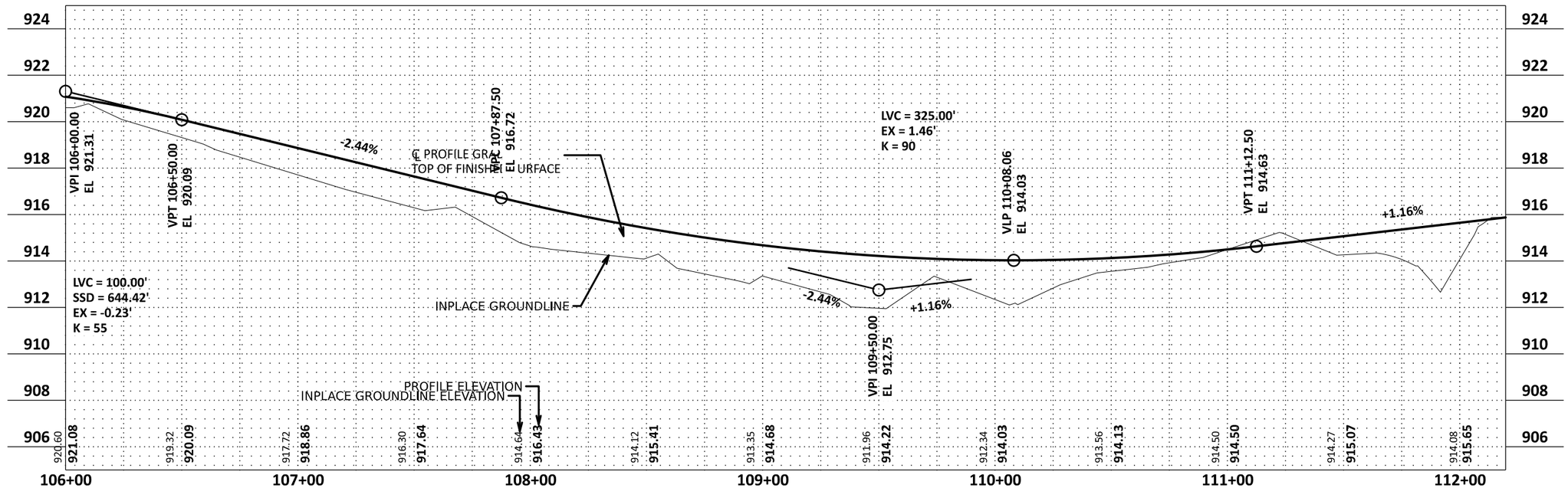
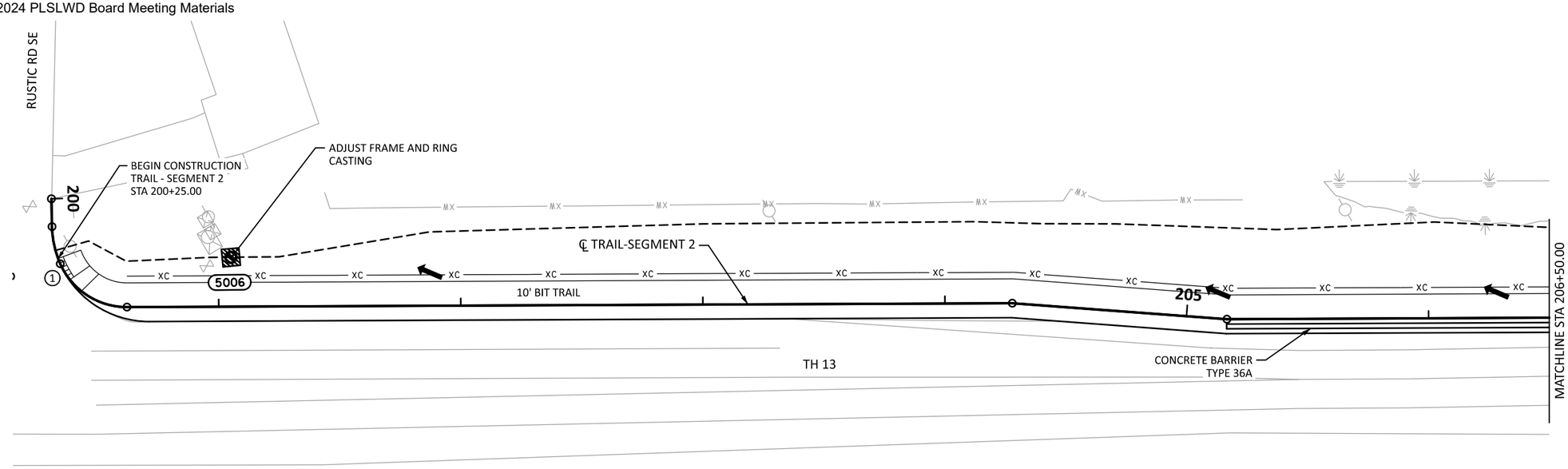
LEGEND

- SIDEWALK PEDESTRIAN CURB RAMP SEE STD PLANS & PED RAMP DETAILS
- CONSTRUCTION LIMITS
- EXISTING R/W
- TEMPORARY EASEMENT
- CATCH BASIN/DROP INLET
- MANHOLE
- APRON
- 0000 STRUCTURE NUMBER
- STORM SEWER PIPE
- FLOW PATH

Trail - Segment 1



DRAWN BY:	MKV	I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	SIGNATURE:	wsb	City of Prior Lake **TH 13 Trail** Prior Lake, Minnesota	CONSTRUCTION PLAN & PROFILE
DESIGNED BY:	MKV		PRINTED NAME: MARCUS VANDERBRUG, P.E.			SP 201-010-008
CHECKED BY:	KH		DATE: 10/7/2024 LIC. NO. 56164			Sheet No. 49 of 86 Sheets



SCALE IN FEET
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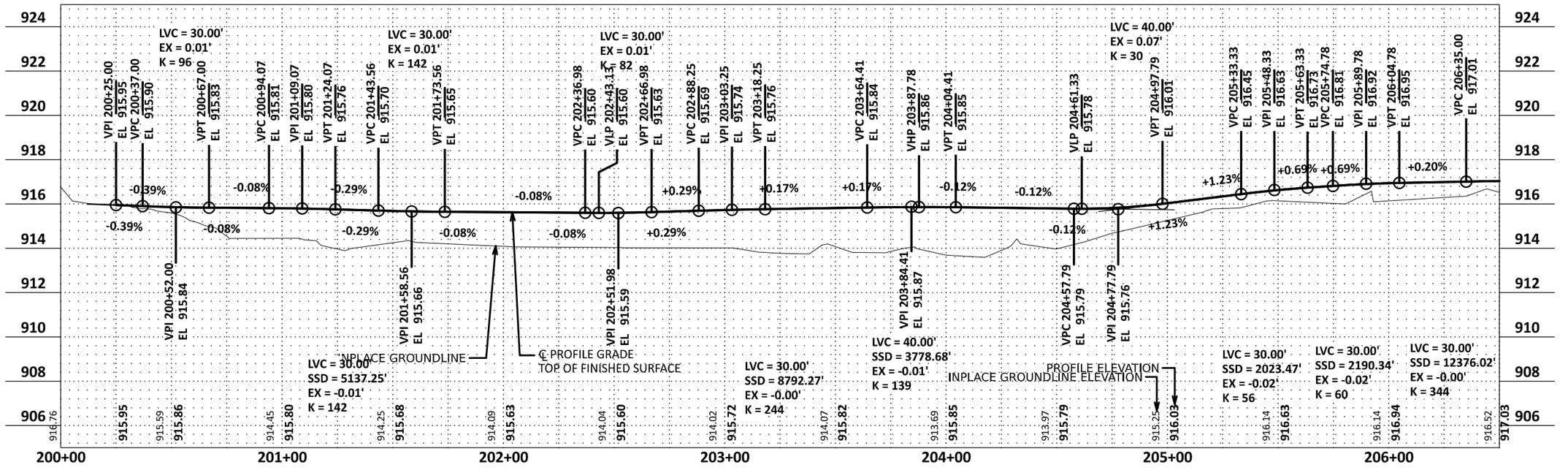
LEGEND

- SIDEWALK PEDESTRIAN CURB RAMP SEE STD PLANS & PED RAMP DETAILS
- CONSTRUCTION LIMITS
- EXISTING R/W
- TEMPORARY EASEMENT
- CATCH BASIN/DROP INLET
- MANHOLE
- APRON
- STRUCTURE NUMBER
- STORM SEWER PIPE
- FLOW PATH

Trail - Segment 2



DRAWN BY:	MKV	I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	SIGNATURE:	City of Prior Lake	CONSTRUCTION PLAN & PROFILE
DESIGNED BY:	MKV		PRINTED NAME: MARCUS VANDERBRUG, P.E.	TH 13 Trail	SP 201-010-008
CHECKED BY:	KH		DATE: 10/7/2024 LIC. NO. 56164	Prior Lake, Minnesota	Sheet No. 50 of 86 Sheets

wsb

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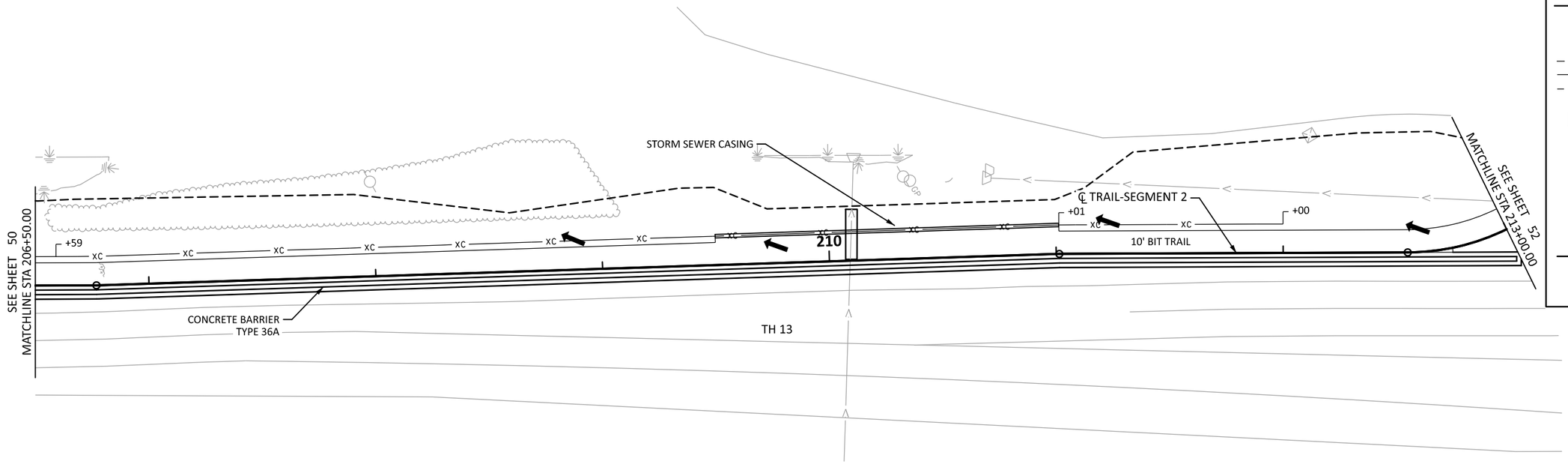

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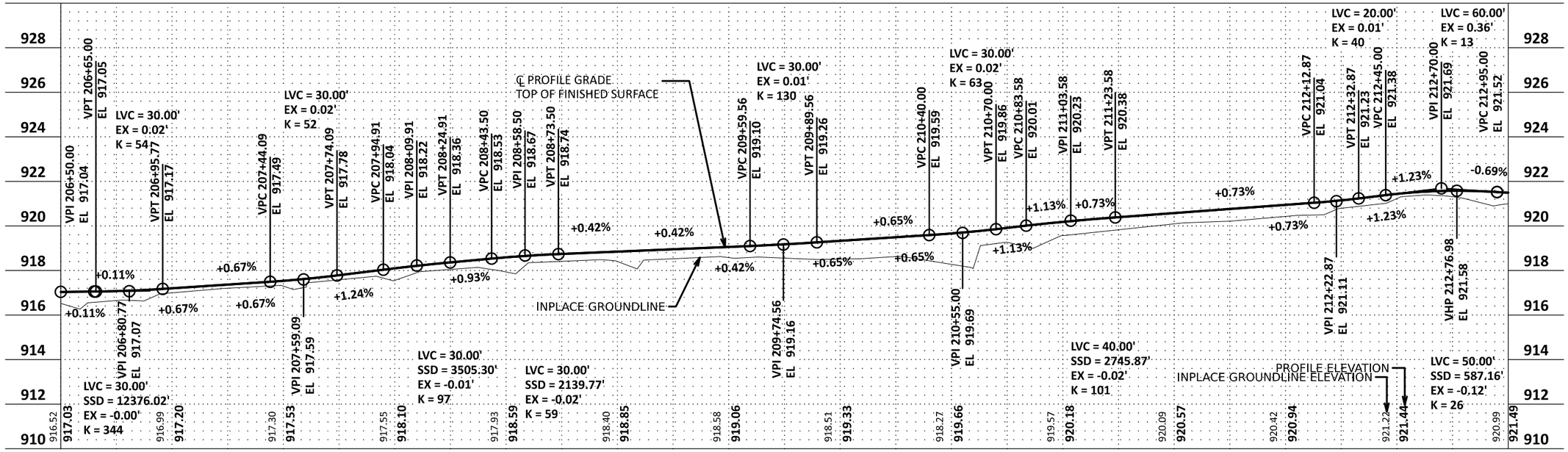

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DESIGNED BY: MKV		PRINTED NAME: MARCUS VANDERBRUG, P.E.	**TH 13 Trail**		Sheet No. 51 of 86 Sheets
CHECKED BY: KH		DATE: 10/7/2024 LIC. NO. 56164	Prior Lake, Minnesota		

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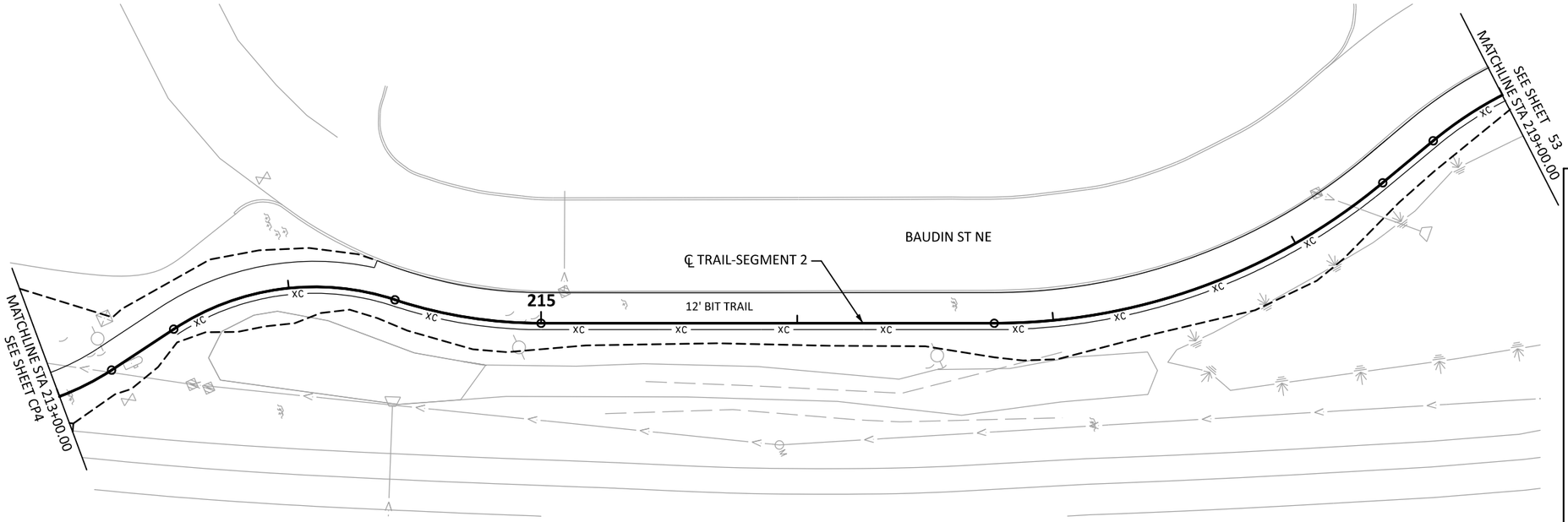

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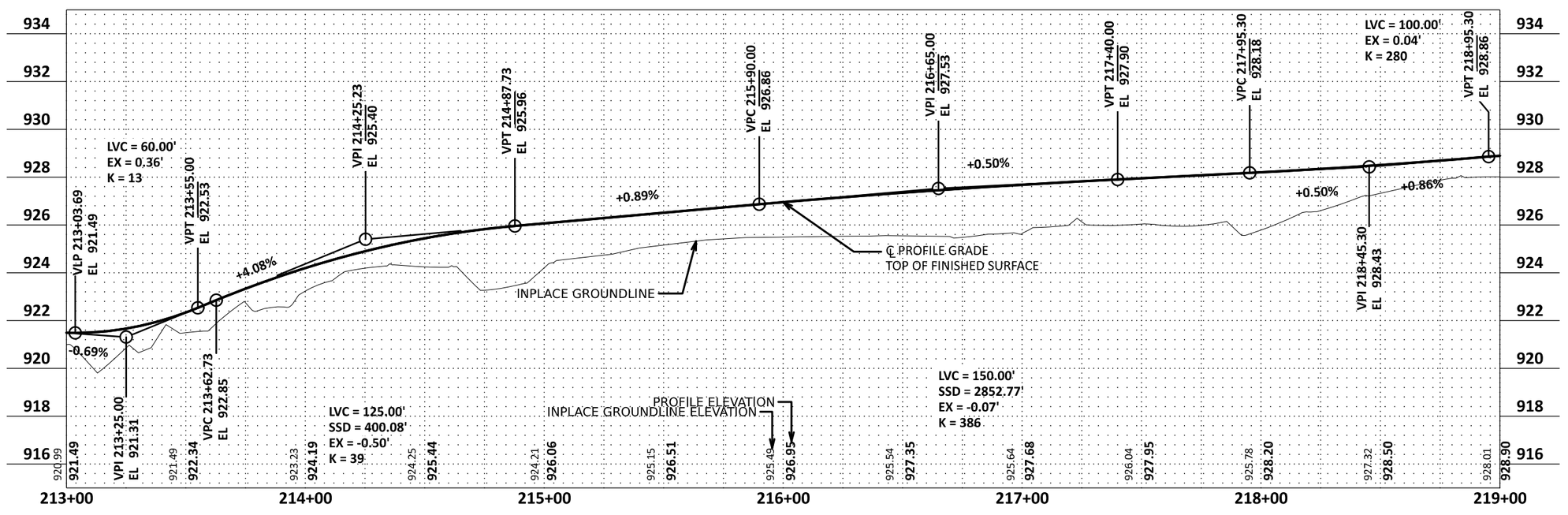

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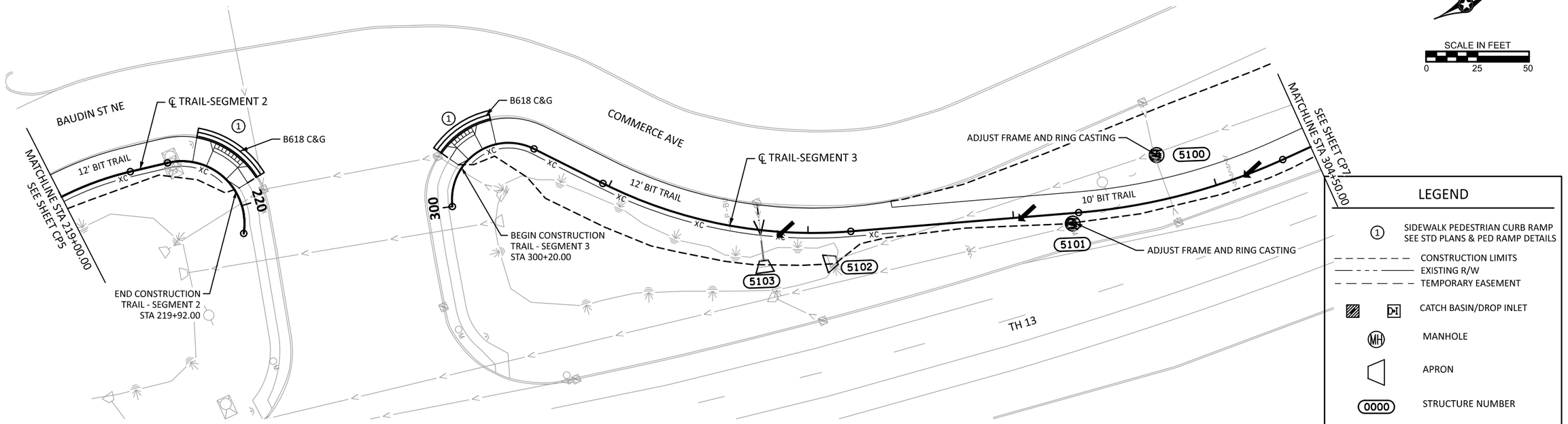

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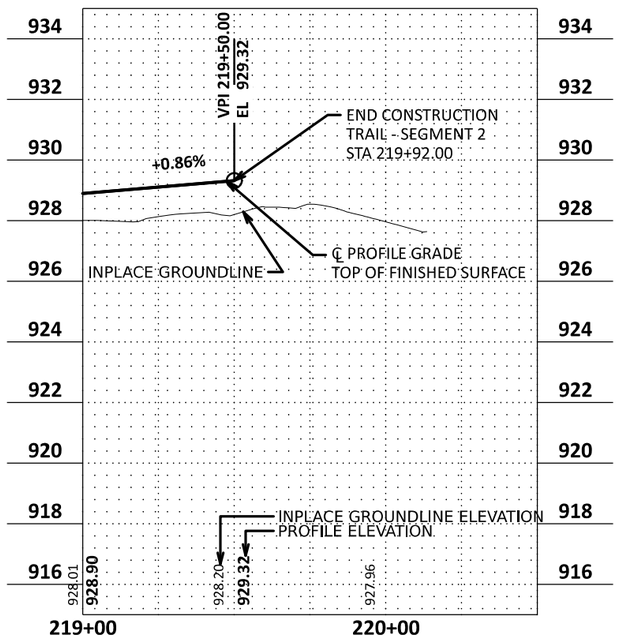

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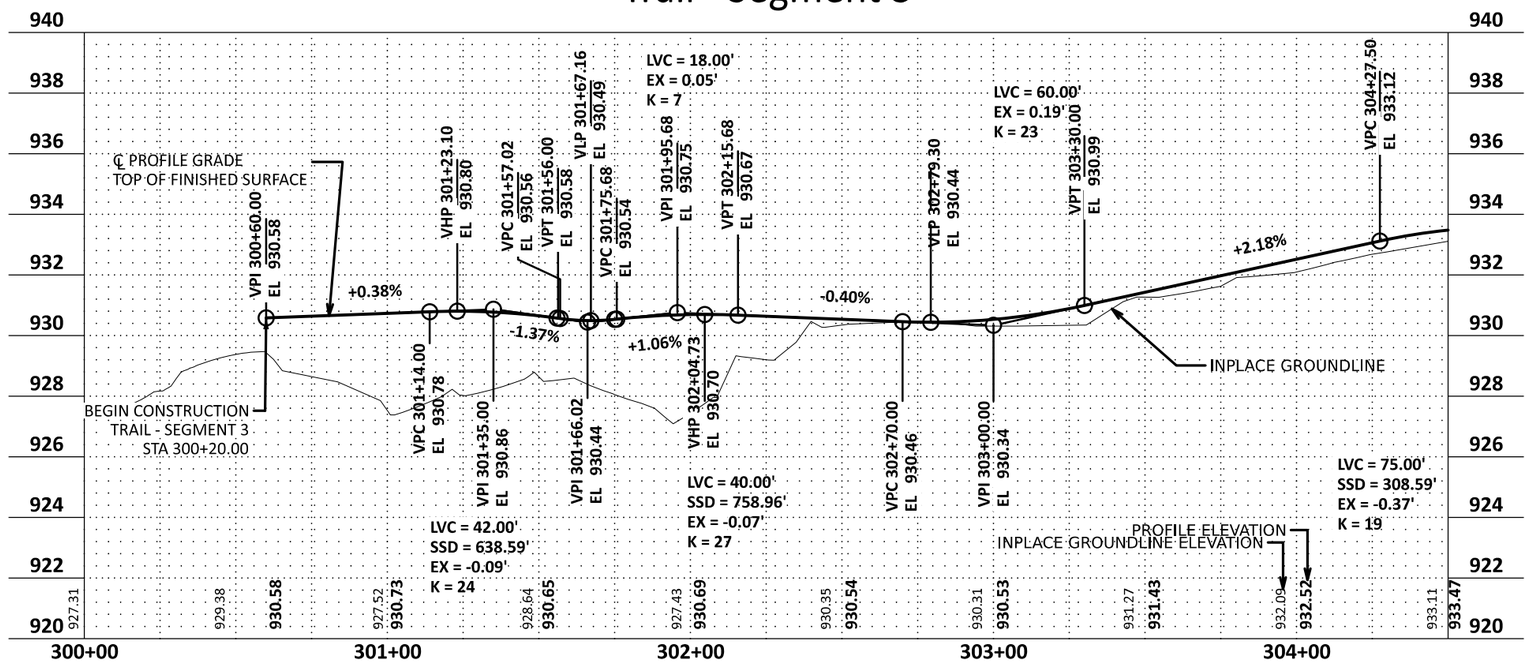

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SIGNATURE:
PRINTED NAME: MARCUS VANDERBRUG, P.E.
DATE: 10/7/2024 LIC. NO. 56164

wsb

City of Prior Lake
TH 13 Trail
Prior Lake, Minnesota

CONSTRUCTION PLAN & PROFILE

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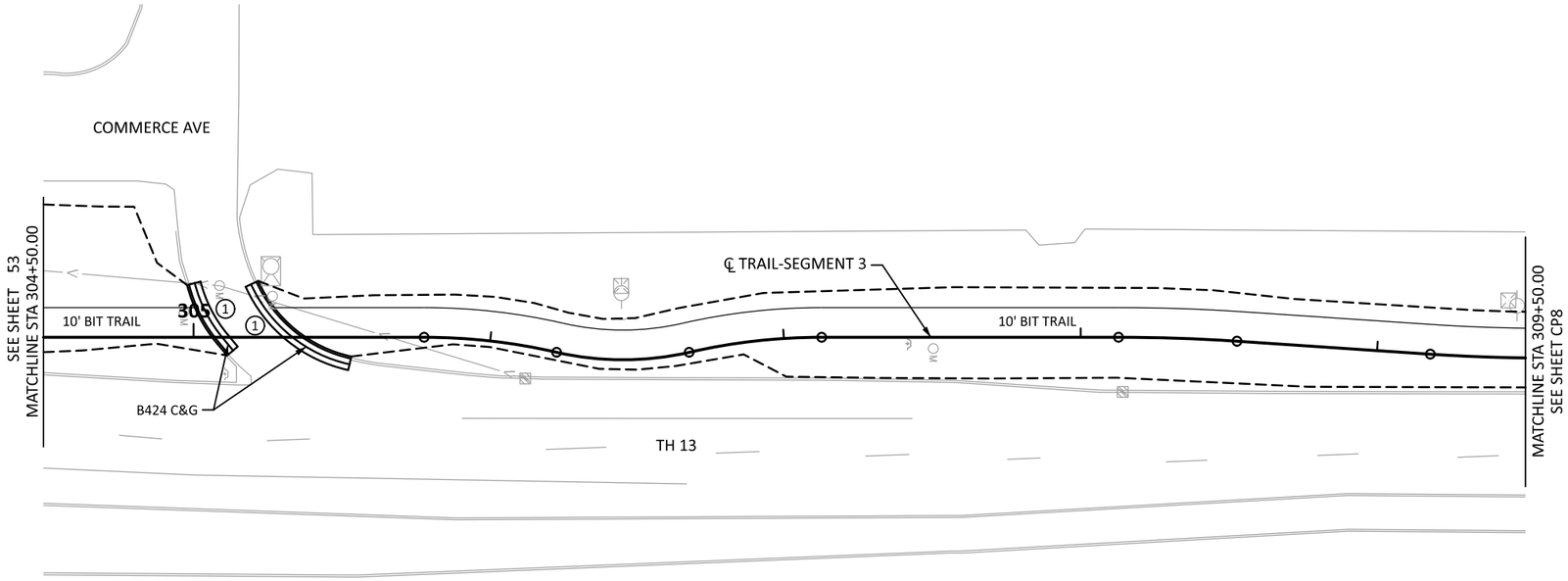

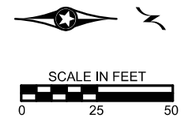

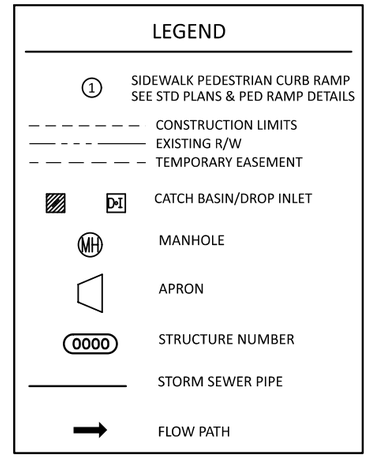

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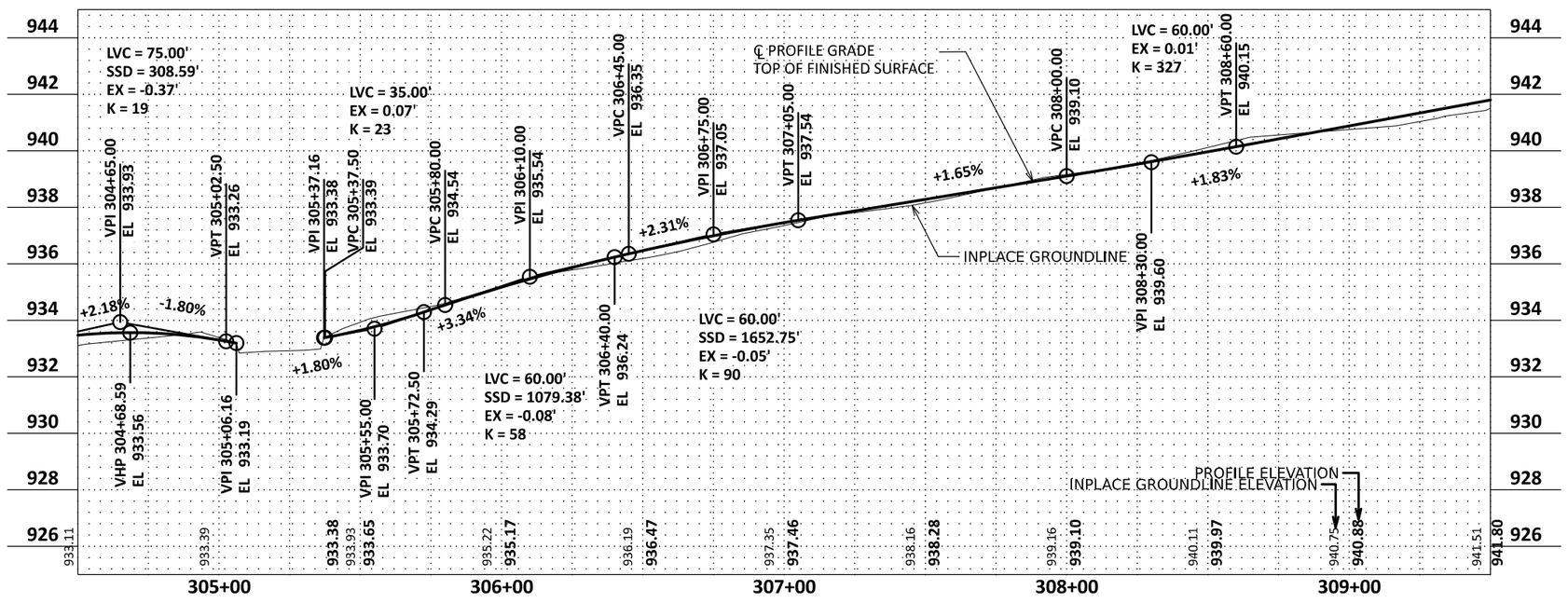

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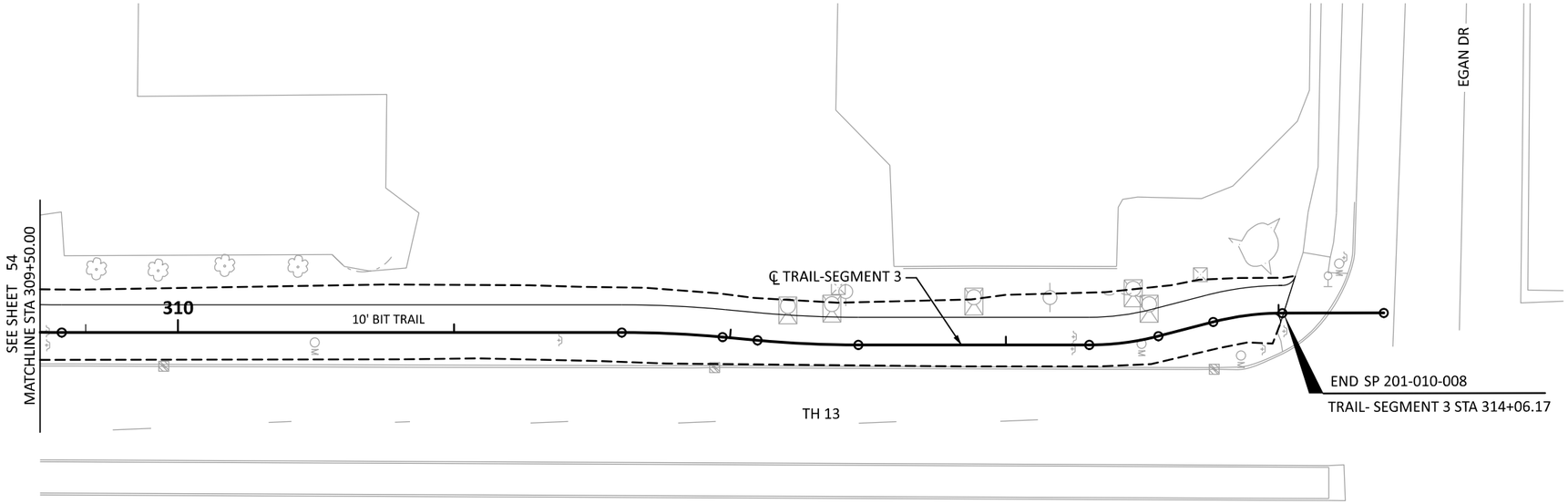
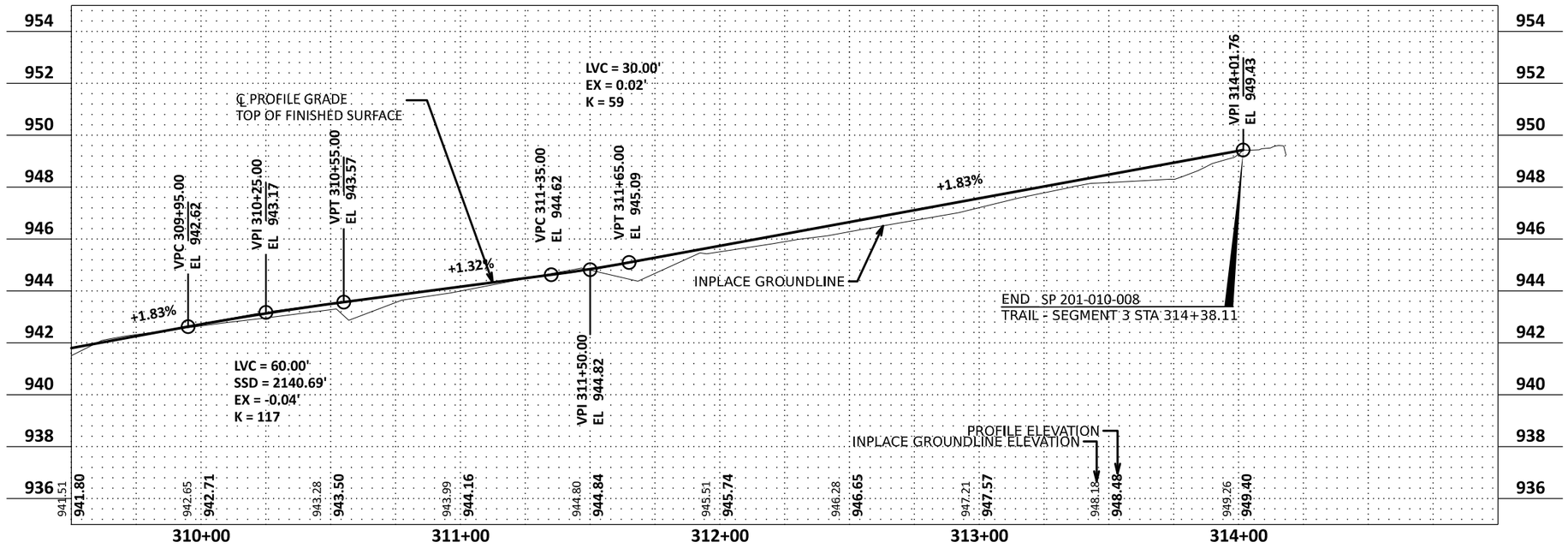


SCALE IN FEET
0 25 50

LEGEND

- SIDEWALK PEDESTRIAN CURB RAMP SEE STD PLANS & PED RAMP DETAILS
- CONSTRUCTION LIMITS
- EXISTING R/W
- TEMPORARY EASEMENT
- CATCH BASIN/DROP INLET
- MANHOLE
- APRON
- STRUCTURE NUMBER (0000)
- STORM SEWER PIPE
- FLOW PATH

Trail - Segment 3



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STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

PROJECT NAME: TH 13 TRAIL
PROJECT LOCATION: WEST SIDE OF TH 13 FROM CR42 TO OAKLAND BEACH AVE SE
STATE: MINNESOTA ZIP: 55372

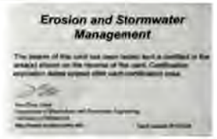
PROJECT NUMBER: WSB 025690-000
CITY: PRIOR LAKE COUNTY: SCOTT
LATITUDE/LONGITUDE: 44.7407,-93.3812

THE PLANNED SCOPE OF THE PROJECT INCLUDES:
THE CITY OF PRIOR LAKE IS PROPOSING TO CONSTRUCT A 10-FOOT WIDE, BITUMINOUS MULTI-USE TRAIL ALONG THE WEST SIDE OF TH 13.

TENTATIVE CONSTRUCTION SCHEDULE (OPERATOR SHOULD PROVIDE ESTIMATED CONSTRUCTION SCHEDULE TO THE ENGINEER)	
CONSTRUCTION ACTIVITIES:	ESTIMATED DATES OF SOIL DISTURBANCE ACTIVITIES:
TEMPORARY SEDIMENT CONTROL BMPS & REMOVALS	MAY 2025
GRADING & UTILITY WORK	JUNE - JULY 2025
CURB & PAVEMENT	JULY - AUGUST 2025
FINAL STABILIZATION	SEPTEMBER 2025

PROJECT PERSONNEL AND TRAINING

SWPPP DEVELOPER:
WSB DUANE GACHNE
3701 40TH AVE NW SUITE 100
ROCHESTER, MN, 55901
507-910-2983/DGACHNE@WSBENG.COM



CONTRACTOR TO PROVIDE CERTIFICATION OF EROSION CONTROL OFFICER AND ANY OTHER CREW MEMBERS WHO WILL WORK ON THE IMPLEMENTATION OF THE SWPPP AND THE INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE, DURING, AND AFTER CONSTRUCTION UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA. PROVIDE PROOF OF CERTIFICATION AT THE PRECONSTRUCTION MEETING. WORK WILL NOT BE ALLOWED TO COMMENCE UNTIL PROOF OF CERTIFICATION HAS BEEN PROVIDED TO THE PROJECT ENGINEER.

CHAIN OF RESPONSIBILITY

THE CITY OF PRIOR LAKE AND THE CONTRACTOR ARE CO-PERMITTEES FOR THE NPDES CONSTRUCTION GENERAL PERMIT. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL ASPECTS OF THE NPDES CONSTRUCTION PERMIT AT ALL TIMES UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA.

NAME	COMPANY	TITLE	PHONE
LUKE SCHWARTZ	THE CITY OF PRIOR LAKE	PROJECT MANAGER	952-447-9889
KELVIN HOWIESON	WSB	PROJECT MANAGER	218-507-1984

AGENCY CONTACTS

ORGANIZATION	CONTACT NAME	PHONE
MPCA (EMERGENCY) 24 HOUR	STATE DUTY OFFICER	1-800-422-0798
MPCA	ANGIE GANDINI	507-344-5240
CITY OF PRIOR LAKE LGU	ALISON HARWOOD	612-360-1320
ACOE	LA CRESCENT FIELD OFFICE	651-290-5902
BWSR	ALYSSA CORE	507-923-5414

LOCATION OF SWPPP REQUIREMENTS

THE REQUIRED SWPPP ELEMENTS MAY BE LOCATED IN MANY PLACES WITHIN THE PLAN SET AS WELL AS IN THE SPECIAL PROVISIONS, PROJECT MANUAL, MNDOT SPEC BOOK, OR ON FILE WITH THE PROJECT OWNER.

DESCRIPTION	LOCATION
TEMPORARY/PERMANENT EROSION CONTROL MEASURES	SHEET NO. PLAN SET
DIRECTION OF FLOW	SHEET NO. PLAN SET
CONSTRUCTION NOTES & STANDARD PLATES	SHEET NO. PLAN SET
DRAINAGE PLAN & CONSTRUCTION PLAN	SHEET NO. PLAN SET
BMP TABULATION	SHEET NO. PLAN SET
STORMWATER CALCULATIONS	DRAINAGE REPORT & HYDRAULIC REPORT. AVAILABLE UPON REQUEST

RECEIVING WATERS

A SPECIAL AND IMPAIRED WATERS SEARCH WAS COMPLETED USING THE MPCA SEARCH ENGINE ON 07/26/2018. BASED ON THIS REVIEW, THE FOLLOWING SPECIAL/IMPAIRED WATERS (WITH CONSTRUCTION RELATED IMPAIRMENTS) ARE LOCATED WITHIN ONE MILE OF, AND DOWNSTREAM OF, ANY PROJECT DISCHARGE POINTS. PARTS 23.9 & 23.10 OF THE NPDES PERMIT APPLY.

WATERBODY	IMPAIRMENT(S)
LOWER PRIOR LAKE	FISH BIOASSESSMENTS; MERCURY IN FISH TISSUE
CREDIT RIVER	BENTHIC MACROINVERTEBRATES BIOASSESSMENTS; CHLORIDE; ESCHERICHIA COLI (E. COLI); FISH BIOASSESSMENTS.

AREAS OF ENVIRONMENTAL SENSITIVITY (AES) AND INFESTED WATERS

IN ADDITION TO THE LIST OF SPECIAL AND IMPAIRED WATERS, THE CONTRACTOR SHALL BE AWARE THAT THERE ARE WETLANDS AND EXISTING STORMWATER FACILITIES WITHIN AND NEAR THE PROJECT BOUNDARY. THERE IS A MAP OF KNOWN NATURAL RESOURCES ON THE LAST PAGE OF THE SWPPP NARRATIVE. AREAS OF ENVIRONMENTAL SENSITIVITY ARE ALSO CALLED OUT ON THE PLAN SHEETS.

SOIL TYPES

A PROJECT WIDE GEOTECHNICAL REPORT WAS COMPLETED DURING THE DESIGN PHASE. GLACIAL TILL IS PREDOMINATING ALONG MOST OF THE ALIGNMENT, HOWEVER, GLACIAL OUTWASH IS SHOWN AT THE EAST END OF THE PROJECT. THE TILL CONSISTS OF A BLEND OF SAND AND CLAY WHILE THE OUTWASH IS GENERALLY SANDY. ADDITIONAL SOIL INFORMATION CAN BE FOUND IN THE GEOTECHNICAL REPORT, LOCATED WITHIN THE PROJECT SPECIFICATIONS. SOIL CLASSIFICATIONS FOR HIGHLY ERODIBLE LAND (HEL), POTENTIALLY HIGHLY ERODIBLE LAND (PHEL), AND NOT HIGHLY ERODIBLE LAND (NHEL) SOILS CAN BE FOUND ON *FIGURE 1. SWPPP RESOURCE MAP*.

NATIVE TOPSOIL WILL BE STRIPPED; IF MATERIAL NEEDS TO BE STOCKPILED, APPROPRIATE ACTION WILL TAKE PLACE TO ENSURE THE STOCKPILES HAVE ALL PROPER BMPS IN PLACE ACCORDING TO THIS SWPPP AND THE NPDES PERMIT.

ENVIRONMENTAL REVIEW

NO FORMAL ENVIRONMENTAL REVIEW WAS REQUIRED FOR THIS PROJECT.

WETLANDS: MITIGATION MEASURES ARE REQUIRED AS A RESULT OF WETLAND IMPACTS FROM THE PROJECT. A PROJECT WIDE WETLAND DELINEATION REPORT SHOWS ONE (1) WETLAND, TWO (2) STORMWATER BASINS, AND TWO (2) WET DITCHES WITHIN THE PROJECT AREA USING THE LEVEL 2 METHOD. MITIGATION MEASURES HAVE BEEN ADDRESSED VIA WETLAND BANKING. ALL WETLAND AREAS WILL BE PROTECTED WITH PERIMETER CONTROL AND A 50' NATURAL BUFFER (IF INFEASIBLE, REDUNDANT PERIMETER CONTROL MEASURES), INCLUDED AREAS THAT ARE PERMITTED TO BE FILLED AND/OR EXCAVATED UNTIL WORK IN THE PERMITTED AREAS ARE NECESSARY. REDUNDANT BMP MEASURES MUST BE PLACED 5' FROM THE INITIAL PERIMETER CONTROL MEASURE WITH A STABILIZED BUFFER STRIP BETWEEN THE BMPS.

THREATENED/ENDANGERED SPECIES: SCOTT COUNTY LISTS THE NORTHERN LONG-EARED BAT AND THE RUSTY PATCHED BUMBLE BEE AS THREATENED/ENDANGERED THE TRICOLORED BAT AS PROPOSED ENDANGERED, THE WESTERN REGAL FRITILLARY AS PROPOSED THREATNED AND THE MONARCH BUTTERFLY AS CANDIDATE SPECIES WITHIN THE COUNTY. TREE REMOVAL SHOULD OCCUR OUTSIDE OF THE NORTHERN LONG-EARED BAT ACTIVE SEASON (APRIL 1 TO OCTOBER 31). BASED ON THE CONSTRUCTION ACTIVITIES, IT IS DETERMINED THAT THE PROJECT WILL HAVE NO EFFECT ON THESE SPECIES OR THEIR HABITATS. HOWEVER, IF THESE SPECIES ARE FOUND, CONTRACTOR TO STOP WORK IMMEDIATELY FOR FURTHER INVESTIGATION.

DRINKING WATER/WELLS: ACCORDING TO THE MDH, THE PROJECT IS NOT LOCATED WITHIN ANY DRINKING WATER SUPPLY MANAGEMENT AREA (DWSMA) OR NEAR ANY WELLHEAD PROTECTION AREAS.

CONTAMINATED PROPERTIES: THE MPCA'S "WHAT'S IN MY NEIGHBORHOOD" DATABASE WAS REVIEWED ON 08/21/2024. THE RESULTS OF THIS REVIEW SHOW ONE (1) KNOWN HAZARDOUS WASTE SITE LOCATED ADJACENT TO THE PROJECT ALIGNMENT: ID 128341. THE DEPTH OF THE FULL RECLAMATION IS NOT PROPOSED TO UNEARTH ANY CONTAMINATED SOIL, CONTAMINATED WATER, AND/OR REGULATED WASTE. REFER TO MNDOT SPEC 1717.1.A. FOR POTENTIAL INDICATORS OF CONTAMINATED MATERIALS AND REGULATED WASTE. IF CONTAMINATED MATERIAL, CONTAMINATED WATER, AND/OR REGULATED MATERIALS ARE FOUND, CREWS ARE TO STOP WORK IMMEDIATELY FOR FURTHER INVESTIGATION/TESTING.

FLOOD CONTINGENCY PLAN: PROJECT ACTIVITIES ARE NOT LOCATED WITHIN THE 100-YEAR FLOODPLAIN OR FLOODWAY; HOWEVER, THE PROJECT ENGINEER (AT THEIR DISCRETION) MAY REQUIRE A PREVENTATIVE FLOOD CONTINGENCY PLAN FOR SPECIFIC PROJECT ACTIVITIES AND AREAS IF SEASONAL PRECIPITATION POSSES A POTENTIAL RISK OF FLOODING WORK AREAS WITHIN THE PROJECT LIMITS. THIS PLAN SHALL BE SUBMITTED BY THE OPERATOR TO THE PROJECT ENGINEER FOR APPROVAL A MINIMUM OF 72 HOURS PRIOR TO THE SCHEDULED WORK AND/OR DURING ACTIVE WORK WITHIN THE AREA OF POTENTIAL RISK OF FLOODING. NO WORK CAN COMMENCE IN THE AREA UNTIL WRITTEN APPROVAL HAS BEEN GRANTED BY THE PROJECT ENGINEER.

FISH EXCLUSION DATES: OPERATOR IS PROHIBITED FROM CONDUCTING IN-WATER WORK DURING THE FISH SPAWNING AND MIGRATION DATES OF MARCH 15 TO JUNE 15 FOR NON-TROUT WATERS. IF WORK MUST BE CONDUCTING DURING THIS TIMEFRAME, CONTRACTOR SHALL CONTACT THE LOCAL DNR FISHERIES MANAGER FOR WRITTEN APPROVAL PRIOR TO CONDUCTING THE IN-STREAM WORK. EXPOSED SOILS WITHIN 200' OF THE WATER'S EDGE, AND THAT DRAIN TO THESE WATERS, MUST RECEIVE STABILIZATION MEASURES IMMEDIATELY AND WITHIN 24 HOURS DURING THE RESTRICTION PERIOD.

AQUATIC INVASIVE SPECIES: ALL IN-WATER, AND DEWATERING EQUIPMENT SHALL BE DECONTAMINATED OF ALL AQUATIC PLANTS AND PROHIBITED INVASIVE SPECIES PRIOR TO USING WITHIN SURFACE WATERS ON-SITE AND TRANSPORTING OFF-SITE. ALL DECONTAMINATION ACTIVITIES SHALL MEET THE CHAPTER 1 STANDARDS OF THE MINNESOTA DNR'S BEST PRACTICES MANUAL FOR MEETING DNR GENERAL PUBLIC WATERS WORK PERMIT GP 2004-0001.

LAND FEATURE CHANGES

TOTAL AREA TO BE DISTURBED = 4.45 ACRES
IMPERVIOUS AREA: PRE-CONSTRUCTION = 0.09 ACRES/POST-CONSTRUCTION = 1.24 ACRES
NET INCREASE OF IMPERVIOUS AREA = 1.15 ACRES

LONG TERM MAINTENANCE AND OPERATION:
THE NPDES PERMANENT STORMWATER TREATMENT SYSTEM (PART 15.1) FROM THE NET NEW IMPERVIOUS SURFACES OF THE PROJECT IS PROVIDED IN THE TWO EXISTING STORMWATER RETENTION BASINS AND WET DITCHES WITHIN THE PROJECT ALIGNMENT. PRIOR LAKE STAFF IS RESPONSIBLE FOR THE LONG-TERM MAINTENANCE AND OPERATION OF THE PERMANENT STORMWATER SYSTEM.
IF A FULL VOLUME REDUCTION IS INFEASIBLE WITHIN THE PROJECT LIMITS, PERMITTEE MUST DOCUMENT REASONS WITHIN THE SWPPP.

STABILIZATION TIME FRAMES

AREA	TIME FRAME	NOTES
EXPOSED AREAS	IMMEDIATELY AND NO LATER THAN 7 DAYS OF BEING UNWORKED	1, 4, 5
LAST 200 LINEAL FEET OF DRAINAGE DITCH/SWALE	WITHIN 24 HOURS OF CONNECTION TO SURFACE WATER/PROPERTY EDGE	1, 2, 3
REMAINING PORTIONS OF DRAINAGE DITCH OR SWALE	7 DAYS	1, 3
PIPE AND CULVERT OUTLETS	24 HOURS	
STOCKPILES	7 DAYS	1

1. INITIATE STABILIZATION IMMEDIATELY WHEN CONSTRUCTION HAS TEMPORARILY OR PERMANENTLY CEASED ON ANY PORTION OF THE SITE. COMPLETE STABILIZATION WITHIN THE TIME FRAME LISTED. IN MANY INSTANCES THIS WILL REQUIRE STABILIZATION TO

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DESIGNED BY: MKV		PRINTED NAME: MARCUS VANDERBRUG, P.E.				Sheet No. 72 of 86 Sheets
CHECKED BY: KH		DATE: 10/7/2024 LIC. NO. 56164				

OCCUR MORE THAN ONCE DURING THE COURSE OF THE PROJECT. TEMPORARY SOIL STOCKPILES WITHOUT SIGNIFICANT CLAY OR SILT AND STOCKPILED AND CONSTRUCTED ROAD BASE ARE EXEMPT FROM THE STABILIZATION REQUIREMENT.
2. STABILIZE WETTED PERIMETER OF DITCH (I.E. WHERE THE DITCH GETS WET).
3. APPLICATION OF MULCH, HYDROMULCH, TACKIFIER AND POLYACRYLAMIDE ARE NOT ACCEPTABLE STABILIZATION METHODS IN THESE AREAS.
4. STABILIZE ALL AREAS OF THE SITE PRIOR TO THE ONSET OF WINTER. ANY WORK STILL BEING PERFORMED WILL BE MULCHED OR BLANKETED WITHIN THE TIME FRAMES IN THE NPDES PERMIT.
5. TOPSOIL BERMS MUST BE STABILIZED TO BE CONSIDERED PERIMETER CONTROL BMPS. USE RAPID STABILIZATION METHOD 3. THE SEED MIX USED IN THE RAPID STABILIZATION MAY BE SUBSTITUTED AS FOLLOWS:
   A. SINGLE YEAR CONSTRUCTION BETWEEN MAY 1 - AUGUST 1, SEED WITH SEED MIX 21-111
   B. SINGLE YEAR CONSTRUCTION BETWEEN AUGUST 1 - OCTOBER 31, SEED WITH SEED MIX 21-112
   C. MULTI YEAR TEMPORARY STABILIZATION 22-111
6. KEEP DITCHES AND EXPOSED SOILS IN AN EVEN ROUGH GRADED CONDITION IN ORDER TO BE ABLE TO APPLY EROSION CONTROL MULCHES, HYDROMULCHES, AND BLANKETS.

SITE INSPECTION AND MAINTENANCE

THE EROSION CONTROL OFFICER IS TO INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. THE OPERATOR SHALL PROVIDE A RAINFALL GAUGE ON-SITE AT VARIOUS MILE INTERVALS ALONG THE ALIGNMENT. INSPECT ALL TEMPORARY AND PERMANENT PROJECT BMPS UNTIL THE SITE HAS UNDERGONE FINAL STABILIZATION AND THE NOT HAS BEEN SUBMITTED. INSPECT SURFACE WATER INCLUDING DRAINAGE DITCHES FOR SIGNS OF EROSION AND SEDIMENT DEPOSITION. INSPECT CONSTRUCTION SITE VEHICLE EXIT LOCATIONS FOR EVIDENCE OF TRACKING ONTO PAVED SURFACES. INSPECT SURROUNDING PROPERTIES FOR EVIDENCE OF OFF-SITE SEDIMENT ACCUMULATION. INSPECT INFILTRATION AREAS FOR SIGN OF SEDIMENT DEPOSITION AND COMPACTIONS (TO ENSURE THAT EQUIPMENT IS NOT BEING DRIVEN ACROSS THE AREA). ALL INSPECTIONS AND MAINTENANCE CONDUCTED MUST BE RECORDED IN WRITING BY THE OPERATOR AND RETAINED WITH THE SWPPP. SUBMIT INSPECTION REPORTS IN A FORMAT THAT IS ACCEPTABLE TO THE PROJECT ENGINEER. RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY SHALL INCLUDE:

A. DATE, TIME, AND NAME OF PERSON(S) CONDUCTING INSPECTIONS;
B. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS;
C. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES); INCLUDING DOCUMENTATION/PHOTOS OF IMPLEMENTED BMPS INTENDED TO CORRECT A PROBLEM BUT FAILED.
D. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 INCHES IN 24 HOURS;
E. DOCUMENTATION OF CHANGES MADE TO THE SWPPP.

REPLACE, REPAIR OR SUPPLEMENT ALL NONFUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY FOLLOWING DISCOVERY UNLESS LISTED DIFFERENTLY BELOW:

A. REPAIR, REPLACE, OR SUPPLEMENT PERIMETER CONTROL DEVICES WHEN THEY BECOME NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT OF THE DEVICE. COMPLETE REPAIRS BY THE END OF THE NEXT BUSINESS DAY FOLLOWING DISCOVERY.
B. REPAIR OR REPLACE INLET PROTECTION DEVICES WHEN THEY BECOME NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT AND/OR DEPTH OF THE DEVICE.
C. DRAIN AND REMOVE SEDIMENT FROM TEMPORARY AND PERMANENT SEDIMENT BASINS ONCE THE SEDIMENT HAS REACHED 1/2 THE STORAGE VOLUME. COMPLETE WORK WITHIN 72 HOURS OF DISCOVERY.
D. REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS. STABILIZE ANY AREAS THAT ARE DISTURBED BY SEDIMENT REMOVAL OPERATIONS. SEDIMENT REMOVAL AND STABILIZATION MUST BE COMPLETED WITHIN 7 DAYS OF DISCOVERY.
E. REMOVE TRACKED SEDIMENT FROM PAVED SURFACES BOTH ON AND OFF SITE WITHIN ONE (1) CALENDAR DAY OF DISCOVERY. STREET SWEEPING MAY HAVE TO OCCUR MORE OFTEN TO MINIMIZE OFF SITE IMPACTS. LIGHTLY WET THE PAVEMENT PRIOR TO SWEEPING.
F. MAINTAIN ALL BMPS UNTIL WORK HAS BEEN COMPLETED, SITE HAS GONE UNDER FINAL STABILIZATION, AND THE NOT HAS BEEN SUBMITTED TO THE MPCA.

CONSTRUCTION ACTIVITY REQUIREMENTS: EROSION/SEDIMENT CONTROL, PROCEDURES, & MAINTENANCE STANDARDS

1. AMEND THE SWPPP AND DOCUMENT ALL CHANGES TO THE SWPPP AND ASSOCIATED PLAN SHEETS IN A TIMELY MANNER. SWPPP AMENDMENTS AND SITE PLANS WILL BE PREPARED BY THE OPERATOR AND SUBMITTED TO THE OWNER FOR REVIEW AND WRITTEN APPROVAL BY THE PROJECT OWNER (OR DESIGNATED REPRESENTATIVE). STORE THE SWPPP AND ALL AMENDMENTS ON SITE AT ALL TIMES.
2. PREPARE AND SUBMIT A SITE MANAGEMENT PLAN FOR THE ENGINEER'S ACCEPTANCE FOR STAGING/STOCKPILE MANAGEMENT AREAS, CONCRETE MANAGEMENT, CONCRETE SLURRY APPLICATION AREAS, FUGITIVE DUST CONTROL PLAN, SPILL CONTAINMENT PLAN, HAZARDOUS MATERIAL MANIFEST & MANAGEMENT PLAN, WETLAND MANAGEMENT PLAN, VEGETATION PRESERVATION & MAINTENANCE PLAN, WORK IN AND NEAR AREAS OF ENVIRONMENTAL SENSITIVITY, AREAS IDENTIFIED IN THE PLANS AS "SITE MANAGEMENT PLAN AREA", ANY WORK THAT WILL REQUIRE DEWATERING, ANY ADDITIONAL PLANS LISTED IN THE PROJECT SPECIFICATIONS, AND AS REQUIRED BY THE ENGINEER. SUBMIT ALL SITE MANAGEMENT PLANS TO THE ENGINEER IN WRITING. ALLOW A MINIMUM OF 7 DAYS FOR PROJECT ENGINEER TO REVIEW AND ACCEPT SITE MANAGEMENT PLAN SUBMITTALS. WORK WILL NOT BE ALLOWED TO COMMENCE IF A SITE MANAGEMENT PLAN IS REQUIRED UNTIL ACCEPTANCE HAS BEEN GRANTED BY THE ENGINEER. THERE WILL BE NO EXTRA TIME ADDED TO THE CONTRACT DUE TO THE UNTIMELY SUBMITTAL.
3. THERE IS NO CONSTRUCTION PHASING OR STAGING DEFINED BY THE OWNER FOR THIS PROJECT. THE SCHEDULE FOR INSTALLING TEMPORARY BMPS SHALL BE INCORPORATED INTO THE OPERATOR'S WEEKLY SCHEDULE FOR EACH CONSTRUCTION STAGE AND PRESENTED TO THE OWNER'S REPRESENTATIVE.
4. BURNING OF ANY MATERIAL IS NOT ALLOWED WITHIN PROJECT BOUNDARY.
5. DO NOT DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMITS. DELINEATE AREAS NOT TO BE DISTURBED AND WETLANDS (EVEN AREAS THAT ARE PERMITTED FOR CONSTRUCTION) PRIOR TO STARTING GROUND DISTURBING ACTIVITIES. IF IT BECOMES NECESSARY TO DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMITS, OBTAIN WRITTEN PERMISSION FROM THE PROJECT ENGINEER PRIOR TO PROCEEDING. PRESERVE ALL NATURAL BUFFERS SHOWN ON THE PLANS.
6. ROUTE STORMWATER AROUND UNSTABILIZED AREAS OF THE SITE WHENEVER FEASIBLE. PROVIDE EROSION CONTROL AND VELOCITY DISSIPATION DEVICES AS NEEDED TO KEEP CHANNELS FROM ERODING AND TO PREVENT NUISANCE CONDITIONS AT THE OUTLET.
7. DIRECT DISCHARGE FROM BMPS TO VEGETATED AREAS WHENEVER FEASIBLE. PROVIDE VELOCITY DISSIPATION DEVICES AS NEEDED TO PREVENT EROSION.
8. LOCATE PERIMETER CONTROL ON THE CONTOUR TO CAPTURE OVERLAND, LOW-VELOCITY SHEET FLOWS DOWN GRADIENT OF ALL EXPOSED SOILS AND PRIOR TO DISCHARGING TO SURFACE WATERS. PLACE J-HOOKS AT A MAXIMUM OF 100-FOOT INTERVALS.
9. ALL STOCKPILES MUST HAVE PERIMETER SEDIMENT CONTROLS IMPLEMENTED AND MAINTAINED AT ALL TIMES AND SHOULD BE INSTALLED PRIOR TO INITIATION OF STOCKPILING. PILES CANNOT BE PLACED IN BUFFER AREAS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE TO PREVENT STORMWATER RUN-ON INTO THE STOCKPILE.
10. STEEP SLOPES MAY BE TEMPORARILY CREATED DURING GRADING OPERATIONS. STABILIZATION OF STEEP SLOPES (3:1 OR GREATER) SHALL BE PROPERLY CAT-TRACKED AND STABILIZED PER THE EROSION CONTROL PLAN. LONG SLOPES CAN BE BROKEN UP WITH SEDIMENT CONTROL LOGS IF EROSION IS EVIDENT.
11. DITCH CHECKS WILL BE PLACED AS INDICATED ON THE PLANS DURING ALL PHASES OF CONSTRUCTION.
12. ALL STORM DRAIN INLETS, THAT RECEIVE PROJECT STORMWATER, MUST BE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED. INLET PROTECTION MAY BE REMOVED FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN (STREET FLOODING/FREEZING) HAS BEEN IDENTIFIED AND THE PERMITTEE(S) HAS RECEIVED WRITTEN CORRESPONDENCE FROM THE JURISDICTIONAL AUTHORITY VERIFYING THE NEED FOR REMOVAL. WRITTEN CORRESPONDENCE MUST BE DOCUMENTED IN THE SWPPP.
13. SILT FENCE IS NOT AN ACCEPTABLE CATCH BASIN INLET PROTECTION BMP. CONTACTOR SHALL CLEAN, REMOVE AND DISPOSE OF SEDIMENT, AND/OR REPLACE STORM DRAIN INLET PROTECTION ON A ROUTINE BASIS TO ENSURE THE DEVICE IS FULLY FUNCTIONAL PRIOR TO THE NEXT FORECASTED PRECIPITATION EVENT (30% OR GREATER).
14. DISCHARGE TURBID OR SEDIMENT LADEN WATER TO TEMPORARY SEDIMENT BASINS WHENEVER FEASIBLE. IN THE EVENT THAT IT IS NOT FEASIBLE TO DISCHARGE THE SEDIMENT LADEN WATER TO A TEMPORARY SEDIMENT BASIN, THE WATER MUST BE TREATED SO THAT IT DOES NOT CAUSE A NUISANCE CONDITION IN THE RECEIVING WATERS OR TO DOWNSTREAM LANDOWNERS. CLEAN OUT ALL PERMANENT STORMWATER BASINS REGARDLESS OF WHETHER USED AS TEMPORARY SEDIMENT BASINS/TRAPS TO THE DESIGN CAPACITY AFTER COMPLETING ALL UP-GRADIENT LAND DISTURBING ACTIVITY. USE A SKIMMER DEVICE FOR BASIN DRAINING.
15. PROVIDE STABILIZATION IN ANY TRENCHES CUT FOR DEWATERING OR SITE DRAINING PURPOSES.
16. THE CONTRACTOR SHALL SUBMIT A DEWATERING PLAN AND NARRATIVE TO THE PROJECT ENGINEER FOR APPROVAL 7 DAYS PRIOR TO UNDERTAKING THESE ACTIVITIES. DEWATERING PLAN MUST INCLUDE BMP'S TO PREVENT SEDIMENT TRANSPORT, EROSION, AND ADVERSE IMPACTS TO DOWNSTREAM RECEIVING WATERS. THE DEWATERING PLAN MUST ALSO INCLUDE ANY SPECIFIC CHEMICAL TREATMENTS (FLOC, POLYMERS, ETC.) THAT WILL BE USED. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ANY PERMIT NECESSARY FOR THESE ACTIVITIES; THE DEWATERING PLAN AND DNR APPROPRIATIONS PERMIT WILL BECOME PART OF THE SWPPP. THE CONTRACTOR SHALL VISUALLY CHECK AND PHOTOGRAPH THE DISCHARGE AT THE BEGINNING AND AT LEAST ONCE EVERY 24 HOURS OF OPERATION TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED AND NUISANCE CONDITIONS WILL NOT RESULT FROM THE DISCHARGE.

TEMPORARY & PERMANENT EROSION CONTROL BMPS

SEED MIX: SEED MIX SHALL BE USED IN CONSTRUCTION AND REVEGETATION PROJECTS IN ORDER TO ENHANCE SOIL NUTRIENT AVAILABILITY AND BIOLOGICAL SOIL STRUCTURE, ENCOURAGE NATIVE PLAN SUCCESSION, REDUCE EROSION, AND DISCOURAGE INVASIVE PLANT SPECIES. INOCULATION OF SOILS WITH MYCORRHIZAL FUNGI OR THE PRESENCE OF PRE-EXISTING SOIL MICROBES IS ESSENTIAL FOR THE STABILIZATION OF ADVERSE SOILS, ESTABLISHMENT OF NATIVE GRASSES, AND THE EXCLUSION OF NON-NATIVE "ANNUALS" AND NOXIOUS WEEDS.

EROSION CONTROL BLANKET: EROSION CONTROL BLANKETS (ECBS) ARE A SOIL STABILIZATION (EROSION CONTROL) BMP, INTENDED TO PROTECT DISTURBED SOIL SURFACES FROM RAINDROP IMPACT EROSION. ECBS ARE CARPET-LIKE MATS, INSTALLED OVER AND ANCHORED TO THE PROPERLY PREPARED SOIL SURFACES. PROPERLY SELECTED AND INSTALLED, ECBS CAN MIMIC THE BENEFICIAL EFFECTS OF VEGETATIVE COVER THEREBY REDUCING EROSION RATES BY OVER 90%. ECBS ALSO PROTECT SEEDS AND PROVIDE A BENEFICIAL ENVIRONMENT FOR VEGETATION TO BECOME ESTABLISHED. CONTRACTOR SHALL VERIFY DURING REGULAR INSPECTIONS THAT NO GULLIES, RILLS, OR SCOUR HOLES HAVE FORMED UNDER EROSION CONTROL BLANKETS AND MATS AND CORRECT ALL ERODED AREAS WITHIN 7 DAYS. ALL REPAIRS MUST BE COMPLETED WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.

STRAW MULCHING: DISTURBED SOIL AREAS SHALL BE PROTECTED WITH STRAW MULCH. MULCHING IS THE APPLICATION OF A PROTECTIVE LAYER OF STRAW OR OTHER SUITABLE MATERIAL TO THE SOIL SURFACE. STRAW MULCH SHALL BE USED IN CONJUNCTION WITH SEEDING AND HYDRO-SEEDING FOR ESTABLISHMENT OF VEGETATION. STRAW MULCH MUST BE SECURED TO THE GROUND USING DISKING OR AN OVERSPRAY OF AN HECP. MULCHING IS COMMONLY USED AS A TEMPORARY MEASURE TO PROTECT BARE OR DISTURBED SOIL AREAS THAT HAVE NOT BEEN SEEDED, UNTIL NATIVE VEGETATION RE-GROWS. CERTIFIED WEED-FREE MULCH MUST BE USED WHEN USING NATIVE SEED MIXES OR WHEN WORKING NEAR ENVIRONMENTALLY SENSITIVE AREAS.

HYDRAULIC MATRICES: HYDRAULIC MATRICES ARE EROSION CONTROL PRODUCTS THAT ARE USED TO STABILIZE EXPOSED SOILS. THESE MATRICES ARE APPLIED IN A SLURRY, PRODUCED BY MIXING FIBER, WATER AND A BINDING AGENT TOGETHER IN A MECHANICAL HYDRO-SEEDER. WOOD FIBER IS WIDELY USED BUT OTHER FIBERS CAN INCLUDE PAPER, STRAW, COIR, CORN, ETC. THE EFFECTIVENESS OF THESE HYDRAULIC MATRICES ARE DEPENDENT ON:

- PROPER SOIL PREPARATION
- APPLICATION RATES (DEPENDENT ON THE MANUFACTURERS RECOMMENDATIONS)
- THE TYPE OF FIBERS USED
- THE TYPE OF BOND AGENT(S) ADDED

THESE HYDRAULIC MATRICES ARE CLASSIFIED IN THE MNDOT SPEC BOOK AND APPROVED PRODUCTS LIST, DEPENDING ON THE PRODUCT CHARACTERISTICS, STRENGTH, AND LONGGEVITY. HYDRAULIC MATRICES USED INCLUDE: ORGANIC FIBER MATRIX, HYDRAULIC MULCH MATRIX, STABILIZED FIBER MATRIX, BONDED FIBER MATRIX, AND FIBER REINFORCED MATRIX.

SOD TYPE LAWN: SOD IS A PERMANENT EROSION PREVENTION BMP THAT PROVIDES INSTANTANEOUS SOIL STABILIZATION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF SOD AS OUTLINED IN THE PROJECT SPECIFICATIONS.

ENERGY DISSIPATER: AN ENERGY DISSIPATER IS A STRUCTURE DESIGNED TO CONTROL EROSION AT THE OUTLET OF A CHANNEL OR CONDUIT.

RAPID STABILIZATION METHOD #1: THIS METHOD SHALL CONSIST OF TYPE 1 MULCH (2 TON PER ACRE) WITH DISC ANCHORING BE SPREAD IN AREAS THAT HAVE BEEN UNWORKED FOR 7 DAYS. THIS METHOD SHALL BE USED ON SLOPES OF 3:1 AND LESS. OPERATOR MUST APPLY MULCH IN A UNIFORM PATTERN OVER THE DISTURBED SOILS TO ACHIEVE A MINIMUM OF 90% GROUND COVER.

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RAPID STABILIZATION METHOD #2: THIS METHOD SHALL CONSIST OF TYPE 3 MULCH (1.5 TON PER ACRE) OR 3884 TYPE STABILIZED FIBER MATRIX (750 LBS PER ACRE) BE SPREAD IN AREAS THAT HAVE BEEN UNWORKED FOR 7 DAYS. THIS METHOD SHALL BE USED ON SLOPES LESS THAN 3:1.

RAPID STABILIZATION METHOD #3: THIS WORK SHALL CONSIST OF OPERATIONS NECESSARY TO RAPIDLY STABILIZE SMALL CRITICAL AREAS WITHIN 200 FEET OF SURFACE WATERS, TO PREVENT OFF SITE SEDIMENTATION AND OR TO COMPLY WITH PERMIT REQUIREMENTS. THIS FORM OF RAPID STABILIZATION EMPLOYS SFM, SEED MIX 22-111, AND FERTILIZER TYPE 3. THIS METHOD SHALL BE USED ON SLOPES LESS THAN 3:1. INSTALL PER MNDOT SPECIFICATION 2575.3.M.1.C.

RAPID STABILIZATION METHOD #4: THIS METHOD SHALL CONSIST OF CATEGORY 20/25 EROSION CONTROL BLANKET (NATURAL NET ONLY) IN COMBINATION WITH MNDOT SEED MIX 22-111 (2 LBS PER 100 SQ. YD.) AND TYPE 3 SLOW RELEASE FERTILIZER (8 LBS PER 100 SQ. YD.). THIS IS AN ACCEPTABLE BMP FOR DISTURBED AREAS ADJACENT TO ENVIRONMENTALLY SENSITIVE AREAS, SURFACE WATERS, AND WITHIN THE LAST 200 FEET OF DITCH BOTTOMS.

TEMPORARY & PERMANENT SEDIMENT CONTROL BMPS

SEDIMENT CONTROL LOGS: SEDIMENT CONTROL LOGS ARE MANUFACTURED FROM STRAW, WOOD EXCELSIOR, COCONUT FIBERS, AND/OR OTHER MATERIALS THAT ARE BOUND WITH POLYPROPYLENE OR BIODEGRADABLE NETTING INTO TIGHT TUBULAR ROLLS. FIBER ROLLS CONTROL THREE TYPES OF EROSIONAL PROCESSES; EROSION CONTROL, RUN OFF CONTROL, AND SEDIMENT CONTROL. SEDIMENT CONTROL LOGS CAN BE USED FOR THE FOLLOWING:

- SLOPE INTERRUPTERS TO REDUCE EROSION ON NEWLY CONSTRUCTED SLOPES
- TEMPORARY DITCH CHECKS TO REDUCE RUNOFF VELOCITIES IN DRAINAGE CHANNELS
- SEDIMENT CONTROL BARRIERS FOR SMALL DISTURBED SOIL AREAS SUCH AS STOCKPILES, DISCRETE SLOPES, OR INDIVIDUAL LOTS

MACHINE SLICED SILT FENCE: A SILT FENCE IS A TEMPORARY SEDIMENT BARRIER CONSISTING OF FILTER FABRIC ENTRENCHED INTO THE SOIL AND ATTACHED TO SUPPORTING POSTS. SILT FENCE IS INTENDED TO BE INSTALLED WHERE SEDIMENT-LADEN WATER CAN POND, THUS ALLOWING THE SEDIMENT TO FALL OUT OF SUSPENSION AND SEPARATE FROM THE RUNOFF. SILT FENCE INSTALLED WITH A TRENCHER OR BY SLICING IS THE MOST EFFECTIVE INSTALLATION METHOD TO ENSURE AGAINST COMMON SILT FENCE FAILURES. THE BMP WILL BE CLEANED OUT OR REPLACED WHEN THE SEDIMENT REACHES 1/2 THE HEIGHT OF THE FENCE.

FLOTATION SILT CURTAIN: FLOTATION SILT CURTAIN WILL BE IN PLACE WHERE PROJECT ACTIVITIES ARE LOCATED WITHIN OR NEAR A SURFACE WATER/WETLAND. THE CURTAIN WILL BE LOCATED AS TIGHT TO THE SHORELINE AS POSSIBLE AND NOT TO EXCEED 1/4 THE STREAM WIDTH. DOWN GRADIENT PERIMETER CONTROL MUST STILL BE INSTALLED AS WELL AS AN ADDITIONAL REDUNDANT BMP WHEN WORK IS WITHIN 50 FEET OF THE SURFACE WATER.

TEMPORARY SEDIMENTATION BASINS: WHERE 5 OR MORE ACRES OF DISTURBED SOIL DRAIN TO A COMMON LOCATION, A TEMPORARY SEDIMENT BASIN MUST BE PROVIDED PRIOR TO RUNOFF LEAVING THE CONSTRUCTION SITE OR ENTERING SURFACE WATERS. ALL TEMPORARY BASINS SHALL BE CONSTRUCTED AND OPERATIONAL PRIOR TO GRADING 5 OR MORE ACRES. BASINS MUST PROVIDE A LIVE STORAGE VOLUME FROM A 2-YEAR 24-HOUR STORM EVENT FROM EACH ACRE (DISTURBED AND UNDISTURBED) DRAINING TO THE BASIN. AT A MINIMUM, IF CALCULATIONS ARE NOT PERFORMED THE BASIN SHALL PROVIDE 3,600 CUBIC FEET OF LIVE STORAGE FROM EACH ACRE. THE BASIN INTAKE MUST BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE, PREVENT SHORT CIRCUITING AND THE DISCHARGE OF FLOATING DEBRIS, INCLUDE AN EMERGENCY OVERFLOW ABOVE THE LIVE STORAGE ELEVATION, AND PROVIDE ENERGY DISSIPATION AT THE BASIN OUTLET. BASINS MUST BE DRAINED AND SEDIMENT REMOVED WHEN THE DEPTH OF COLLECTED SEDIMENT IN THE BASIN REACHES 1/2 THE LIVE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
IF A BASIN IS INFEASIBLE WITHIN THE PROJECT LIMITS, EQUIVALENT SEDIMENT CONTROL BMPS MUST BE IMPLEMENTED AND DOCUMENTED IN THE SWPPP OR SWPPP AMENDMENT.

STABILIZED CONSTRUCTION EXIT: TEMPORARY CONSTRUCTION EXITS ARE CONSTRUCTED AT THE EGRESS POINT FROM THE CONSTRUCTION AREA ONTO A PAVED ROAD. A STABILIZED CONSTRUCTION EXIT IS A TRACKING CONTROL BMP INTENDED TO PREVENT TRACKING OF SOIL FROM THE CONSTRUCTION SITE BY EQUIPMENT AND VEHICLES. THE EXITS ARE CONSTRUCTED OF LARGE ANGULAR ROCK, STEEL RIBS (RUMBLE STRIPS), OR TRACK PADS INTENDED TO KNOCK THE MUD OFF THE TIRES BEFORE TRAVELING ONTO THE ROADWAY.

CHEMICAL TREATMENTS: OPERATOR MUST AMEND THE SWPPP TO INCLUDE THE INTENDED USES AND LOCATIONS OF FLOCCULANTS, POLYMERS, AND OTHER SEDIMENTATION TREATMENT CHEMICALS. CHEMICAL TREATMENTS MUST BE IN COMPLIANCE WITH PART 9.18.

BIORETENTION & BIOSWALES: BIORETENTION BASINS AND BIOSWALES DIRECT SHEET FLOW ACROSS A GRASS BUFFER STRIP TO A PONDING AREA FOR INFILTRATION. THEY UTILIZE SOILS AND BOTH WOODY AND HERBACEOUS PLANTS TO REMOVE POLLUTANTS FROM STORMWATER RUNOFF. THE PONDING AREA GENERALLY CONSISTS OF A SURFACE LAYER CONTAINING ORGANICS SUCH AS MULCH, TREES, NATIVE GRASSES AND SHRUBS, A SUBSURFACE LAYER OF PLANTING SOIL, AND A SAND BED.

DUST CONTROL: OPERATOR WILL COMPLY WITH STATE RULE 7011.0150 ON DUST PREVENTION REQUIREMENTS. DUST FROM THE SITE WILL BE CONTROLLED BY INCREASED STREET SWEEPING AND/OR USING A MOBILE PRESSURE-TYPE DISTRIBUTOR TRUCK TO APPLY POTABLE WATER TO DISTURBED AREAS. THE MOBILE UNIT WILL APPLY WATER AT A RATE NECESSARY TO PREVENT RUNOFF AND PONDING.

POLLUTION PREVENTION MANAGEMENT

POTENTIAL SOURCES OF POLLUTANTS FROM CONSTRUCTION ACTIVITIES INCLUDE, BUT NOT LIMITED TO:

1. SEDIMENT AND FUGITIVE DUST GENERATED FROM CLEARING AND GRUBBING, IMPORT/EXPORT OPERATIONS, REMOVALS/COMPACTION, MASS/FINE GRADING, EXCAVATIONS, TRENCHING, TOPSOIL STRIPING STOCKPILING, WET/DRY PAVEMENT CUTTING, STREET CONSTRUCTION.
2. BASIC/ACIDIC PH LEVELS FROM CURB AND GUTTER, MANHOLE STRUCTURES, SIDEWALKS, DRIVEWAY APRONS, FOUNDATIONS, BRIDGE ABUTMENTS, WET/DRY PAVEMENT CUTTING, MASONRY WASHOUT/CLEANOUT.
3. EXCESS NUTRIENTS FROM LANDSCAPING INSTALLATIONS, SOIL ADDITIVES, FERTILIZATION, MULCHING.
4. HYDROCARBONS FROM STREET CONSTRUCTION, DEMOLITION/REMOVALS, WET/DRY PAVEMENT CUTTING.

OPERATOR WILL COMPLY WITH ALL OF THE POLLUTION PREVENTION AND MANAGEMENT MEASURES IDENTIFIED IN THE NPDES-CSW PERMIT, PART 12.1. STORAGE AND DISPOSAL OF CONSTRUCTION AND HAZARDOUS WASTES MUST BE IN COMPLIANCE WITH MPCA REGULATIONS.

A. POSITION AND STAKE DOWN ALL PORTABLE TOILETS SO THEY CANNOT BE TIPPED OR KNOCKED OVER. SUPPLY ADEQUATE SECONDARY CONTAINMENT.
B. SECONDARY CONTAINMENT IS NEEDED AROUND ALL STATIONARY EQUIPMENT (GENERATORS, PUMPS, LIGHT PLANTS, ETC.) PROVIDE CONTAINMENT FOR ALL HAZARDOUS MATERIALS AND TOXIC WASTE.
C. NO ENGINE DEGREASING IS ALLOWED ON SITE.
D. VEHICLE AND EQUIPMENT WASHING TO OCCUR IN DESIGNATED AREA AS DETERMINED BY THE CONTRACTOR SUBMITTAL OF A MANAGEMENT PLAN FOR THESE ACTIVITIES.
E. PROPERLY CLEAN UP AND REPORT ALL SPILLS AS REQUIRED BY THE MPCA AND MNDOT SPECIFICATIONS.
F. PROVIDE A SPILL KIT AT EACH WORK LOCATION ON THE SITE.
G. PROVIDE A SECURE STORAGE AREA WITH RESTRICTED ACCESS FOR ALL HAZARDOUS MATERIALS AND TOXIC WASTE. RETURN ALL HAZARDOUS MATERIALS AND TOXIC WASTE TO THE DESIGNATED STORAGE AREA AT THE END OF THE BUSINESS DAY UNLESS INFEASIBLE. STORE ALL HAZARDOUS MATERIALS AND TOXIC WASTE (INCLUDING BUT NOT LIMITED TO OIL, DIESEL FUEL, GASOLINE, HYDRAULIC FLUIDS, PAINT, PETROLEUM BASED PRODUCTS, WOOD PRESERVATIVES, ADDITIVES, CURING COMPOUNDS, AND ACIDS) IN SEALED CONTAINERS WITH SECONDARY CONTAINMENT. CLEAN UP SPILLS IMMEDIATELY.
STORE, COLLECT AND DISPOSE OF ALL SOLID WASTE.
H. SLURRY FROM CONCRETE OPERATIONS MUST BE VACUUMED UP IMMEDIATELY. NO CONCRETE WASHOUT SHALL COME IN CONTACT WITH THE GROUND AND MUST BE PROPERLY DISPOSED OF.
I. A SIGN MUST BE INSTALLED ADJACENT TO EACH CONCRETE WASHOUT FACILITY.
J. CREATE AND FOLLOW A WRITTEN DISPOSAL PLAN FOR ALL WASTE MATERIALS. INCLUDE IN THE PLAN HOW THE MATERIAL WILL BE DISPOSED OF AND THE LOCATION OF THE DISPOSAL SITE. SUBMIT PLAN TO THE ENGINEER PRIOR TO CONSTRUCTION.
K. USE METHODS AND OPERATIONAL PROCEDURES THAT PREVENT DISCHARGE OR PLACEMENT OF BITUMINOUS GRINDINGS, CUTTINGS, MILLINGS, AND OTHER BITUMINOUS WASTES FROM AREAS OF EXISTING OR FUTURE VEGETATED SOILS AND FROM ALL WATER CONVEYANCE SYSTEMS, INCLUDING INLETS, DITCHES AND CURB FLOW LINES.

FINAL STABILIZATION

FINAL STABILIZATION IS ACHIEVED WHEN NPDES CGP PARTS 13.1-13.7 (AS APPLICABLE) ARE COMPLETED PRIOR TO SUBMISSION OF THE NOTICE OF TERMINATION (NOT) TO MPCA.

1. ALL AREAS MUST BE STABILIZED WITH A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%.
2. ALL TEMPORARY SEDIMENT CONTROL BMP MEASURES MUST BE REMOVED PRIOR TO SUBMITTING PERMIT NOT.
3. THE NOT SUBMITTAL MUST INCLUDE EITHER GROUND OR AERIAL PHOTOGRAPHS SHOWING THE AFOREMENTIONED REQUIREMENTS OF HAVE BEEN MET.

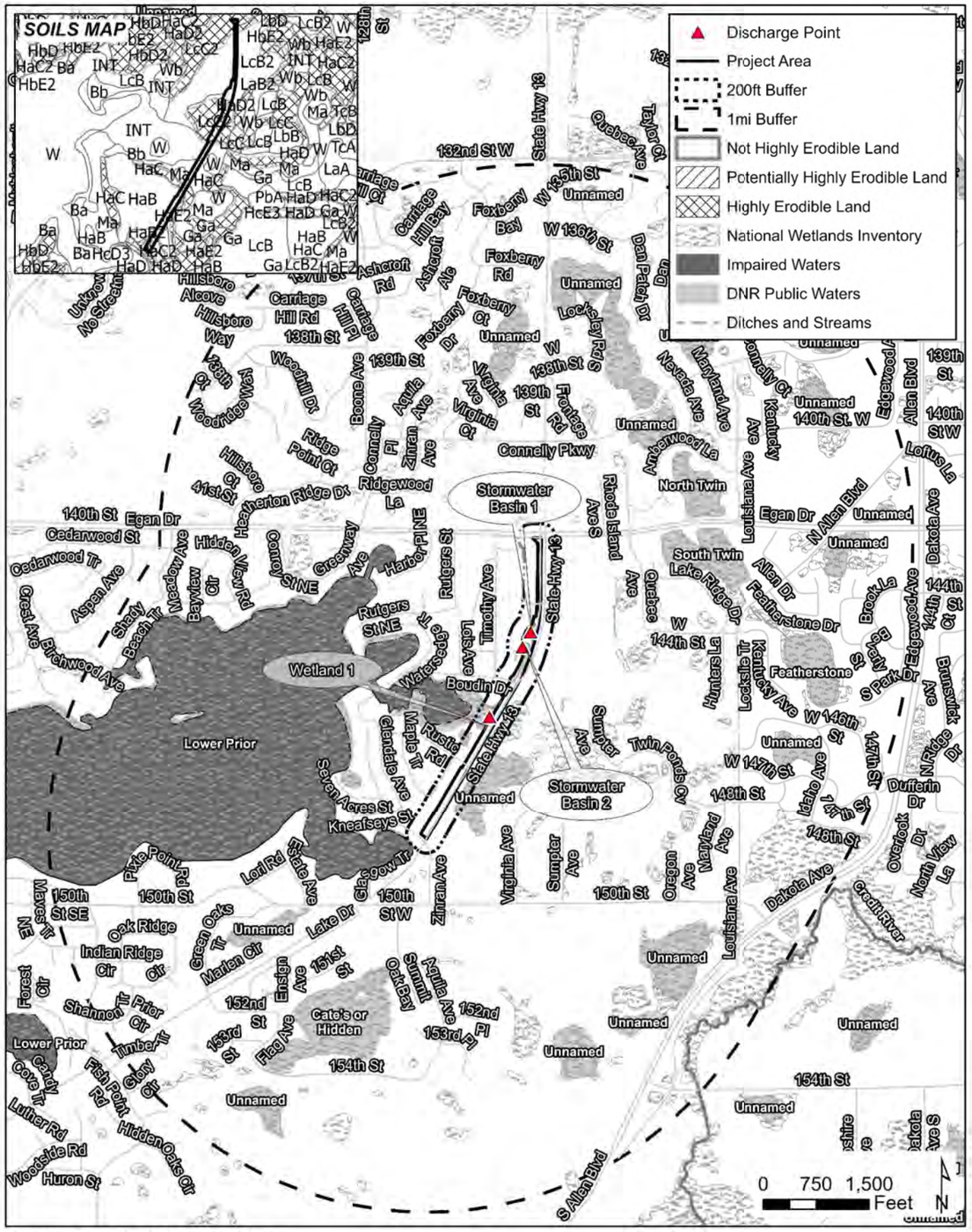

Figure 1. SWPPP Resource Map

DRAWN BY: MKV DESIGNED BY: MKV CHECKED BY: KH	I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	SIGNATURE: PRINTED NAME: MARCUS VANDERBRUG, P.E. DATE: 10/7/2024 LIC. NO. 56164	wsb	**City of Prior Lake** **TH 13 Trail** Prior Lake, Minnesota	STORM WATER POLLUTION PREVENTION PLAN	SP 201-010-008 Sheet No. 75 of 86 Sheets

DATE: 10/7/2024 TIME: 10:59:41 AM
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TURF ESTABLISHMENT & EROSION CONTROL NOTES

1. SEDIMENT CONTROL MUST BE IN PLACE AND APPROVED BY ENGINEER BEFORE ANY PHASE OF CONSTRUCTION CAN BEGIN.

2. TEMPORARY STABILIZATION MEASURES SHALL BE EMPLOYED WITHIN 200' OF THE NORMAL WETTED PERIMETER OF ALL DISCHARGE POINTS WITHIN 24 HOURS. MULCH IS NOT AN APPROVED MEASURE.

3. IN THE EVENT THAT PERMANENT STABILIZATION CANNOT BE IMPLEMENTED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY IN THE DISTURBED AREA HAS CEASED, TEMPORARY STABILIZATION BMPS MUST BE SCHEDULED TO OCCUR WITHIN THAT 7 DAY TIME FRAME (EXCEPT WHERE CALLED OUT BY NOTE 2)

4. ALL STOCKPILES MUST HAVE DOWN GRADIENT PERIMETER SEDIMENT CONTROL IMPLEMENTED AND MAINTAINED AT ALL TIMES. STOCKPILES TO RECEIVE TEMPORARY STABILIZATION VIA RAPID STABILIZATION METHOD 3 IF UNWORKED FOR 7 DAYS.

5. STOCKPILES MAY NOT BE PLACED WITHIN ANY DRAINAGE OR CURB LINE UNLESS PROPER BYPASS IS INSTALLED PRIOR TO STOCKPILE PLACEMENT.

6. STABILIZATION OF DISTURBED AREAS SHALL BE DONE BY PERMANENT TURF ESTABLISHMENT WHENEVER POSSIBLE.

7. PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER.

8. IN THE EVENT THAT DEWATERING OPERATIONS NEED TO OCCUR, A DEWATERING PLAN MUST BE SUBMITTED AND APPROVED BY THE ENGINEER BEFORE ANY OPERATIONS TAKE PLACE. THE PLAN MUST BE DEVELOPED IN ACCORDANCE WITH THE SWPPP GUIDELINES.

9. SLURRY FROM CONCRETE OPERATIONS MUST BE VACUUMED UP IMMEDIATELY. NO CONCRETE WASHOUT SHALL COME IN CONTACT WITH THE GROUND AND MUST BE PROPERLY DISPOSED OF.

10. ALL HAZARDOUS MATERIALS MUST BE KEPT UNDER COVER AND WITHIN PROPER CONTAINMENT WHEN NOT IN USE.

11. A SIGN MUST BE INSTALLED ADJACENT TO EACH CONCRETE WASHOUT FACILITY.

12. REDUBDANT PERIMETER SEDIMENT CONTROLS MUST BE INSTALLED AT LEAST 5 FEET APART UNLESS LIMITED BY LACK OF AVAILABLE SPACE.

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL AMEND THE SWPPP AND EROSION CONTROL PLAN SHEETS TO SHOW THE LOCATIONS OF PROPOSED STOCKPILES, STAGING AREAS, AND POTENTIAL POLLUTANT GENERATING ACTIVITIES (IF DESIGNATED CONCRETE WASHOUT ARES, FUELING LOCATIONS, CHEMICAL STORAGE, ETC.) INLET PROTECTION IS SHOWN FOR EXISTING AND PROPOSED STORM STRUCTURES.

2. ADDITIONAL EROSION CONTROL CAN BE ADDED AT ANY PHASE OF THE PROJECT WITH APPROVAL BY THE ENGINEER.

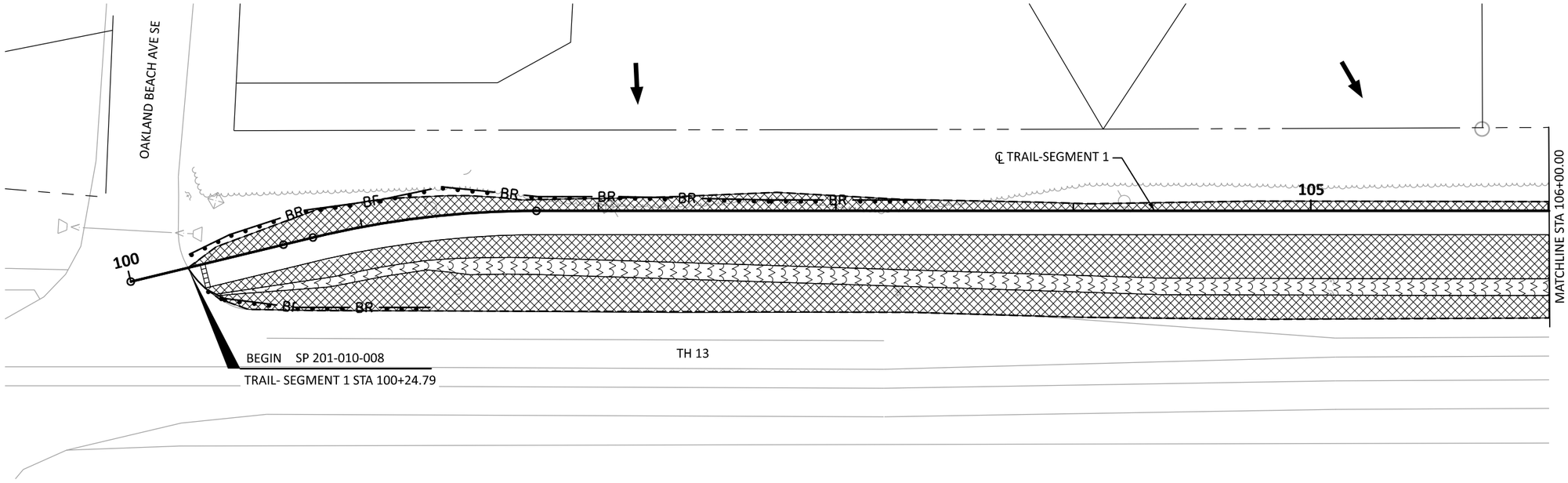
3. DISTURBED SOILS WITHIN 200' OF WETLAND OR SURFACE WATER NEED STABILIZATION WITHIN 24 HOURS OF COMPLETETION OR INACTIVITY.

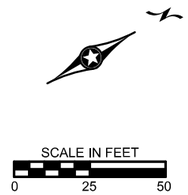
EROSION CONTROL LEGEND

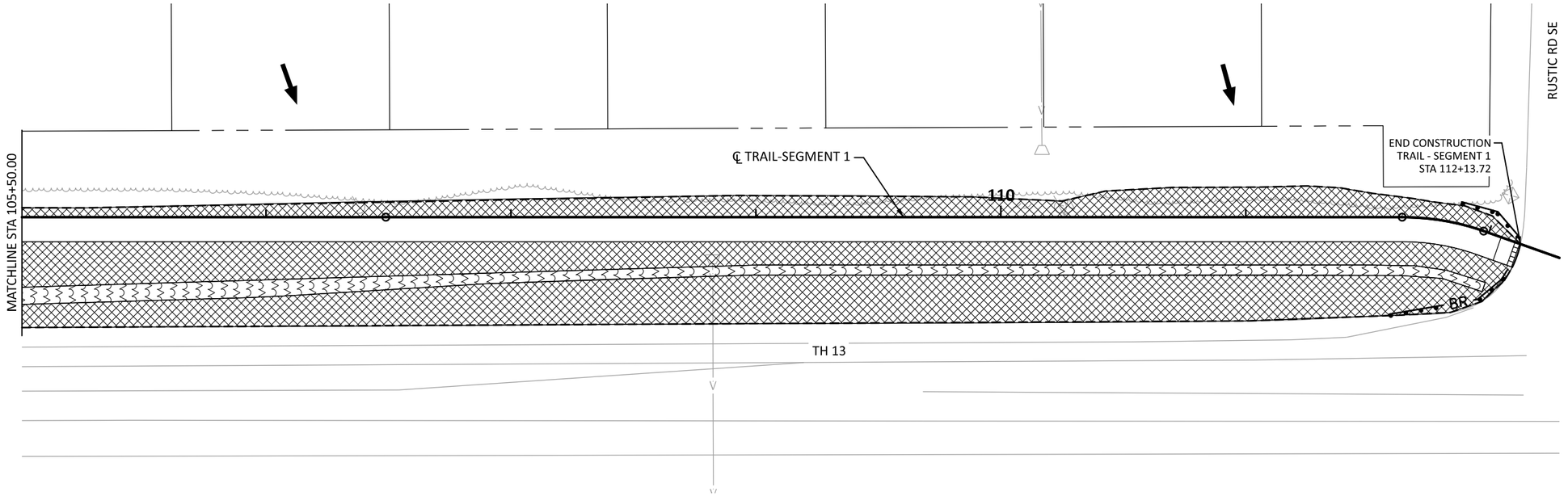
- WETLAND BOUNDARY
- BR — SEDIMENT CONTROL LOG TYPE WOOD FIBER
- MS — SEDIMENT CONTROL SILT FENCE
- CP — CULVERT END OUTLET PROTECTION
- STORM DRAIN INLET PROTECTION
- FLOW ARROW
- DITCH CHECK
- CONSTRUCTION LIMITS
- RIGHT OF WAY
- TEMPORARY EASEMENT

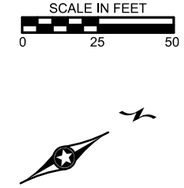
	PERMANENT:	TEMPORARY:
	SEED MESIC INSLOPE (65 LBS/ACRE) FERTILIZER TYPE 3 (SLOW RELEASE; 22-5-10) HYDRAULIC STABILIZED FIBER MATRIX (3000 LB/ACRE)	HYDRAULIC STABILIZED FIBER MATRIX (3000 LBS/ACRE)
	PERMANENT: SEED SOUTHERN SHORTGRASS ROADSIDE (26 LBS/ACRE) FERTILIZER TYPE 3 (SLOW RELEASE; 22-5-10) ROLLED EROSION PREVENTION CATEGORY 25	TEMPORARY: RAPID STABILIZATION METHOD 4
	PERMANENT: SEED WET DITCH (20 LBS/ACRE) FERTILIZER TYPE 4 (120 LBS/ACRE, 18-1-18) ROLLED EROSION PREVENTION CATEGORY 25	TEMPORARY: SEED OATS (100 LBS/ACRE) FERTILIZER TYPE 3 (SLOW RELEASE; 22-5-10) ROLLED EROSION PREVENTION CATEGORY 25
	PERMANENT: RESIDENTIAL TURFGRASS (200 LBS/ACRE) (20 LBS/ACRE) FERTILIZER TYPE 3 (SLOW RELEASE;22-5-10) HYDRAULIC STABILIZED FIBER MATRIX (3000 LB/ACRE)	TEMPORARY: HYDRAULIC STABILIZED FIBER MATRIX (3000 LBS/ACRE)

DRAWN BY: MKV DESIGNED BY: MKV CHECKED BY: KH	I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. SIGNATURE: PRINTED NAME: MARCUS VANDERBRUG, P.E. DATE: 10/7/2024 LIC. NO. 56164	wsb	City of Prior Lake **TH 13 Trail** Prior Lake, Minnesota	TURF ESTABLISHMENT & EROSION CONTROL PLAN	SP 201-010-008 Sheet No. 76 of 86 Sheets









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City of Prior Lake
TH 13 Trail
Prior Lake, Minnesota

TURF ESTABLISHMENT & EROSION CONTROL PLAN

SP 201-010-008

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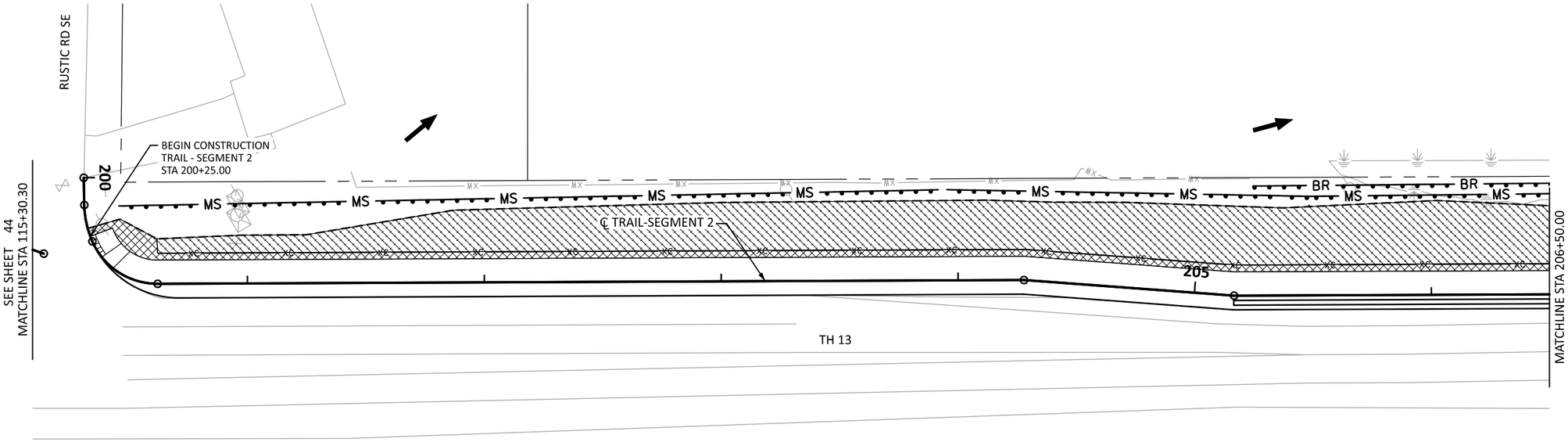

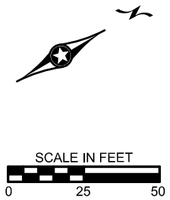

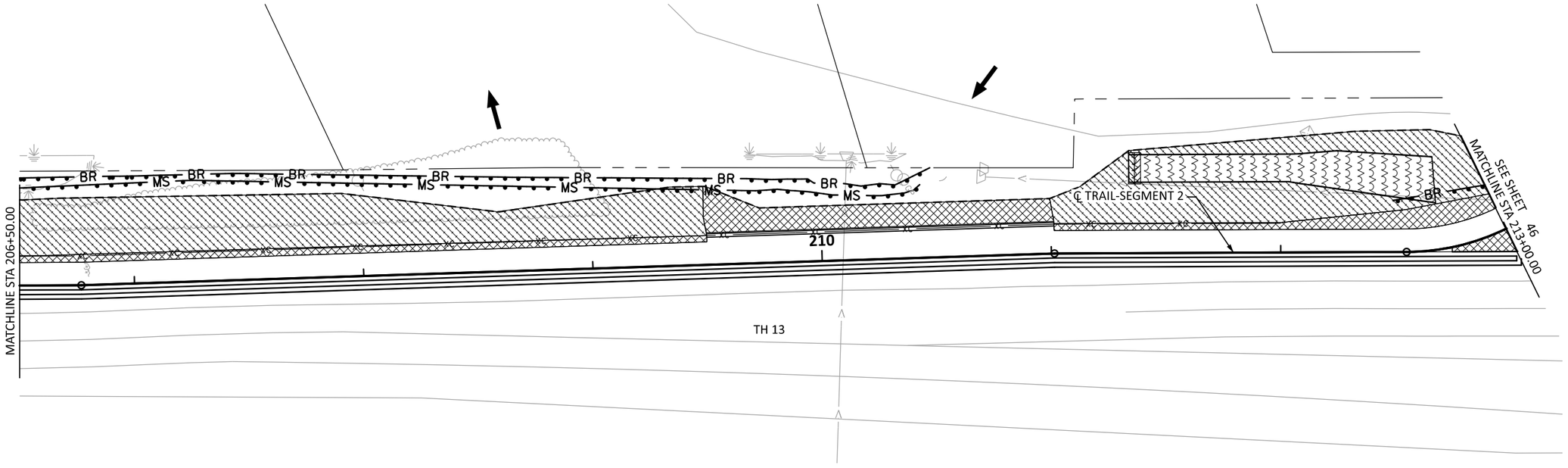

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City of Prior Lake
TH 13 Trail
Prior Lake, Minnesota

TURF ESTABLISHMENT & EROSION CONTROL PLAN

SP 201-010-008

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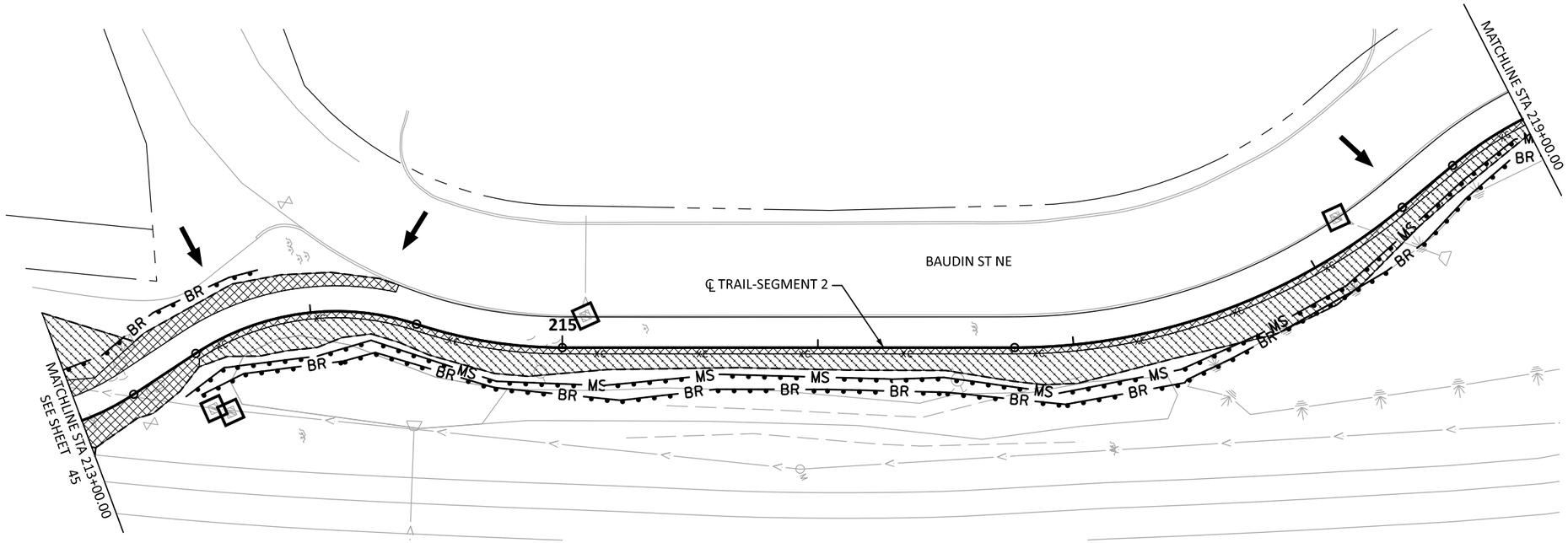

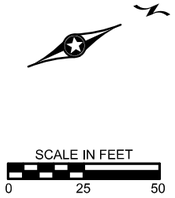

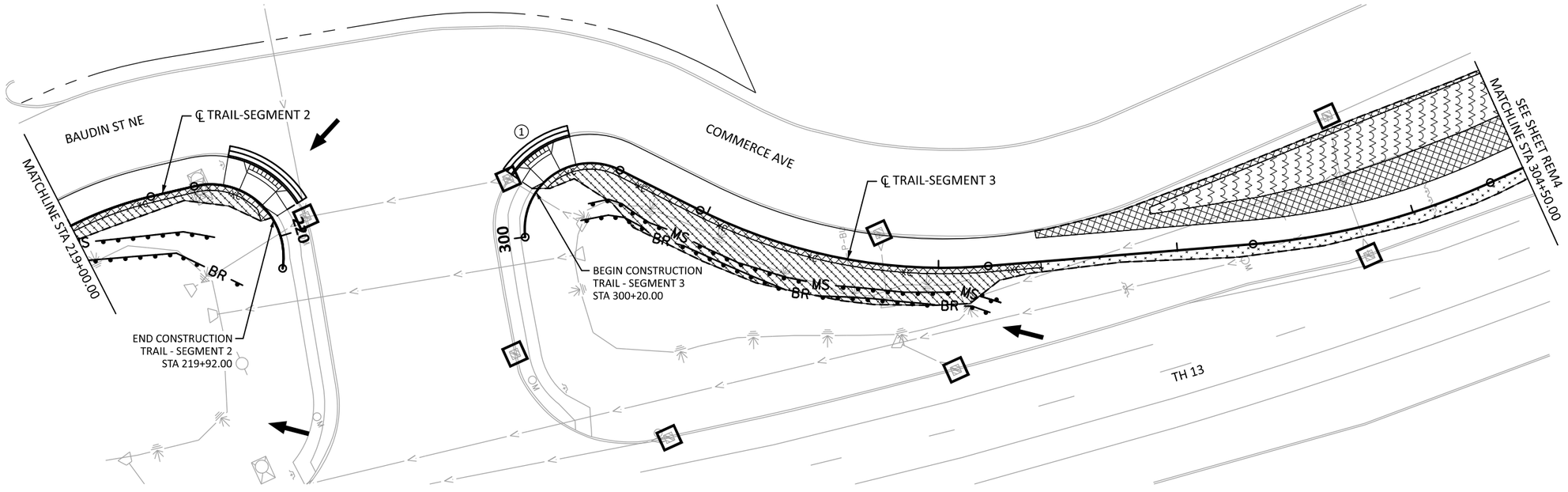

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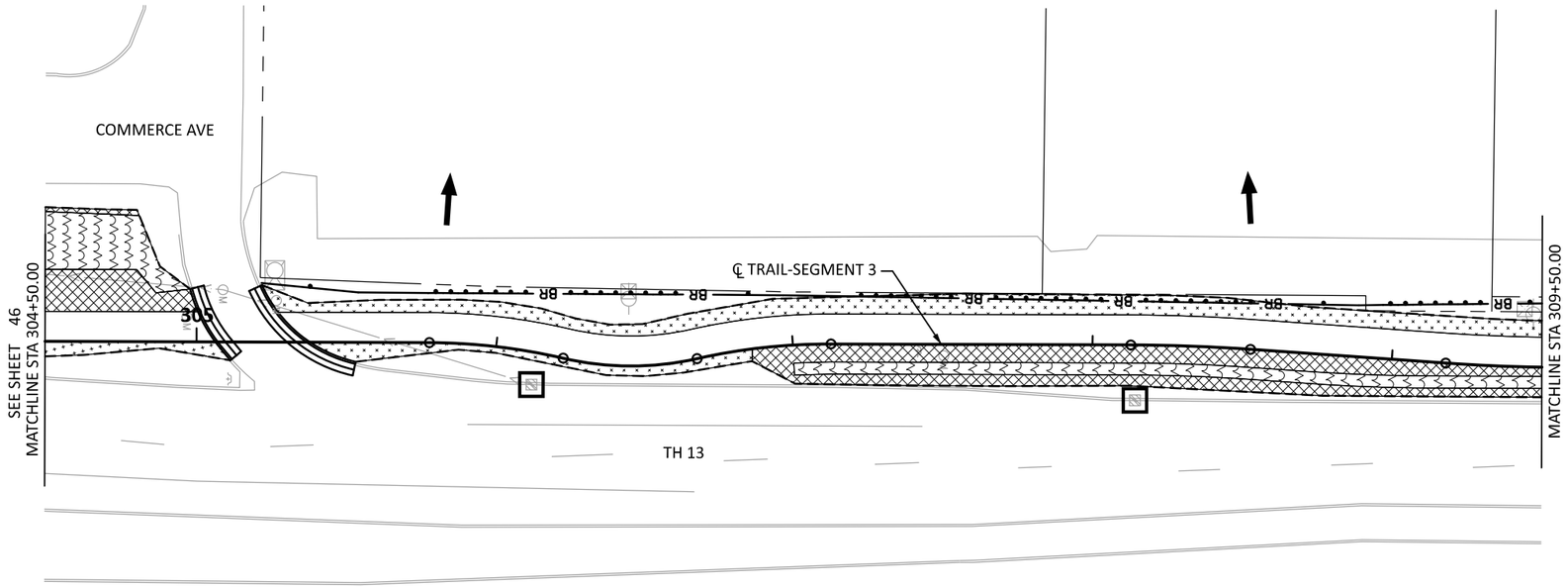
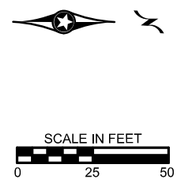
City of Prior Lake
TH 13 Trail
Prior Lake, Minnesota

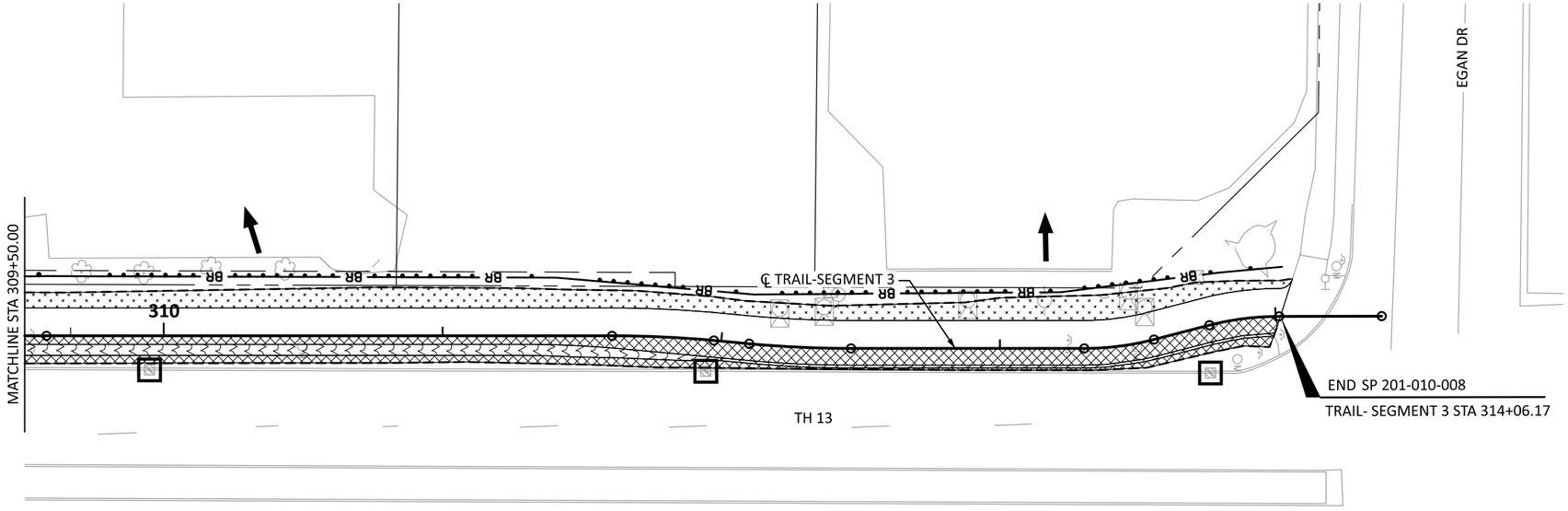
TURF ESTABLISHMENT & EROSION CONTROL PLAN

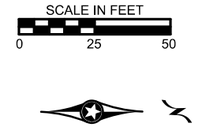
SP 201-010-008

Sheet No. 79 of 86 Sheets









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City of Prior Lake
TH 13 Trail
Prior Lake, Minnesota

TURF ESTABLISHMENT & EROSION CONTROL PLAN

SP 201-010-008

Sheet No. 80 of 86 Sheets

PRIOR LAKE SPRING LAKE WATERSHED DISTRICT
Financial Report - Cash Basis
January 1, 2024 Through November 30, 2024

Reflects bills paid through November 30, 2024

Program Element		2024 Source of Funds					2024 Actual Results		
		2024 Levy	Budget Reserve	Grant Funds/Fees	Budget Adjustment	2024 Budget	November 2024	YTD	YTD % of Budget
	General Fund (Administration)								
	Revenues								
	Property Taxes	$ 252,000	$ -	$ -		$ 252,000	$ -	$ 129,170	51%
	Interest	-	-	9,000		9,000	-	7,469	83%
	Total Revenues	**$ 252,000**	**$ -**	**$ 9,000**	**$ -**	**$ 261,000**	-	**136,640**	52%
	Expenditures								
	Administrative Salaries and Benefits	$ 145,000	$ -	$ -		$ 145,000	6,294	125,318	86%
	703 · Telephone, Internet & IT Support	7,000	-	9,000		16,000	1,212	11,822	74%
	702 - Rent	27,500	-	-		27,500	2,459	27,661	101%
	706 · Office Supplies	8,000	-	-		8,000	253	5,802	73%
	709 · Insurance and Bonds	13,000	-	-		13,000	-	11,799	91%
	670 · Accounting	33,500	-	-		33,500	2,695	25,695	77%
	671 · Audit	10,500	-	-		10,500	-	10,500	100%
	901- Mailings	-	-	-		-	-	-	#DIV/0!
	903 · Fees, Dues, and Subscriptions	1,500	-	-		1,500	-	1,479	99%
	660 · Legal (not for projects)	6,000	-	-		6,000	323	7,175	120%
	General Fund (Administration) Expenditures	**$ 252,000**	**$ -**	**$ 9,000**		**$ 261,000**	**13,236**	**227,251**	87%
	Net Change in General Fund	-	-	-	-	-	**(13,236)**	**(90,612)**	

No assurance is provided on this statement. See selected information.

PRIOR LAKE SPRING LAKE WATERSHED DISTRICT

Financial Report - Cash Basis

January 1, 2024 Through November 30, 2024

Reflects bills paid through November 30, 2024

Program Element		2024 Source of Funds					2024 Actual Results		
		2024 Levy	Budget Reserve	Funds/Fees	Budget Adjustment	2024 Budget	November 2024	YTD	YTD % of Budget
	Implementation Fund								
	Revenues								
	Property Taxes	$ 1,697,000	$ -	$ -		$ 1,697,000	-	865,967	51%
	Grants/Fees	-	-	34,000	75,000	109,000	-	150,903	138%
	Interest	-	-	61,000		61,000	6,307	128,671	211%
	Sales/Other	-	-	-		-	-	39,879	#DIV/0!
	Budget Reserves	-	$ 468,500	-	54,856	523,356	-	-	0%
	Total Revenues	**$ 1,697,000**	**$ 468,500**	**$ 95,000**	**$ 129,856**	**$ 2,390,356**	**6,307**	**1,185,419**	50%
	Expenditures								
	Program Salaries and Benefits (not JPA/MOA)	$ 490,500	$ -	$ -	$ (5,000)	$ 485,500	**33,214**	**398,716**	82%
Water Qual	550 Public Infrastructure Partnership Projects	$ -	$ -	$ -	$ -	$ -	-		#DIV/0!
Water Qual	550 - Buck Stream				$ 223,400	$ 223,400	135,338	147,216	66%
Water Qual	550 - Swamp Lake				$ 61,000	$ 61,000	-	40,015	66%
Water Qual	550 - FeCl Site Improvements					$ -	4,636	33,848	#DIV/0!
Water Qual	611 Farmer-led Council	55,000	-	-		55,000	5,985	36,555	66%
Water Qual	611 Cost-Share Incentives	68,000	-	-		68,000	17,559	40,476	60%
Water Qual	611 Highway 13 Wetland, FeCl system & Desilt, O&M	244,000	-	61,000		305,000	3,057	69,569	23%
Water Qual	611 Carp Management	96,500	-	-		96,500	5,072	43,158	45%
Water Qual	611 Spring Lake Demonstration Project Maintenance	1,200	-	-		1,200	14	1,089	91%
Water Qual	611 Alum Internal Loading Reserve	230,000	-	-	-	230,000	2,156	3,517	2%
Water Qual	611 Fish Stocking	2,000	-	-		2,000		2,500	125%
Water Qual	637 District Monitoring Program	84,500	-	-		84,500	3,076	44,075	52%
Water Qual	626 Planning and Program Development	27,500	-	-		27,500	8,826	23,519	86%
Water Qual	626 LGU Plan Review	-	4,000	-		4,000	-	832	21%
Water Qual	626 Engineering not for programs	20,000	-	-		20,000	1,183	13,379	67%
Water Qual	648 Permitting and Compliance	57,000	-	5,000		62,000	5,810	40,538	65%
Water Qual	648 Update MOAs with cities & county	-	5,000	-		5,000	-		0%
Water Qual	648 BMP and easement inventory & inspections	25,000	-	2,000	20,875	47,875	6,431	27,105	57%
Water Qual	626 Lake Ridge Stormwater Feasability Study	-	-	-	-	-	54	54	#DIV/0!
Water Qual	626 Upper Watershed Projects	194,000	442,000	-	(209,400)	426,600	5,946	64,388	15%
Water Qual	626 District Plan Update	-	2,500			2,500	-	455	18%
	WQ TOTAL	**$ 1,104,700**	**$ 453,500**	**$ 68,000**	**$ 95,875**	**$ 1,722,075**	**208,617**	**636,749**	37%
Water Storage	550 District-wide Hydraulic & Hydrologic model	$ 5,000	$ -	$ -		$ 5,000	-	-	0%
Water Storage	626 Comprehensive Wetland Plan Update	35,500			-	35,500	-	-	0%
	WS TOTAL	**$ 40,500**	**$ -**	**$ -**	**$ -**	**$ 40,500**	**-**	**-**	0%
AIS	611 Aquatic Vegetation Mgmt	2,000	-	$ 12,000	$ 3,500	$ 17,500	-	17,455	100%
AIS	637 Automated Vegetation Monitoring (BioBase)	$ 1,300	-	-		1,300	-	-	0%
AIS	637 Aquatic Vegetation Surveys	15,500	-	-	(3,500)	12,000	-		0%
AIS	637 Boat inspections on Spring, Upper & Lower Prior	19,000	-	15,000	-	34,000	-	32,861	97%
	AIS TOTAL	**37,800**	**-**	**27,000**	**-**	**64,800**	**-**	**50,317**	78%
Ed & Out	652 Education and Outreach Program	$ 23,500	$ 15,000	$ -		$ 38,500	1,569	29,439	76%
	E&O TOTAL	**$ 23,500**	**$ 15,000**	**$ -**	**$ -**	**$ 38,500**	**$ 1,569**	**$ 29,439**	76%
	PLOC Contribution		**$ -**	**$ -**	**$ 38,981**	**$ 38,981**	**-**	**38,981**	100%
	Debt Payment Reserve		-	-		-	-	-	#DIV/0!
	Total Implementation Fund	**$ 1,697,000**	**$ 468,500**	**$ 95,000**	**$ 129,856**	**$ 2,390,356**	**243,400**	**1,154,202**	48%
	Net Change in Fund Balance Implementation Fund	**-**	**-**	**-**	**-**	**-**	**(237,093)**	**31,216**	

	Grant Funds/Fees Anticipated				2024 Budget
	Interest Income (general fund & Implementation fund)			$ 70,000	$ 70,000
	648 New Easement Acquisition Fees			5,000	5,000
Water Qual	**648 Easement amendment/violations fees**			2,000	2,000
AIS	**611 Aquatic Vegetation Mgmt. (Scott County)**			27,000	27,000
Water Storage	**550 Buck Stream (SWCD Grant)**			75,000	75,000
	Total Grant Funds/Fees Anticipated			**$ 179,000**	**$ 179,000**

Budget Summary	Fund Sources/Fund Expenditures	2024 Levy	Budget Reserves	Grants/Rev	Amendments	Budget Total	2023 Levy	Levy Increase	% Increase
	General Fund	$ 252,000		$ 9,000	$ -	$ 261,000	249,200		
	Implementation Fund	$ 1,697,000	$ 468,500	$ 95,000	$ 129,856	$ 2,390,356	1,670,736		
	Total Fund Sources	**$ 1,949,000**	**$ 468,500**	**$ 104,000**	**$ 129,856**	**$ 2,651,356**	**1,919,936**	**$ 29,064**	**1.5%**
	Expenditures								
	General Fund					261,000			
	Implementation Fund					2,390,356			
	Total Expenditures					**2,651,356**			

Fund Balance Commitments/Assingments		2024 (Budget)				
		12-31-23 Bal	Additions	Reductions	Amendments	12-31-24 Bal
	611 Alum Internal Loading Reserve	$ 700,000	$ 230,000	$ -	$ -	$ 930,000
	626 Upper Watershed Projects	$ 442,000	$ 194,000	$ (636,000)	$ -	$ -
	Debt Payment Reserve	$ 180,000	$ -	$ -	$ -	$ 180,000
		$ 1,322,000	**$ 424,000**	**$ (636,000)**	**$ -**	**$ 1,110,000**

No assurance is provided on this statement. See selected information.

PLSLWD Monthly Treasurers Report Treasurer: Christian Morkeberg

Account balances as of 11/30/24

4M Fund (Checking Account)	$	1,479,335
4M Fixed Income	$	1,905,150
Total Uncleared Transactions	$	-
SUBTOTAL	**$**	**3,384,485**

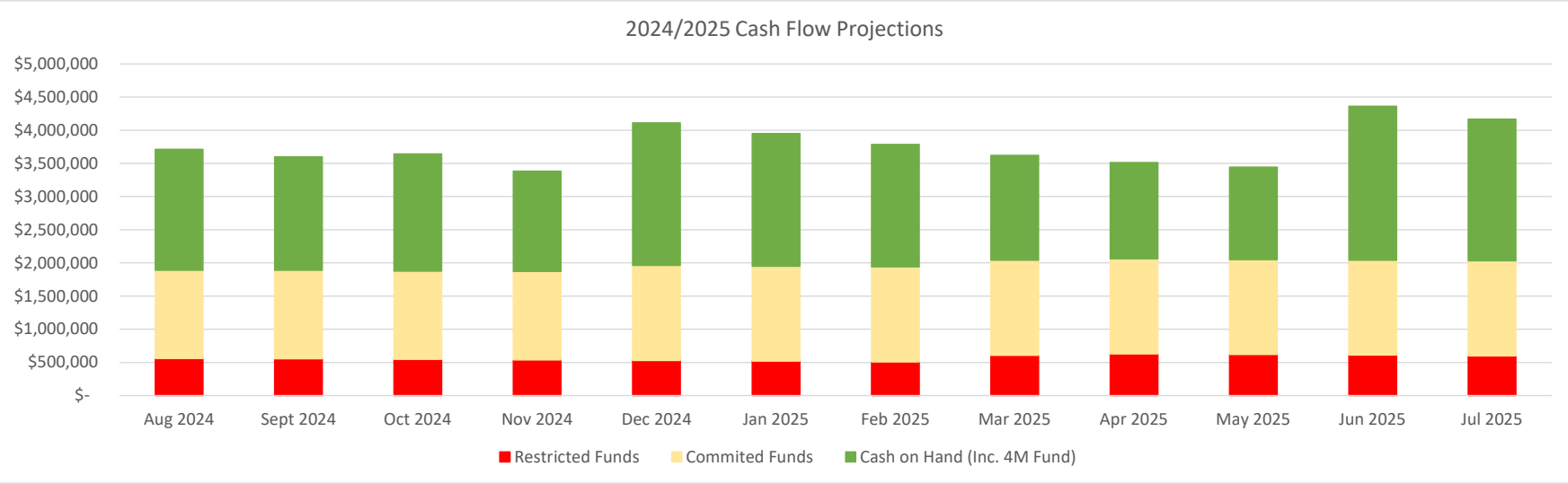
RESTRICTED/COMMITTED FUNDS		
Restricted - Permit Deposits, etc. (350 & 360)	$	120,026
Restricted - PLOC Contingency Reserve (850)	$	255,434
Restricted - PLOC O&M Funds (830)	$	163,850
Committed - Alum Internal Loading Reserve	$	700,000
Committed - Upper Watershed Fund Balance	$	442,000
Committed - Debt Payment	$	180,000
TOTAL DISTRICT/PLOC RESTRICTED OBLIGATIONS	**$**	**1,861,310**

Available cash at end of November 2024	**$**	**1,523,175**
57.4%	*of 2024 Amended Budget*	

No assurance is provided on this statement. See selected information.

Cash Flow Chart

Month (End of Month)	Aug 2024	Sept 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025
Restricted Funds	$ 558,009	$ 556,969	$ 545,873	$ 539,310	$ 529,460	$ 519,460	$ 509,460	$ 607,585	$ 630,021	$ 620,021	$ 610,021	$ 600,021
Commited Funds	$ 1,332,000	$ 1,332,000	$ 1,332,000	$ 1,332,000	$ 1,431,400	$ 1,431,400	$ 1,431,400	$ 1,431,400	$ 1,431,400	$ 1,431,400	$ 1,431,400	$ 1,431,400
Cash on Hand (Inc. 4M Fund)	$ 1,823,480	$ 1,712,110	$ 1,763,504	$ 1,513,175	$ 2,149,196	$ 2,001,686	$ 1,847,126	$ 1,584,441	$ 1,452,781	$ 1,391,695	$ 2,320,859	$ 2,134,916
Total Cash on Hand	$ 3,713,489	$ 3,601,079	$ 3,641,377	$ 3,384,485	$ 4,110,056	$ 3,952,546	$ 3,787,986	$ 3,623,426	$ 3,514,202	$ 3,443,116	$ 4,362,280	$ 4,166,337



Draft Amounts subject to chanbge during audit preparation

No assurance is provided on these financial statements. See selected information

PLSL Watershed District

Cash Minimum Balance Alert $ 150,000

	Aug 2024	Sept 2024	Oct 2024	Nov 2024	Dec 2024	2024 Total	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025	Total Jan-Jul 2025
Cash on hand (beginning of month)	$ 3,895,010	$ 3,713,489	$ 3,601,079	$ 3,641,377	$ 3,384,485		$ 4,110,056	$ 3,952,546	$ 3,787,986	$ 3,623,426	$ 3,514,202	$ 3,443,116	$ 4,362,280	
Cash Receipts														
Property Tax Levy	$ -	$ -	$ 573	$ -	$ 888,576	$ 889,149	$ 7,050	$ -	$ -	$ -	$ -	$ 1,060,424	$ -	$ 1,067,474
BWSR WBIF	-	-	104,968	-	-	104,968	-	-	-	-	83,974	-	-	83,974
Grants - Other	-	-	27,000	-	-	27,000	-	-	-	-	9,500	-	-	9,500
PLOC Contributions	-	-	-	-	-	-	-	-	108,125	32,436	-	-	-	140,561
Interest Income	8,473	7,361	32,534	6,307	33,600	97,349	7,100	7,100	7,100	30,000	7,100	30,400	7,100	95,900
Other Receipts	8,000	-	84	-	-	41,297	375	375	375	375	375	375	375	2,625
Total Cash Reciepts	$ 16,473	$ 7,361	$ 165,159	$ 6,307	$ 922,176	$ 1,159,763	$ 14,525	$ 7,475	$ 115,600	$ 62,811	$ 100,949	$ 1,091,199	$ 7,475	$ 1,400,034
Total Cash Available	$ 3,911,483	$ 3,720,850	$ 3,766,238	$ 3,647,684	$ 4,306,661		$ 4,124,581	$ 3,960,021	$ 3,903,586	$ 3,686,237	$ 3,615,151	$ 4,534,315	$ 4,369,755	
Cash Paid Out														
Salaries and Per Diems	$ 45,704	$ 48,834	$ 48,353	$ 39,512	$ 47,300	$ 296,712	$ 51,660	$ 51,660	$ 51,660	$ 51,660	$ 51,660	$ 51,660	$ 51,660	$ 361,620
Office Expense, Audit, Accounting	6,979	7,251	7,520	14,647	7,058	47,996	10,375	10,375	10,375	10,375	10,375	10,375	10,375	72,625
PLSLWSD Program Costs	116,368	58,051	57,892	202,477	132,397	631,166	100,000	100,000	100,000	100,000	100,000	100,000	131,383	731,383
PLOC Contribution						-			108,125		-	-	-	108,125
PLOC Operations	3,729	5,635	11,096	6,563	9,850	46,277	10,000	10,000	10,000	10,000	10,000	10,000	10,000	70,000
Debt Service						-	-	-	-	-	-	-	-	-
Other Disbursements	$ 25,213					25,213								-
Subtotal	$ 197,994	$ 119,771	$ 124,861	$ 263,199	$ 196,605	$ 1,022,152	$ 172,035	$ 172,035	$ 280,160	$ 172,035	$ 172,035	$ 172,035	$ 203,418	$ 1,343,753
Cash on Hand (end of month)	$ 3,713,489	$ 3,601,079	$ 3,641,377	$ 3,384,485	$ 4,110,056		$ 3,952,546	$ 3,787,986	$ 3,623,426	$ 3,514,202	$ 3,443,116	$ 4,362,280	$ 4,166,337	

Draft amounts subject to change during audit

No assurance is provided on these financial statements

PLSLWD
Cost Analysis
Year to Date 11/30/2024

	Year to Date 11/30/2024 Amount	% of total
Program staff costs	**398,716**	**28.9%**
Consultants		
EOR	154,230	
Blue Water Science	6,600	
Hawkins, Inc.	25,485	
WSB & Associates	37,480	
Scott Soil and Water Cons.	135,893	
RMB Environmental Labs	31,578	
HDR Engineering Inc.	20,258	
Waterfront Resorations	29,985	
PLM	10,747	
Vessco	6,090	
Kisters North America	5,400	
	458,346	**33.2%**
Hard costs, exclusive of prog staff & consultant costs	258,158	
	258,158	**18.7%**
Overhead and Administration		
Staff costs	125,318	
Audit/Accounting/Legal	43,370	
Other admin overhead	48,890	
IT Support (Rymark)	9,674	
	227,251	**16.5%**
Bonds payments	**-**	**0.0%**
PLOC Contribution	38,981	**2.8%**
Expenses excluding PLOC expenses per manager report	**1,381,454**	**100.0%**

No assurance is provided on this statement. See selected information.
This statement omits required disclosures.
This statement is prepared on the cash basis of accounting.

PRIOR LAKE SPRING LAKE WATERSHED DISTRICT

WORKSHOP MEETING MINUTES
Tuesday, November 19, 2024
Prior Lake City Hall
4:00 PM

Members Present:	Bruce Loney, Frank Boyles, Ben Burnett, Christian Morkeberg, Matt Tofanelli
Staff & Consultants Present:	Joni Giese, District Administrator Emily Dick, Water Resources Project Manager Carl Almer, EOR, District
Others Present:	Lisa Quinn, Spring Lake Township Jim Fitzsimmons, Scott SWCD Loren Hanson, Citizen Advisory Committee

The meeting was called to order at 4:00 PM.

Proposed 2025 Budget Options
After the Board approved a 6% increase levy at the September Board meeting, the Board requested that staff prepare some modified options at different rate increases. District Administrator Giese gave an overview of several options for the 2025 Budget ranging from 3-6% levy increases. While developing those alternate approaches, staff also needed to add additional funds for the higher costs of the Ferric Chloride site improvements, and the engineering work for the Highway 13 Excavation project. While accounting for these additional items, several options were proposed utilizing a range of budget reserves. Project Manager Emily Dick also presented a draft long-term outlook of capital project costs. Overall, the Board had mixed opinions ranging from 5-6%. District Administrator will bring forward a resolution for both 5 and 6% at the December meeting.

Minnesota Watersheds Annual Business Meeting & Proposed Resolutions
Administrator Giese presented the recommended resolutions that will be brought forward for vote at the annual business meeting of Minnesota Watersheds. The topics ranged from chloride regulation, calcareous fen management, public noticing, acquisition buyouts, DNR regulatory positions, and permit review time limits. Manager Boyles made a motion to follow the committee recommendations unless a Board manager learns some new information which changes their outlook, Second by Christian Morkeberg. All ayes. Motion carries 5-0.

Minnesota Watersheds Committee Positions
Minnesota Watersheds' annual meeting also includes regional caucuses in which committees are established for the following year by the Minnesota Watershed Board of Directors. Board managers can serve on a statewide committee for a year-long term. Committees must consist of a board manager and a district administrator from each region, totaling at least six members. Committee responsibilities vary but can be as low as one meeting a year. Managers can volunteer for a committee without being at the regional caucus. Manager Boyles and Manager Burnett were interested in the legislative and resolution committees, respectively.

Administrator Report
- There is a tentative move-in date to City Hall at the beginning of February. Staff also had a chance to reconfigure cubicles and were able to repurpose the vast majority of existing equipment.
- Legislators meeting to be scheduled with interested managers soon now that the election has passed. This would focus on District priorities and relationship building in the coming year.
- Have been working to establish equivalency agreements with local government units in the District, and that progress has been difficult to complete with other Administrator responsibilities. If capacity continues to be an issue, there may be a need for a consultant to complete this work.
- Had communications with MPCA about MS4 permit and clarifying applicability of MS4 for a watershed district.
- There was an intruder in the Fire Station about a week ago and some staff items went missing. The investigation is wrapping up, and the County Attorney will determine if they should press burglary charges.

Liaison Updates
<u>District Partner Reports</u>
- *Spring Lake Township*- The Township has had experience with spending down their reserves and stated having adequate reserves is in the District's best interest. Have been working on planning for the Lydia area. There has been discussion on County Ditch 13. Dock structure from Spring Lake Regional Park is moved into a bay over winter and there has been some resident concerns.
- *Scott SWCD*- Assisting over 40 District landowners, 30 are planning to install a project. Four major projects under construction, including Buck stream stabilization, grade stabilization structures on CD-10, and shoreline stabilization on Spring Lake. A new state grant will bring in roughly $60,000 for water quality projects. Conservation easement inspections have been conducted and violations were noted. Two major violations will be discussed at today's meeting.
- *CAC*- No CAC updates, expressed appreciation for work of the board.

<u>Manager Liaison Reports</u>
- *CAC*- Bringing forward new CAC member application at tonight's meeting.
- *Scott SWCD*- None.

- *Lower Minnesota Watershed District*- Public listening session on January 8th 1-4 pm to get feedback on flooding issues, etc.
- *Sand Creek Township*- None.
- *Spring Lake Township*- An issue with a wetland drainage was brought up.
- *Scott WMO*- Budget is drafted at 6.8% increase. They are dipping into reserves. Working on MOA and AIS prevention plan.
- *Shakopee*- None.
- *SCALE*- Postpone until 2025 legislative priorities have been distributed.
- *Scott County*- Passed more funding for a second phase of the Spring Lake Regional Park.
- *Metro Watersheds*- None.
- *PLOC Cooperators*- Meeting yesterday with reports on vegetation maintenance and easement records report. Finances are looking good.
- *Farmer-Led Council*- None.

Respectfully Submitted,
Emily Dick
11/19/2024

REGULAR MEETING MINUTES
Tuesday, November 19, 2024
Prior Lake City Hall
6:00 PM

Members Present: Bruce Loney, Christian Morkeberg, Frank Boyles, Matt Tofanelli, Ben Burnett

Staff & Consultants Present: Joni Giese, District Administrator
Jeff Anderson, Water Resources Coordinator
Emily Dick, Water Resources Project Manager
Danielle Studer, Water Resources Specialist
Carl Almer, EOR, District Engineer

Others Present: Chuck Holtman, District Lawyer
Troy Kuphal, SWCD
Aaron Pietsch, new CAC Member
Gwendolyn Brandt (3410 200 ST E PRIOR LAKE, MN 55372), Brian Brandt, and Mrs. Brian Brandt

- **1.0 CALL TO ORDER & PLEDGE OF ALLEGIANCE:**
  President Loney called the meeting to order at 6:00 pm. Everyone present recited the Pledge of Allegiance.

- **2.0 PUBLIC COMMENT**
  None

- **PM PUBLIC HEARING – Capital Improvement Project: 200th Street Pond Improvements**
  - Motion to open Public Hearing by Mgr. Burnett; 2nd by Mgr. Tofanelli; Passed 5-0.
  - Emily Dick presented an overview of the project.
  - Mrs. Gwendolyn Brandt (3410 200 ST E PRIOR LAKE, MN 55372) and her son (Brian Brandt) expressed their concern with the project affecting the drain tile they have in place and the easement for that drain tile. The tile lines starts at the Lake Ridge Estates development, goes under Hwy 10 and then along Hwy 10, where it then crosses CR 81 and outlets in a low area. Mrs. Brandt indicated she has mapping showing the location of tile easement. Manager Loney stated staff would contact Mrs. Brandt to learn more about the tile line when project design starts.
  - Motion to close Public Hearing by Mgr. Morkeberg; 2nd by Mgr. Burnett; Passed 5-0.

- **PUBLIC HEARING – Capital Improvement Project: Prior Lake Outlet Channel Pipelining**
  - Motion to open Public Hearing by Mgr. Burnett; 2nd by Mgr. Tofanelli; Passed 5-0.
  - Emily Dick presented an overview of the project.
  - No public comments
  - Motion to close Public Hearing by Mgr. Boyles; 2nd by Mgr. Burnett; Passed 5-0.

- **3.0 APPROVAL OF AGENDA**
  - Motion to approve agenda by Manager Tofanelli; 2nd by Manager Burnett; passed 5-0.

- **4.0 OTHER OLD/NEW BUSINESS**

4.1 Approval of new CAC Member

- Danielle Studer introduced Aaron Pietsch. Aaron came up to the podium, he lives near Hwy 13 and CR 42. He has a background and interest in Environmental Engineering, and is interested in outdoor activities.
- Managers welcomed Aaron to the CAC.
- Motion to approve Aaron's CAC appointment by Manager Morkeberg; 2nd by Manager Tofanelli; passed 5-0.

4.2 Spring Lake Regional Park Easement Amendment

- Troy Kuphal, from Scott SWCD, presented a description of the Easement Amendment.
- Manager Morkeberg motioned to Authorize the District Administrator to pursue amending Conservation Easement Document A758596 (The Bluffs of Northwood Meadows) on Parcel ID 254590780, owned by Scott County Parks Department.
- The motion was seconded by Manager Burnett; and passed 5-0.

4.3 Kohlenberger Conservation Easement Encroachment Agreement

- Troy Kuphal, from Scott SWCD, described the Easement Encroachment Agreement.
- There were some questions about costs; PLSLWD will cover the costs this time, which included working with Chuck Holtman, District legal counsel, to create a template for future encroachment agreements that staff will use in the future.
- Manager Morkeberg motioned to approve the Kohlenberger Encroachment Agreement to Conservation Easement A738855 for execution by the District Administrator, with any further non-substantive changes on advice of legal counsel, subject to the receipt of a signed and notarized Encroachment Agreement from the property owners, Maureen G. McKay-Kohlenberger and Donald E. Kohlenberger.
- The motion was seconded by Manager Burnett; and passed 5-0.

4.4 Programs & Projects Update

- Staff provided a report of its many activities the preceding month, and some upcoming events. Some highlights:

- Some Lake Level recovery from recent rainfall was reported
- Carp Management focus on Spring Lake this winter
- Buck stream project is mostly done, PLSLWD will be responsible for vegetation maintenance for two years. After two years, maintenance will be the responsibility of the property owners.

4.5 Ferric Chloride Building Improvements Contractor Award

- Emily Dick presented staff's recommendation for contractor award.
- There was manager discussion about splitting the drive improvements and building improvements into two separate quote requests per manager direction at the October board meeting. Previous quote combined both the building and drive improvements in one quote request.
- Manager Boyles motioned to authorize the District Administrator to enter into a contract with Total Mechanical Services for the construction of FeCl Building Improvements, in the amount of $234,350, on the advice of counsel, and to manage and return outstanding bid bonds, and to authorize the District Administrator to enter into change orders in an aggregate amount not to exceed $23,450 (or 10% of the contract amount).
- The motion was seconded by Manager Burnett; and passed 5-0.

4.6 Ferric Chloride Drive Improvements Contractor Award (Vote)

- Emily Dick presented staff's recommendation for contractor award.
- Manager Morkeberg motioned to approve the contract with Finch Excavating for the construction of FeCl Drive Improvements, in an amount not to exceed $20,158.05, for District Administrator execution and with any further non-substantive changes on the advice of legal counsel, and authorize the District Administrator to enter into change orders in an aggregate amount not to exceed $2,015 (10%, of the contract NTE).
- The motion was seconded by Manager Boyles; and passed 5-0.

- **5.0 TREASURER'S REPORT**

Treasurer Morkeberg summarized the financial information contained in the packet including:

5.1 Monthly Financial Reports

- Financial Report
- Treasurers Report
- Cash Flow Projections
- Cost Analysis

- **6.0 CONSENT AGENDA**

The consent agenda is considered as one item of business. It consists of routine administrative items or items not requiring discussion. Items can be removed from the consent agenda at the request of the Board member, staff member, or a member of the audience. Please state which item or items you wish to remove for a separate discussion.

6.1 Meeting Minutes – October 15, 2024, Board Workshop
6.2 Meeting Minutes – October 15, 2024, Board Meeting

6.3 Claims List and Bank Purchase Card Expenditures Summary
6.4 EOR Amended Scope of Work: FeCl3 Site Improvements

- Motion to approve consent agenda by Manager Tofanelli; 2nd by Manager Burnett; Passed 5-0.

- **7.0 UPCOMING MEETING/EVENT SCHEDULE:**
  - Board of Managers Workshop, Tuesday, December 17, 2024, 4:00 pm (Prior Lake City Hall – Parkview Conference Room)
  - Board of Managers Meeting, Tuesday, December 17, 2024, 6:00 pm (Prior Lake City Hall – Council Chambers)
  - CAC Meeting, Thursday, December 19, 2024, 6:00 pm (Prior Lake Library Large Meeting Room

- **8.0 ADJOURNMENT**
  - Motion to adjourn by Manager Burnett; 2nd by Manager Morkeberg; Passed 5-0.
  - Meeting adjourned at 7:31 pm.

Respectfully Submitted,
Ben Burnett, PLSLWD Secretary, 12/10/2024.

Prior Lake Spring Lake Watershed District
Claims list for Invoice Payments due for the prior month

Managers will consider approving this claims list - Staff payroll and benefits, Manager per diems, and Health insurance premiums have already been paid via ACH transfers. After the managers vote, two Managers will approve individual payments via BILL within three days of the meeting for approved claims. Then, staff will release payment via BILL to the claims list parties.

Vendor	Invoice Link	Description	Amount
1. Watershed District Projects (excluding staff payroll)			
EOR	x	General Engineering	$ 2,117.75
		Swamp Lake IESF Final Design & CMS	$ 1,022.00
		Desiltation Pond Outlet & High-Flow Bypass FS	$ 1,256.00
		Upper Watershed Projects Support	$ 344.50
		PLOC Low Flow Gate Assessment Tasks 2 & 3	$ 2,835.00
		Buck Stream Stabilization	$ 1,348.38
		FeCl Site Improvements	$ 4,981.83
		Easements	$ 156.00
		Permitting	$ 312.00
Smith Partners	x	FeCl Site Improvement bidding issues	$ 2,075.35
		Contract	$ 188.30
		Permitting	$ 511.10
Prior Lake Association	x	CAC Cost share of lake maps	$ 500.00
Three Rivers Park Distirct	x	Lake Monitoring	$ 20,457.00
Joe Hentges	x	Grid Sampling for Field Phosphorus Reduction	$ 631.40
BSA	x	Photoplankton Analysis	$ 2,366.00
Geomorphic Restorations	x	Retainage Payment	$ 6,531.93
Valley Surveying	x	Parcel Survey	$ 3,000.00
WSB	x	Carp Management	$ 3,741.00
RMB	x	Ferric Monitoring	$ 544.00
Xcel Energy	x	Utilities	$ 11.91
Gopher State	x	Location services	$ 2.70
CLA		Bill.com fees	$ 61.00
		Subtotal	**$ 54,995.15**
2. Outlet Channel - JPA/MOA (excluding staff payroll)			
Smith Partners		Outlet Channel	$ 295.90
Prairie Restorations	x	PLOC Woody invasives	$ 10,100.00
EOR		2024 PLOC Vegetation/Stability Inspections	$ 2,045.51
		Local Drainage to Outlet Pipe Research	$ 260.00
		2024 PLOC Engineering Assistance	$ 260.00
		2024 PLOC XP-SWMM Updates	$ 194.50
		Subtotal	**$ 13,155.91**
3. Payroll, Office and Overhead			
ADP Manager Per Diems			$ 307.02
ADP Staff Payroll			$ 22,931.12
ADP Taxes & Benefits			$ 19,665.12
NCPERS	x	January Premiums	$ 96.00
Reliance Standard	x	December LTD and STD Premiums	$ 939.71
HealthPartners	x	December Health Insurance Premiums	$ 8,194.71
City of Prior Lake	x	Rent (January 2025)	$ 2,458.64
CLA	x	Monthly Accounting November	$ 3,045.00
		Technology and Client Support Fee	$ 170.60
		Monthly Payroll Processing Fees	$ 367.00
Smith Partners		General Legal Services	$ 134.50
		General Admin	$ 726.30
Rymark	x	December Billing (7 workstations)	$ 912.45
MetroSales	x	Contract base rate November-December	$ 155.00
StarTribune	x	November public notices	$ 214.88
US Bank		October 26-November 25 Billing	$1,709.81
		Subtotal	**$ 62,027.86**

TOTAL CLAIMS DECEMBER 2024 $ 130,178.92

Prior Lake-Spring Lake Watershed District
US Bank Transactions through 11/25/2024

Trans Date	Merchant Name	Amount	Receipt Link	Staff Approval	Class	Customer	Expense	Description
10/29/2024	Amazon	$ 17.95	x	Patty Dronen	405 General Fund		706 Office Supplies	
10/29/2024	Deputy Registrar	$ 33.00	x	Patty Dronen	637 Monitoring & Research	Equipment Storage & Maintenance	903 Dues, Fees, Subscriptions	
10/29/2024	Deputy Registrar	$ 0.71		Patty Dronen	637 Monitoring & Research	Equipment Storage & Maintenance	903 Dues, Fees, Subscriptions	credit card use charge for plates- no
10/31/2024	Home Depot	$ 22.62	x	Zach Nagel	611 Operations & Maintenance	Hwy 13 Wetland, FeCl System & Desilt Pon	876 Field Equipment & Maintenance	Rodent supplies
11/4/2024	Verizon	$ 30.08	x	Jeff Anderson	648 Regulation	Easement Inspections & violations	876 Field Equipment & Maintenance	Cell data
11/6/2024	Home Depot	$ 107.31	x	Zach Nagel	611 Operations & Maintenance	Fish Mgmt - Carp Removals-Seining	876 Field Equipment & Maintenance	Thin ice signs
11/7/2024	MN Watershed Annual Conference	$ 1,108.29	x	Joni Giese	626 Planning	Planning and Program Development	904 Staff & Board Training	
11/8/2024	Target	$ 13.24	x	Patty Dronen	405 General Fund		706 Office Supplies	
11/9/2024	Microsoft	$ 4.99	x	Patty Dronen	626 Planning	Planning and Program Development	903 Dues/Fees/Subscriptions	Software
11/13/2024	Amazon	$ 51.82	x	Patty Dronen	405 General Fund		706 Office Supplies	
11/13/2024	Amazon	$ 49.99	x	Jeff Anderson	611 Operations & Maintenance	Fish Mgmt - Carp Removals-Seining	876 Field Equipment & Maintenance	Auger for ice signs
11/15/2024	Menards	$ 15.72	x	Patty Dronen	648 Regulation	Easement Supplies	803 Easements	Easement hardware
11/19/2024	Panera Bread	$ 55.13	x	Patty Dronen	PLOC 839	PLOC Administrative Expenses	902 Meals and Lodging	
11/19/2024	Jimmy Johns	$ 106.90	x	Patty Dronen	626 Planning	Planning and Program Development	902 Meals and Lodging	
11/23/2024	Adobe	$ 92.06	x	Patty Dronen	626 Planning	Planning and Program Development	903 Dues, Fees, Subscriptions	
	TOTAL	**$ 1,709.81**						

PLSLWD Board Staff Report
December 10, 2024

Subject |	Budget Amendment Resolutions
Board Meeting Date |	December 17, 2024 **Item No:** 6.4
Prepared By |	Joni Giese, District Administrator
Attachments |	a) Resolution 24-387: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 611-Highway 13 Wetland, FeCl System & Desilt, O&M to 550-FeCl Site Improvements b) Resolution 24-388: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 626-Lake Ridge Feasibility Study c) Resolution 24-389: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 550-200th Street Pond Improvements
Proposed Action |	Motion to approve Resolution 24-387: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 611-Highway 13 Wetland, FeCl System & Desilt, O&M to 550-FeCl Site Improvements Motion to approve Resolution 24-388: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 626-Lake Ridge Feasibility Study Motion to approve Resolution 24-389: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 550-200th Street Pond Improvements

Background

Over the course of 2024, several projects advanced from feasibility investigation status to implementation status. Public hearings were held to establish capital projects on the following dates:

- Ferric Chloride (FeCl) Site Improvements: August 20, 2024
- 200th Street Pond Improvements: November 19, 2024

The Fish Lake Management Plan included recommendations of future implementation and feasibility studies for the purpose of reducing nutrient loads to Fish Lake. Both the 200th Street pond improvements and the Lake Ridge Estates Stormwater Feasibility Study were recommended future action items in the Fish Lake Management Plan.

Discussion

Funds for the implementation of the FeCl Site Improvements were incorporated into the 2024 budget under the 611-Highway 13 Wetland, FeCl System & Desilt, O&M budget item. Resolution 24-387 reclassifies funds intended for FeCl site improvements (building and drive) implementation to a newly established capital project budget item, 550-FeCl Site Improvements.

Funds for the implementation of the 200th Street Pond Improvements were incorporated into the 2024 budget under the 626-Upper Watershed Projects budget item. Resolution 24-389 reclassifies funds intended for the 200th Street Pond improvements implementation to a newly established capital project budget item, 550-200th Street Pond Improvements.

Funds for the Lake Ridge Estates Stormwater Feasibility Study were incorporated into the 2024 budget under the 626-Upper Watershed Projects budget item. Resolution 24-388 reclassifies funds intended for this feasibility study to a new planning budget item, 626-Lake Ridge Feasibility Study. Reclassifying funds to a new budget item will allow staff to better monitor and manage expenditures associated with this project.

Estimated unexpended portions of these budget items at December 31, 2024, have been brought forward to the 2025 budget as budget reserve funds.

Recommendation

Staff recommends the Board of Managers approve Resolution 24-387: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 611-Highway 13 Wetland, FeCl System & Desilt, O&M to 550-FeCl Site Improvements.

Staff recommends the Board of Managers approve Resolution 24-388: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 626-Lake Ridge Feasibility Study.

Staff recommends the Board of Managers approve Resolution 24-389: Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 550-200th Street Pond Improvements

Budget Impact

Adoption of these resolutions will not impact the District's budget as they are reclassifying funds from one budget item to another.

Resolution 24-387

Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 611-Highway 13 Wetland, FeCl System & Desilt, O&M to 550-FeCl Site Improvements

Motion By:_____ **Second By**:_____

WHEREAS, Within the 2024 budget adopted by the Board of Managers on December 12, 2023, the 509 Implementation Fund, 611- Highway 13 Wetland, FeCl System & Desilt, O&M budget item in the amount of $305,000, which included funds to advance FeCl building and drive improvements towards implementation; AND

WHEREAS, due notice was provided and a public hearing was held to establish a capital project for the Ferric Chloride site improvements on August 20, 2024; AND

WHEREAS, work under these contracts will span budget years 2024 and 2025;

THEREFORE, BE IT RESOLVED, In the 509 Implementation Fund, the 611- Highway 13 Wetland, FeCl System & Desilt, O&M budget item will be reduced by $158,100 to cover a portion of the FeCl site improvements capital cost, resulting in an amended 611- Highway 13 Wetland, FeCl System & Desilt, O&M budget item of $146,900, and correspondingly, the establishment of a 550-FeCl Site Improvements budget item in the amount of $158,100.

The question was called on the adoption of the Resolution and there were __ yeas and __ nays as follows:

	Yea	Nay	Abstain	Absent
Boyles	☐	☐	☐	☐
Burnett	☐	☐	☐	☐
Loney	☐	☐	☐	☐
Morkeberg	☐	☐	☐	☐
Tofanelli	☐	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary

Resolution 24-388

Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 626-Lake Ridge Feasibility Study

Motion By:_____ **Second By**:_____

WHEREAS, Within the 2024 budget adopted by the Board of Managers on December 12, 2023, the 509 Implementation Fund, 626-Upper Watershed Projects budget item included funds to advance potential water quality and flood mitigation studies towards implementation; AND

WHEREAS, The Board of Managers approved entering into a contract for the completion of the Lake Ridge Estates Stormwater Retrofit Feasibility Study ("Lake Ridge Feasibility Study") on October 15, 2024; AND

WHEREAS, Upper Watershed Project funds in the amount of $60,000 were projected to be expended on the Lake Ridge Feasibility Study;

THEREFORE, BE IT RESOLVED, In the 509 Implementation Fund, the 626-Upper Watershed Projects budget item will be reduced by $60,000, and correspondingly, the 626-Lake Ridge Feasibility Study budget item will be established with a budget amount of $60,000.

The question was called on the adoption of the Resolution and there were __ yeas and __ nays as follows:

	Yea	Nay	Abstain	Absent
Boyles	☐	☐	☐	☐
Burnett	☐	☐	☐	☐
Loney	☐	☐	☐	☐
Morkeberg	☐	☐	☐	☐
Tofanelli	☐	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary

Resolution 24-389

Amending the 2024 Budget to Reclass Funds in the 509-Implementation Fund, from 626-Upper Watershed Projects to 550-200th Street Pond Improvements

Motion By:_____ **Second By**:_____

WHEREAS, Within the 2024 budget adopted by the Board of Managers on December 12, 2023, the 509 Implementation Fund, 626-Upper Watershed Projects budget item included funds to advance potential water quality and flood mitigation studies towards implementation; AND

WHEREAS, the 200th Street pond improvements project was a recommended implementation project in the Fish Lake Management Plan; AND

WHEREAS, due notice was provided and a public hearing was held to establish a capital project for the Ferric Chloride site improvements on November 19, 2024; AND

WHEREAS, Upper Watershed Project funds in the amount of $17,000 were projected to be expended on the 200th Street Pond Improvements capital project; AND

WHEREAS, the District has received the first 50% installment of WBIF grant funds in the amount of $15,000 that will be applied to the 200th Street Pond Improvements;

THEREFORE, BE IT RESOLVED, In the 509 Implementation Fund, the 626-Upper Watershed Projects budget item will be reduced by $17,000, resulting in an amended 626-Upper Watershed Projects budget item of $349,600 (also incorporating reclasses from Resolutions 24-383 and 24-388), and correspondingly, the 550-200th Street Pond Improvements budget item will be established with a budget amount of $32,000 to reflect the $17,000 Upper Watershed reclassification and $15,000 WBIF grant funds received.

The question was called on the adoption of the Resolution and there were __ yeas and __ nays as follows:

	Yea	Nay	Abstain	Absent
Boyles	☐	☐	☐	☐
Burnett	☐	☐	☐	☐
Loney	☐	☐	☐	☐
Morkeberg	☐	☐	☐	☐
Tofanelli	☐	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary

PLSLWD Board Staff Report
December 10, 2024

Subject |	Year End Fund Commitments
Board Meeting Date |	December 17, 2024 **Item No:** 6.5
Prepared By |	Joni Giese, District Administrator
Attachments |	a) Resolution 24-390: Alum Internal Loading Fund Balance Commitment b) Resolution 24-391: Capital Project Planning Fund Balance Commitment
Proposed Action |	Motion to adopt Resolution 24-390: Alum Internal Loading Fund Balance Commitment Motion to adopt Resolution 24-391: Capital Project Planning Fund Commitment

Background

Annually staff reviews the District's committed funds. If the amount of funds to be committed needs to be increased or decreased at year end, staff prepares commitment revision resolutions for board approval. If the value of a committed fund is not expected to change at year end, a resolution is not needed.

Discussion

Alum Internal Loading Reserve

The District's 2024 budget included a levy of $230,000 to fund future alum treatments. Approximately $20,000 will be expended in 2024 to cover alum coring in Spring Lake. To ensure that District levy funds are used for future alum treatment expenditures, staff recommends the Board of Managers commit an additional $210,000 to the Alum Internal Loading Reserve fund, resulting in a fund balance of $910,000 on December 31, 2024. This commitment restricts these funds to the preparation for and implementation of alum treatments.

Capital Project Planning Reserve

The District's initial 2024 budget included $636,000 for the Upper Watershed Projects reserve fund. During the year, $286,400 of Upper Watershed Project funds have been, or are expected to be, reallocated to specific upper watershed projects. Project reallocations include the Swamp Lake Iron Enhanced Sand Filter project and the Buck Stream Stabilization project (Resolution 24-383), along with the 200th Street Pond Improvements (Resolution 24-389) and the Lake Ridge Feasibility Study (Resolution 24-388). It is estimated that $291,600 of the reserve funds will not be expended by year end.

It is the Board of Managers' intent to broaden the geographic location of projects eligible for these funds to include the entire watershed district. Therefore, the name of reserve fund shall be changed from "Upper Watershed Projects" to "Capital Project Planning."

Staff recommends the Board of Managers rename the fund and commit the remaining $291,600 of the Upper Watershed Projects reserve to Capital Project Planning reserve. This commitment restricts these funds to planning activities associated with anticipated future capital projects.

Once fund balance constraints are imposed through commitments, the constraint must be removed by the Board of Managers via another resolution prior to redirecting the funds for other purposes.

Recommendation

Staff recommends Board adoption of Resolution 24-390: Alum Internal Loading Fund Balance Commitment.

Staff recommends Board adoption of Resolution 24-391: Capital Project Planning Fund Commitment.

Budget Impact

The budget commitments are incorporated into the 2025 budget approved by the Board of Managers at the September 2024, board meeting. The budget commitments are also incorporated into the 2025 budget being brought forward for Board approval at the December 17, 2024 public hearing.

Resolution 24-390

Alum Internal Loading Reserve Balance Commitment

WHEREAS, the Governmental Accounting Standards Board (GASB) has issued Statement No. 54, establishing a hierarchy clarifying the constraints that govern how a governmental entity can use amounts reported as fund balance; AND

WHEREAS, the Board of Managers is the highest level of decision-making authority, and has the authority to commit, assign, or evaluate existing fund balance classifications and identify the intended uses of committed or assigned funds; AND

WHEREAS, the committed fund balance classification reflected amounts subjected to internal constraints self-imposed by the Board of Managers; AND

WHEREAS, once the committed fund balance constraints are imposed, it requires the constraint to be removed by the Board of Managers via resolution prior to redirecting the funds for other purposes;

THEREFORE, BE IT IS RESOLVED that the Board of Managers has determined it will commit $210,000 of the Implementation Fund, fund balance for the year ending December 31, 2024, for a total commitment of $910,000 for the purpose of the Alum Internal Loading Reserve.

The question was called on the adoption of the Resolution and there were ___ yeas and ___ nays as follows:

	Yea	Nay	Absent
Boyles	☐	☐	☐
Burnett	☐	☐	☐
Loney	☐	☐	☐
Morkeberg	☐	☐	☐
Tofanelli	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary

Resolution 24-391

Capital Project Planning Fund Commitment

WHEREAS, the Governmental Accounting Standards Board (GASB) has issued Statement No. 54, establishing a hierarchy clarifying the constraints that govern how a governmental entity can use amounts reported as fund balance; AND

WHEREAS, the Board of Managers is the highest level of decision-making authority, and has the authority to commit, assign, or evaluate existing fund balance classifications and identify the intended uses of committed or assigned funds; AND

WHEREAS, the committed fund balance classification reflected amounts subjected to internal constraints self-imposed by the Board of Managers; AND

WHEREAS, once the committed fund balance constraints are imposed, it requires the constraint to be removed by the Board of Managers via resolution prior to redirecting the funds for other purposes; AND

WHEREAS, the Board of Managers intend to broaden the geographic location of projects eligible for these funds to the encompass the entire watershed district, and therefore, change the name of the reserve fund from "Upper Watershed Projects" to "Capital Project Planning";

THEREFORE, BE IT IS RESOLVED that the Board of Managers has determined it will commit $291,600 of the Implementation Fund, Upper Watershed Projects fund balance for the year ending December 31, 2024, to the 2025 Capital Project Planning fund.

The question was called on the adoption of the Resolution and there were ___ yeas and ___ nays as follows:

	Yea	Nay	Absent
Boyles	☐	☐	☐
Burnett	☐	☐	☐
Loney	☐	☐	☐
Morkeberg	☐	☐	☐
Tofanelli	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

It is hereby certified that the Board of the Prior Lake-Spring Lake Watershed District adopted this Resolution at a duly convened meeting of the Board held on the 17th day of December 2024, and that such Resolution is in full force and effect on this date, and that such Resolution has not been modified, amended, or rescinded since its adoption.

_____ Dated: December 17, 2024

Ben Burnett, Secretary