PLSLWD Board Staff Report
June 12, 2025

Subject |	County Ditch 13 Drainage Authority: Continued Analysis Discussion		
Board Meeting Date |	June 17, 2025	**Item No:**	W.1
Prepared By |	Joni Giese, District Administrator		
Attachments |	None		
Proposed Action |	Discussion only		

Background

Scott County reached out to PLSLWD to inquire if the District would be interested in taking on the role of drainage authority for County Ditch 13. An initial analysis of benefits and drawbacks of taking on the role of drainage authority was presented at the May 20, 2025, workshop. At that meeting, managers brought forward topics they wanted additional information on in order to better inform decision-making.

Discussion

Additional information will be brought forward at the workshop in order to respond to Manager information requests.

Recommended Action

No action requested.

Budget Impact

To be determined.

PLSLWD Board Staff Report
June 11, 2025

Subject |	Post-Alum Treatment Assessments for Upper Prior and Spring Lakes
Board Meeting Date |	June 17, 2025 **Item No:** W.2
Prepared By |	Jeff Anderson, Water Resources Coordinator
Attachments |	a) Upper Prior Lake Post Alum Treatment Evaluation b) Spring Lake Post Alum Treatment Evaluation
Proposed Action |	For discussion only

Background

In 2020, Upper Prior Lake received the first of two planned alum treatments, while Spring Lake received its third and final dose, both aimed at reducing internal phosphorus loading; follow-up sediment coring was recommended to support adaptive management. In response, EOR conducted sediment sampling and evaluated treatment effectiveness for both lakes, analyzing District water quality and climate data, original alum dosing plans, and sediment chemistry before and after treatment. As hypolimnetic phosphorus levels rose in both Spring Lake and Upper Prior Lake following their respective alum treatments, EOR submitted sediment samples from each lake to the University of Wisconsin–Stout for detailed analysis of phosphorus release rates, phosphorus fractionation, and alum deposition depth. The attached memos summarize the findings and provide recommendations for future lake management.

Discussion

The alum treatment projects have achieved positive outcomes for both Upper Prior Lake and Spring Lake, with significant improvements in water quality since the treatments began. However, the next steps for each lake diverge based on current conditions and treatment effectiveness.

For Upper Prior Lake, water quality has improved since the initial alum application in 2020, but sediment core data and rising bottom phosphorus concentrations indicate that a significant internal phosphorus load remains untreated as expected with an initial partial dose. This untreated phosphorus is contributing to mid-season mixing events, which elevate surface phosphorus levels during the growing season and increase the risk of algal blooms. Given these findings, a second alum treatment is recommended to further reduce internal loading and protect water quality and meet 2020 BWSR grant assurances. The projection for lasting success is strong, supported by concurrent efforts to manage upstream nutrient sources and biological stressors such as carp and invasive aquatic plants. The proposed second dose, based on 2024 sediment data, reflects adaptive management and includes modest increases in application rates for both treatment zones. The estimated cost ranges from $935,000 to $1,120,000, including engineering and application oversight.

In contrast, Spring Lake presents a more complex scenario. While water quality has improved since the alum treatment series began in 2013, recent data suggest that the effectiveness of the treatments is diminishing. Bottom phosphorus concentrations are rising again, and phosphorus release rates are at the upper limit of acceptable thresholds. However, surface water quality remains relatively stable, with the exception of some elevated fall concentrations linked to external loading. Importantly, key factors that limit alum treatment

longevity, specifically high carp populations and unresolved external nutrient inputs, have not been sufficiently addressed. As such, EOR recommends delaying any further alum applications until external loading is reduced in accordance with the TMDL and carp biomass falls below the 100 kg/ha threshold.

While Upper Prior Lake is well-positioned for a second alum treatment, its recommended Spring Lake takes a strategic pause. Addressing external nutrient sources and bioturbation pressures is critical before considering additional internal load control. This approach ensures that alum treatments remain a cost-effective and sustainable tool for long-term water quality improvement.

The District's engineering consultant will present an overview of each lake's status and discuss recommendations for future management.

Recommendation

For discussion only.

Budget Impact

The 611 Alum Internal Loading Reserve has been increasing in anticipation of future projects. The fund will have an estimated 2025 yearend balance of $1,059,000.

memo

Project Name |	Upper Prior Lake Post Alum Treatment Evaluation	**Date** |	6/12/25
Contact	PLSLWD Board of Managers		
Cc / Contact info |	Jeff Anderson		
From / Contact info |	Anne Wilkinson, PhD		

Introduction

Upper Prior Lake received its first alum dose in 2020. The lake management plan recommends follow up sediment cores be collected before the subsequent dose to afford adaptive management and potentially adjust the alum treatment plan. In response, EOR conducted follow up sediment coring and evaluation of alum treatment effectiveness on Upper Prior Lake. EOR also analyzed District water quality data, climate data, the original alum plan and dosing recommendations, and sediment chemistry results before and after the alum treatment. This memo provides an explanation of results and recommendations for future management.

Background

Upper Prior Lake receives water from Spring and Arctic Lakes as well as from a small drainage area on the east side of the lake. The 2012 Spring and Upper Prior Lake TMDL Implementation Plan calculated an annual load of 5,216 pounds of phosphorus to Upper Prior while the load capacity for Upper Prior is 3,073 lbs/year, thus requiring a total load reduction of 2,143 lbs/year, (internal reduction of 571 lbs/year). Since the 2012 TMDL, multiple projects have been completed that address both internal and external phosphorus loading to Spring Lake and consequently to Upper Prior Lake. With the upstream treatment of Spring Lake with alum, lower concentrations of phosphorus are reaching Upper Prior Lake. However, as past studies have indicated, there is still an internal reservoir of phosphorus in Upper Prior Lake that continues to hinder the improvement of water quality in the lake. The 2012 TMDL indicates that there were three sources of phosphorus loading to Upper Prior Lake: 1) loading from Spring Lake and upstream lakes (42%), 2) internal loading (50%), and 3) septic systems and atmospheric load (8%).

Past management for Upper Prior Lake includes curly leaf pondweed treatments, carp removals, and alum treatments on Spring Lake. The first alum dose was funded by a fiscal year 2020 Clean Water Fund grant with an agreement that the second dose would be completed in a future phase. This report serves as a post first dose evaluation for sediment analysis and water quality response to the first alum treatment.

Historic Water Quality

Historically water quality in Upper Prior Lake exceeded eutrophication standards, 60 ug/L. Pre-treatment Total Phosphorus (TP) concentrations between June and August 2019, were observed as high as 95 ug/L. Figure 1 shows that TP concentrations within the hypolimnion increased throughout the stratified period and then were mixed into the surface layer during lake turnover. This presents a high load of phosphorus from the lake into the surface layer where it can be utilized by algae and cause algal blooms. Following the alum treatment in 2020 there was an improvement in all of the surface water quality parameters. In fact, water quality parameters were meeting state standards for TP and Secchi depth from 2020-2024 and, chl-a for 2020-2023. It is important to note

that 2024 was a high precipitation year preceded by several dry years which leads to higher-than-average external loading. Additionally, after the alum treatment in 2020, the hypolimnetic (bottom) phosphorus concentration decreased significantly. Starting in 2022 the bottom phosphorus concentrations begin to increase.

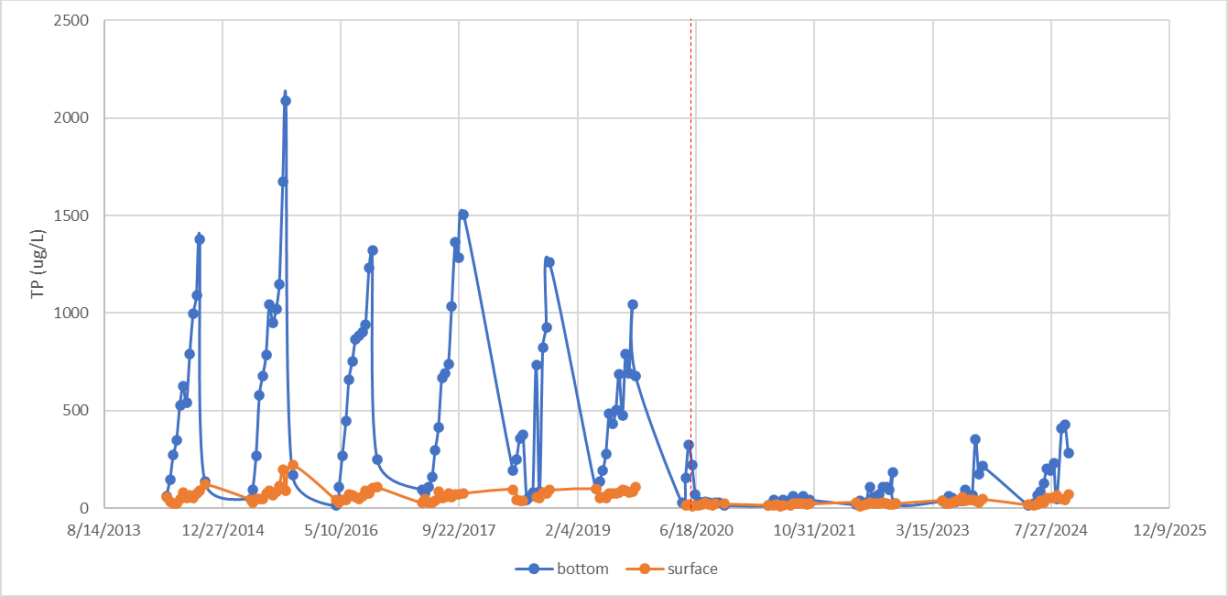

Figure 1: Historic TP summary. Orange represents the surface data and blue represents the bottom data. The red dashed line represents the date of the alum treatment.

Alum Treatment

The first dose of an alum treatment was conducted May 26-June 2, 2020, according to the dose outlined in Figure 2. The dose includes alum and sodium aluminate in tandem to reduce pH spikes to protect ecology based on the needed alum application rate. There were two different zones that received different doses based on the results of the feasibility study. Treatment Zone 1 has a total surface area of 230 acres and represents the shallower depths of the lake with moderate redox-P concentrations. Treatment Zone 2 has a total surface area of 43 acres and represents areas with depths greater than 20 feet. Zone 1 received a higher dose of 490.5 gal/acre of alum and 245 gals/acre of sodium aluminate. Zone 2 received a lower dose of 454 gal/acre of alum and 227 gals/acre of sodium aluminate. The goal of the alum treatments is to reduce the internal loading of Upper Prior Lake by 571 lbs/year.

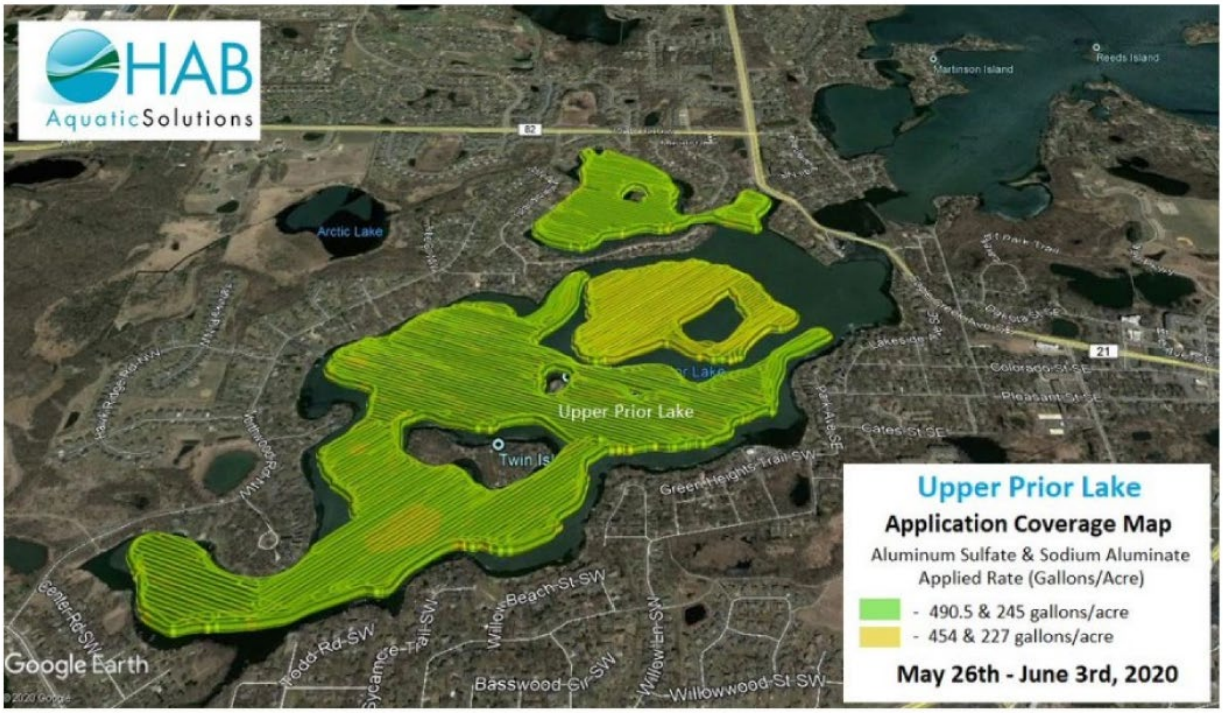

Figure 2: First alum dose coverage and summary.

Alum Treatment Effectiveness

Alum treatment effectiveness is impacted by several factors that differ amongst lakes and watersheds. Cooke et al. (2005) identified the following complications that limit the long-term effectiveness of an alum treatment:

- **Low doses –** Low doses of alum treatments can reduce effectiveness because not enough P is bound to the alum to reduce the internal load.
- **Focusing of the alum floc layer by wind mixing** – Wind mixing can reduce effectiveness because alum coverage becomes uneven leaving P rich sediments untreated.
- **Interference with macrophytes** – Aquatic plants impact alum effectiveness several ways. They can disrupt floc settling, excessive growth may raise the pH resulting in phosphorus sediment release, plant dieback may produce anoxic areas that release mobile phosphorus, and plant dieback can put phosphorus directly back into the water column.
- **Bioturbation of the floc** – High rough fish densities can negate the effects of an alum treatment by disturbing the floc, exposing underlying P rich sediment. Also, high densities of carp, black bullheads, and even bluegill sunfish can theoretically excrete enough sediment-derived phosphorus to produce algae blooms.
- **Insufficient reduction of external nutrient loading or coverage by new sediment** – Insufficient reduction of external nutrient loading or coverage by new sediment represents the potential limitation to the long-term effectiveness of the alum treatment

The remainder of this report will discuss the present study to evaluate the effectiveness of the alum series and make recommendations for future management.

Results

Water Quality

PLSLWD has contracted Three Rivers Park District to monitor water quality in Upper Prior Lake from 2006 through 2024. The lake is monitored 13 times per year, at surface, middle, and bottom locations.

Overall, the water quality in Upper Prior Lake is good and has improved since the first alum treatment, especially decreasing bottom phosphorus concentrations, Figure 4 and Figure 5. Table 1 shows the TP concentrations attributed to the sampling data collected from 2012-2024. The first and second rows represent the summer average (April-October) and the growing season average evaluated by the state standard (June -September), respectively. The table then compares data sampled at different dates ranging from early, mid, and late month samples. TP concentrations exceeding the state standard are highlighted in orange and concentrations at or below the state standard are highlighted in blue. The red dashed line represents the timing of the alum treatment, where the alignment left of the cell represents spring treatment and the right of the cell represents a fall treatment for the representative year. Blank cells represent were no samples taken during that period. Data in bold represents samples that are influenced by hypolimnetic mixing, meaning the TP concentrations has increased following a mixing event. Upper Prior Lake is a shallow lake, thus it is susceptible to mixing due to the influence of wind and temperature changes.

The surface TP concentrations have been meeting state standards for every biweekly sampling event since the 2020 alum treatment except for two samples in fall 2024 which were driven by turnover events in late August and October, Figure 4 and Table 1. There is evidence, Table 1 (bolded samples) and Figure 5, that suggest mid-season water column mixing in which surface TP concentrations are influenced by the bottom layer. It is important to understand these dynamics because release of high concentrations of TP into the surface where it can fuel algae blooms and control that nutrient release. The alum treatment effectively reduced the concentration of bottom phosphorus concentrations through 2023 and 2024 when P concentrations have started accumulating during periods of anoxia.

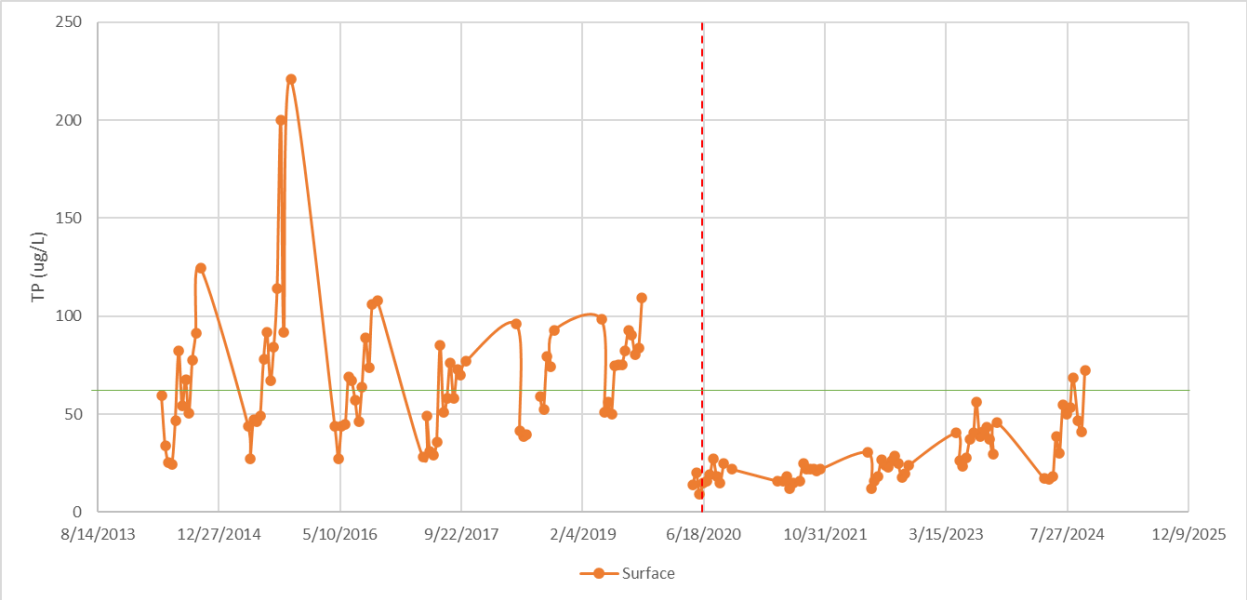

Figure 3: Historic TP summary. Orange represents the surface data. The red dashed line represents the date of the alum treatment. The green line represents the state standard 60 ug/L.

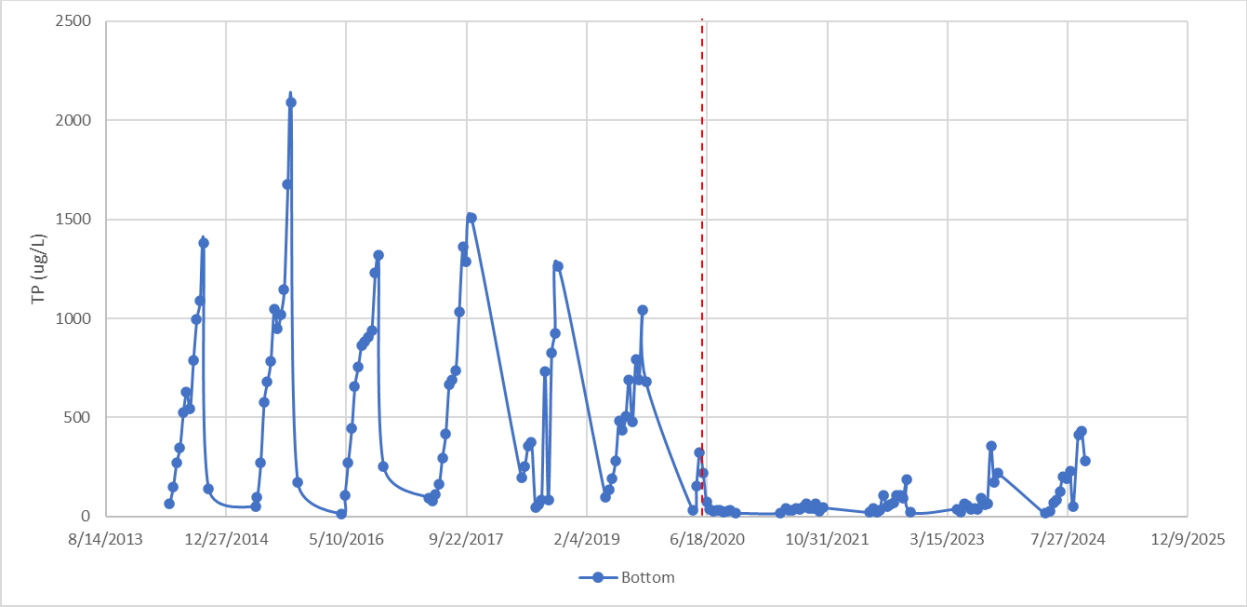

Figure 4: Historic TP summary. Blue represents the bottom data. The red dashed line represents the date of the alum treatment.

Table 1: Historic TP summary table. The blue squares are samples meeting the shallow lake state standard. The orange squares represent samples exceeding the shallow lake standard. Data in bold represents samples that are influenced by hypolimnetic mixing. The green cells represent the growing season period. The red dashed line represents the timing of the Spring 2020 alum treatment. Blank cells represent that there were no samples taken during that period.

Upper Prior Lake Phosphorus Shallow Lake State Standard ≤ 60 µg/L 10-Year Average: 49 µg/L	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Summer Average	62	89	65	55	64	78	18	19	22	37	42
Growing Season Average	50	76	62	61	56	83	17	15	24	41	49
April		44	**44**	28		**99**		**16**	**31**	**40**	**17**
Early May	59	27	27	49	96	51	14	17	12	**26**	17
Late May	34	47	44	30	41	56	20	18	**16**	23	18
Early June	25	48	45	36	39	50	9	12	18	28	39
Late June	24	78	68	85	40	75	16	15	27	**37**	30
Early July	47	92	57	51	51	75	19	23	24	**40**	55
Late July	82	67	46	58	82	79	**27**	16	23	**56**	50
Early August	68	84	64	76	59	93	18	24	28	39	53
Late August	51	114	89	58	**52**	91	**15**	**22**	25	42	**69**
Early September	78	200	74	73	79	80	25	22	18	37	47
Late September	91	92	106	70	74	84	29	21	20	30	41
October	125	**221**	108	77	93	109	**22**	22	**24**	46	**72**

Sediment Core Results

Pre-treatment sediment cores were analyzed by St. Croix Watershed Research Station for phosphorus fractionation analysis to quantify the mass of biologically available sediment phosphorus (i.e., the mobile fractions likely to diffuse from sediments). In 2024, EOR collected nine sediment cores from the same locations, Figure 5. EOR delivered the sediment cores to the University of Wisconsin Stout. Cores from all nine sediment locations were segmented into six sections: 0-2cm, 2-4cm, 4-6cm, 6-8cm, 8-10cm, 10-20cm. Each section was analyzed for loosely-bound P, iron-bound P, labile organic P, and aluminum-bound P. In addition, five sediment core locations were analyzed for soluble reactive phosphorus release rates. Incorporating release rate analysis is imperative to understanding the load reductions achieved by the alum treatment. The five locations represent a cross section of the alum application area. The release rate data from these five locations is the minimum resolution necessary to understand any spatial variability of the alum treatment effectiveness.

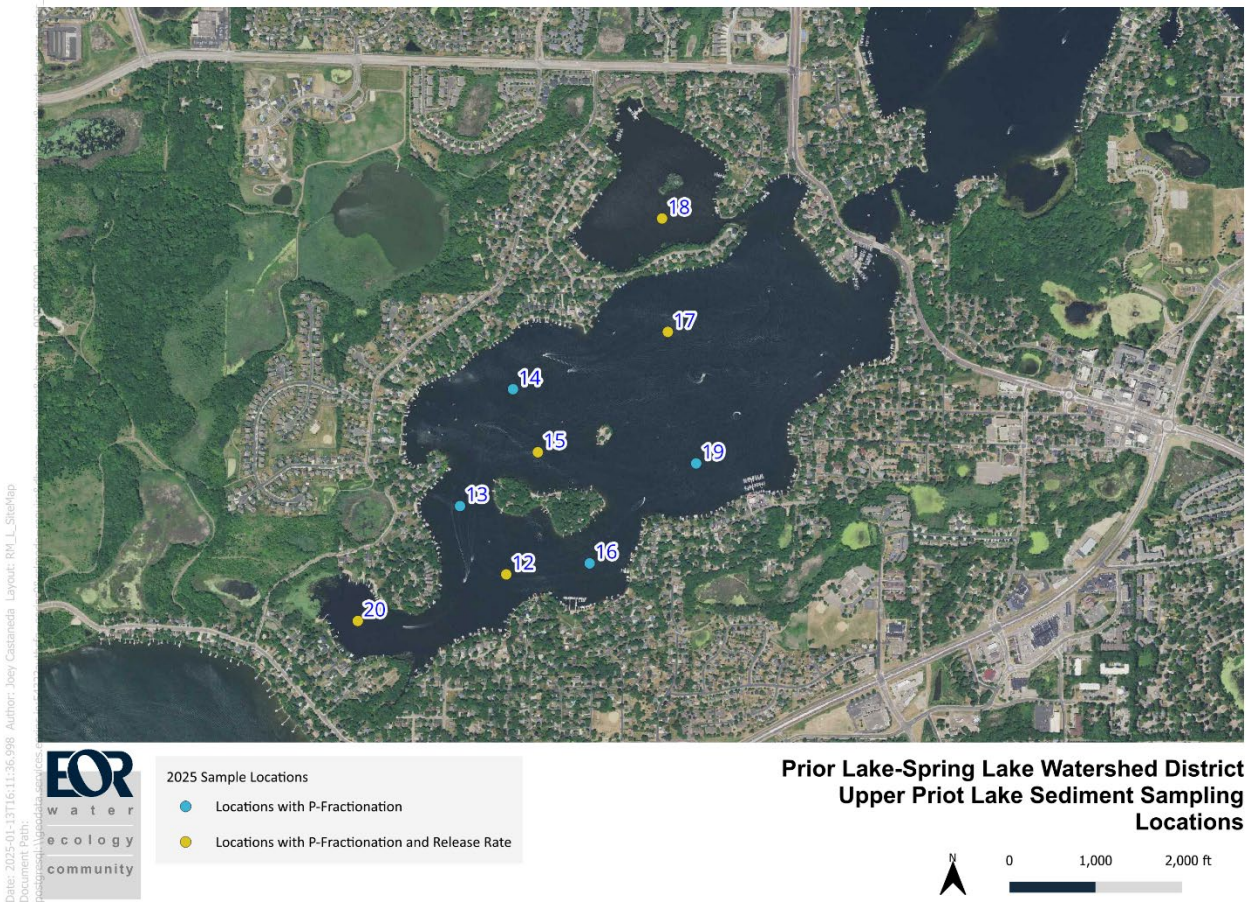

Figure 5: 2025 Sediment Core Locations

There is variability within the lake for redox P but when comparing pre-treatment (dashed) redox P concentrations in the top four centimeters to the post treatment samples (solid line) there is a reduction in redox P Figure 6 and Figure 7. This result is expected after an alum treatment but there is still redox P that should be reduced by the second treatment. In general, there was higher redox P

concentrations in Zone 2 compared to Zone 1 which is consistent with pretreatment conditions and will be reflected in the dosing strategy.

Al-bound phosphorus increased from pretreatment concentrations significantly in both Zone 1 and Zone 2, Figure 8 and Figure 9. Generally, there were higher concentrations observed in Zone 2 which may be an indication of floc migration, but it does not seem to impact the effectiveness of the alum dose in Zone 1, as evidenced by the redox P and release rate reductions, Table 2.

A low release rate is generally considered below 2 (mg/m2 d). The release rate is summarized in Table 2. The average release rate in Zone 1 is 1.33 mg/m2 d with some spatial variability. In Zone 2 there is still a high release rate in the deepest section of the lake at site 12 and a much lower release rate at site 17. This will be reflected in the dosing strategy.

Table 2: Release Rate Summary

Station		Release Rate (mg/m2 d)
Zone 1 (Shallow)	15	0.68
	18	2.86
	20	0.46
Zone 2 (Deep)	12	8.17
	17	2.19

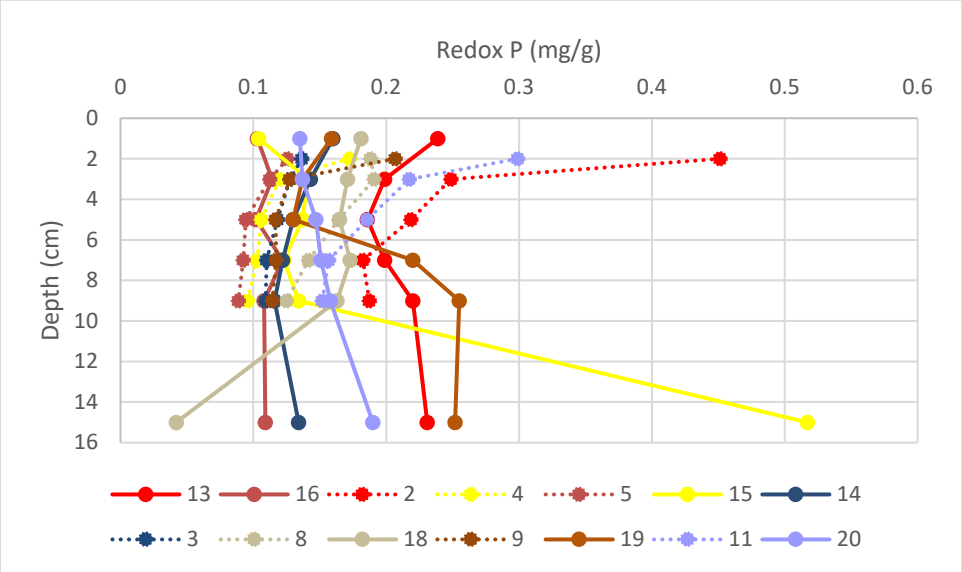

Figure 6: Redox P profile comparison for Zone 1. The dashed lines represent the pre-treatment data, and the solids lines represent 2025 data.

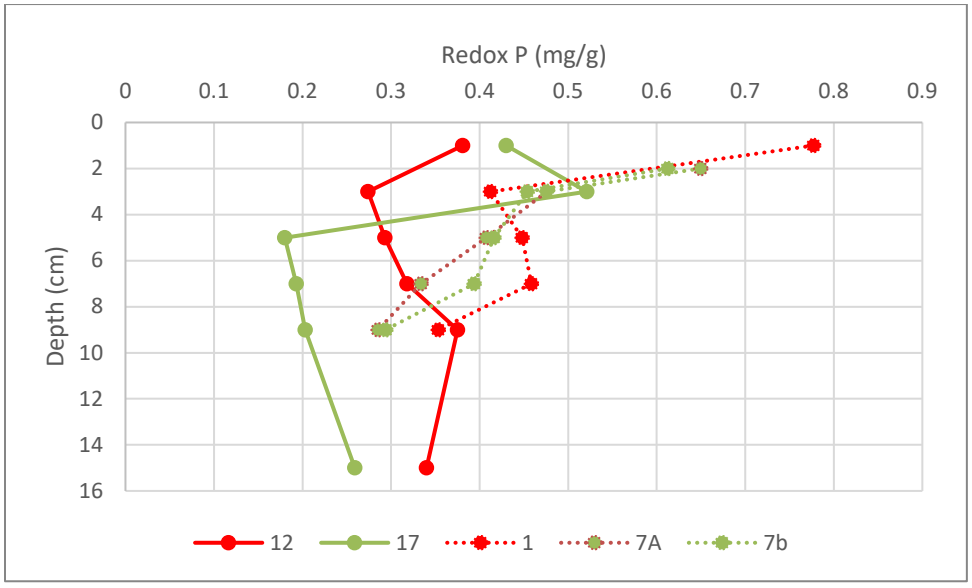

Figure 7: Redox P profile comparison for Zone 2. The dashed lines represent the pre-treatment data, and the solids lines represent 2025 data.

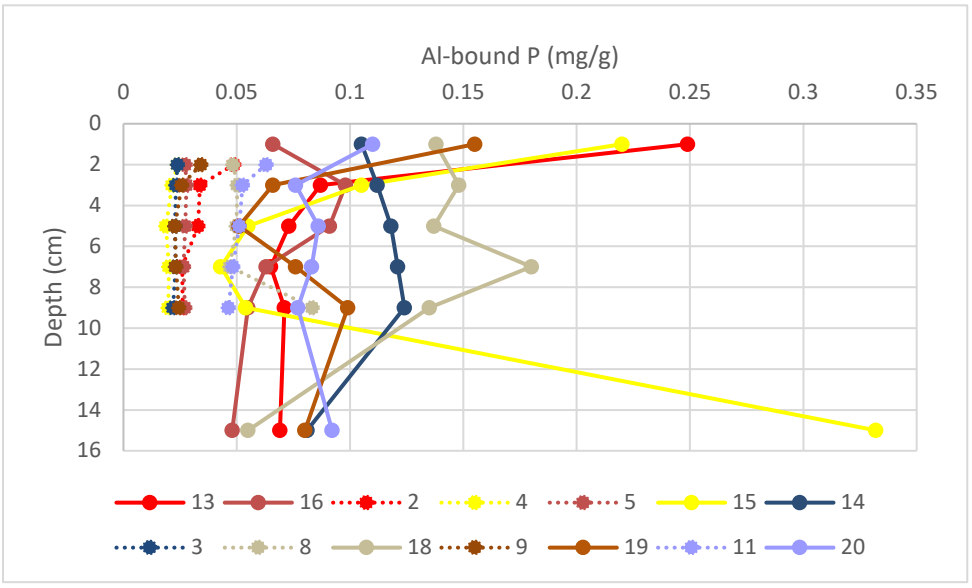

Figure 8: Al-bound P profile comparison for zone 1. The dashed lines represent the pre-treatment data, and the solids lines represent 2025 data.

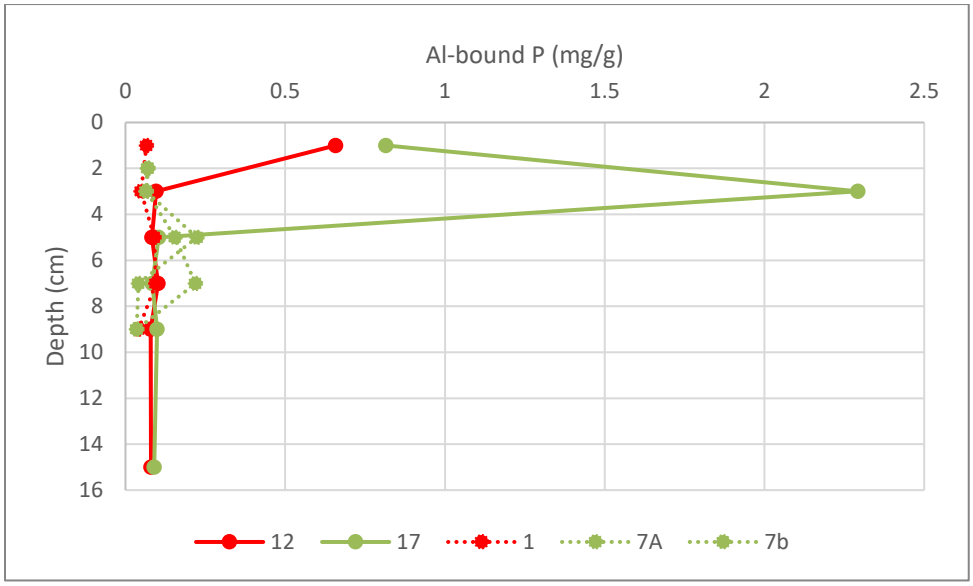

Figure 9: Al-bound P profile comparison for zone 2. The dashed lines represent the pre-treatment data, and the solids lines represent 2025 data.

Discussion

The rest of this discussion will outline the evidence to support the effectiveness of the alum treatment series. Table 3 represents the key factors which contribute to alum treatment effectiveness and the evidence from Upper Prior Lake which supports the influence of those factors.

Table 3: Effectiveness Factor Summary for Upper Prior Lake.

Effectiveness Factor		Applicable to Upper Prior Lake	Evidence
Dosing and application area	Low Dose	Low	The applied dose was appropriate
	Wind Mixing	Low	Differences amongst Al-bound coverage Low wind conditions during treatment
Biotic Interference	Interference with macrophytes	Low	CLP was not in the application area
	Bioturbation of the floc	Low	Carp is below the population threshold for bioturbation
External Load	Watershed Load	Medium	External load coming from Spring Lake

Dosing and Application Area

Dose

The first dose was appropriate for the alum treatment based on the Redox-P or Mobile-P, Table 4. It is important to note that the dosing relationship is not linear and is based on empirical relationships that account for broad range of redox P and alum doses (James and Bischoff 2015). In general, there were higher redox P concentrations in Zone 2 compared to Zone 1 which is consistent with pretreatment conditions and is reflected in the dosing strategy. Additionally, in Zone 2 there is still a high release rate in the deepest section of the lake at site 12 and much lower release rate at site 17 and is reflected in the recommended dosing strategy.

Table 4: Alum dose summary.

Alum Application	Treatment Zone	Acres	Al dose (g/m2)	Alum (gal/acre)	Sodium Aluminate (gal/acre)	Alum (gallons)	Sodium Aluminate (gallons)
2020	Zone 1	230	61.8	490.5	245.3	112,815	56,408
	Zone 2	43	57.2	454	227	19,522	9,761

Weather During Application

In general, specifications for alum treatment applications are to apply only if the forecasted 24-hr precipitation is less than 1 in and the wind speed is less than 15 mph to avoid misapplication from drifting of the barge or excessive wave action. These conditions were met during the 2020 application.

Additionally, Al-bound concentrations were correlated with the dose in the application zones and not effected by wind mixing or high-density flocs. Upper Prior Lake is a shallow lake and is thus more susceptible to the influence of mixing. There may be some evidence that the Al-bound concentrations were higher in the deeper zone which could be due to floc migration, however the re-dox P and release rate data does not support this as a factor that contributes to reduced effectiveness in Zone 1.

Biotic Interference

Fisheries

In 2024, the District tracked the movement of 17 radio-tagged carp in Spring Lake and Upper Prior Lake using a Yagi antenna and receiver to create spatio-temporal maps. The District also tracks carp through Passive Integrated Transponder (PIT) tags, which function like a pet microchip.

In 2024, carp population estimates were 48.5 +/- 6 kg/ha, which surpasses the District's biomass goal of 100 kg/ha. District staff also maintained six carp barriers to prevent access to spawning areas across the District. In 2024, these were located at: 12/17 Wetland, Tadpole Pond, Desilt Pond, FeCl Weir, Arctic Lake Outlet, and Northwoods Pond. Carp migration spawning activity will be monitored to see if any additional barriers are needed moving forward. The District's goal in 2025 is to focus efforts on carp removals from Spring Lake and shift to maintenance activities as outlined in the IPM plan for Upper Prior Lake.

Curly Leaf Pondweed

Aquatic plant point intercept surveys for Upper Prior Lake were conducted in the summers of 2015, 2018, 2020, 2021 and 2023. Results of the 2023 summer aquatic plant point intercept survey found 6 submerged aquatic plant including Curly leaf pondweed (CLP) and Eurasian Water Milfoil (EWM). Native plants were found around the perimeter of the basin of Upper Prior Lake. Aquatic plants were estimated to cover 37% of the lake bottom (143 acres). Coontail and Eurasian watermilfoil were the dominant aquatic plants. The 7 native aquatic plant species found in this survey represent a fair diversity for Upper Prior Lake in late summer.

In 2024, several areas were delineated as having the potential for heavy CLP growth by June. A CLP treatment was conducted on May 3, 2024, using diquat on a total of 29.55 acres in Upper and Lower Prior Lake. Post Treatment a follow-up CLP assessment was conducted on May 20, 2024. This assessment found CLP in the treatment areas was mostly well controlled.

The CLP was delineated and treated generally outside of the treatment area and the treatment occurred early in the CLP growth cycle to avoid CLP senescence which can contribute to high TP concentrations within the lake.

Loading

The internal load was 50% of the current water budget. Based on past studies and current evidence, the external load is not deemed to be a high threat to alum treatment effectiveness especially because the vast majority of the external load is coming from upstream Spring Lake. It is important to understand that phosphorus inflow exists in different forms with different bioavailability and controls. Dissolved phosphorus enters the lake and can be immediately used by algae. Particulate phosphorus settles to the bottom of the lake. Phosphorus bound to the sediments cannot be used by algae but can accumulate in sediments, under anoxic conditions dissolved phosphorus is released from the sediments. The alum treatments on Spring Lake do not have a direct impact on the effectiveness of the Upper Prior Lake. The water quality in Spring Lake has improved and Spring Lake provides pretreatment/settling of sediments which are the threat to alum treatment longevity. The alum treatments on Spring Lake have reduced dissolved phosphorus from potential being transported downstream and fueling algae blooms. However, the threat to the alum treatment on Upper Prior Lake is particulate phosphorus accumulation not dissolved phosphorus. Thus, changes to the internal loading control strategy on Spring Lake will not directly impact the alum treatment effectiveness on Upper Prior Lake.

After the second alum treatment it is important to continue monitoring hypolimnetic phosphorus conditions to determine if there are any unexpected influences in alum treatment effectiveness.

Conclusions and Recommendations

Overall, the water quality in Upper Prior Lake is good and has improved since the first alum treatment. However, a second alum treatment is recommended for the following reasons:

- There is an observed increase in bottom phosphorus concentrations and sediment core results reflect that there are still untreated phosphorus at the bottom of Upper Prior Lake.

- This untreated load is influencing the surface layer during mid-season mixing which increases the risk of algae blooms because it occurs within the growing season when algae growing conditions are optimal.
- Delaying the alum treatment prolongs the influence of the untreated internal load and increases the risk of algae blooms
- The prognosis for the success of the second alum treatment on Upper Prior is good with biological impacts and ongoing upstream external loads being addressed through carp and plant management and nutrient management in Spring Lake.

The second dose is recommended to be completed according to the following dosing strategy, Table 5. The updated dose is based on the sediment samples collected in winter of 2024 and represent adaptive management. The second dose is comparable to the first dose. In Zone 1 there is a recommended 6% increase and in Zone 2 there is a recommended 22% increase in doseage compared to the 2020 application.

Table 5: Recommended second alum dose summary

Alum Application	Treatment Zone	Acres	Al dose (g/m2)	Alum (gal/acre)	Sodium Aluminate (gal/acre)	Alum (gallons)	Sodium Aluminate (gallons)
Recommended Second Dose	Zone 1	230	65	518	259	119,201	59,601
	Zone 2	43	70	554	277	23,820	11,910

Total cost estimate includes application cost, and engineering cost to provide bidding, permitting, and application oversight assistance, Table 6. The cost is estimated for application is based on the cost of recent alum treatments. The range is provided because alum and sodium aluminate suppliers are hesitant to release prices more than about six months in advance due to market uncertainty and potential influences from tariffs.

Table 6: Recommended dose and cost estimate

Activity	Estimated Cost
Application treatment range	$915,000-$1,100,000
Engineering	$20,000
Total	$935,000-$1,120,000

Although the effectiveness factors have low risk of impacting the longevity of the second alum treatment, it is still important to exercise adaptive lake management by monitoring hypolimnetic phosphorus to determine that the internal load is still controlled by the alum dose as expected.

memo

Project Name |	Spring Lake Post Alum Treatment Evaluation	**Date** |	6/12/25
Contact	PLSLWD Board of Managers		
Cc / Contact info |	Jeff Anderson		
From / Contact info |	Anne Wilkinson, PhD		

Introduction

Hypolimnetic phosphorus in Spring Lake is increasing faster than projected after the 3rd dose of alum applied in 2020. In response, District staff requested EOR to conduct follow up sediment coring and evaluation of alum treatment effectiveness on Spring Lake following the series of alum treatments. EOR collected the sediment cores, delivered the samples to University of Wisconsin Stout for analysis of phosphorus release rate, phosphorus fractionation, and alum deposition depth. EOR also analyzed District water quality data, climate data, the original alum plan and dosing recommendations, and sediment chemistry results before and throughout the alum treatment series. This memo provides an explanation of results and recommendations for future management.

Background

Spring Lake is a 642 acre lake, with a maximum depth of 35 feet, and an average depth of 16 feet. The littoral area of the lake is 47% of the total lake area. The watershed of Spring Lake is 12,670 acres and consists mostly of agricultural land use.

According to the 2012 Spring and Upper Prior Lake TMDL Implementation Plan (TMDL), approximately 8,000 pounds of the 9,900 pounds of incoming total phosphorus load is deposited in the sediment of Spring Lake each year. The TMDL also indicates that 5,161 pounds, or 52 percent, of the total phosphorus load originates from internal loading. Since the 2012 TMDL, multiple projects have been completed that address both internal and external phosphorus loading to Spring Lake. Past management for Spring Lake includes ferric chloride treatment facility, curly lead pondweed treatment, and alum treatments. A series of three alum treatments have been completed in 2013, 2017, and 2020. This report serves as a post alum treatment series evaluation for sediment analysis and water quality response to the alum treatments.

Historic Water Quality

Historically water quality in Upper Prior Lake exceeded eutrophication standards, 60 ug/L. The mean summer total phosphorus concentration (TP) reported in the TMDL for the period of 1996-2006 is 0.114 mg/L. Over the last ten years the mean TP concentration has improved to 0.044 mg/L.

The water quality has improved in part due the series of alum treatments described in sections below. As outlined in Figure 1 prior to the alum treatments, TP concentrations within the bottom layer increased throughout the stratified period and then were mixed into the surface layer during lake turnover. This presents a high load of phosphorus from the lake into the surface layer where it can be utilized by algae and cause algal blooms. The response to the alum treatments is demonstrated by the hypolimnetic phosphorus concentrations (blue line) have decreased dramatically after each alum treatment (red dashed line) however the internal load continues to

accumulate after a few years due to external runoff and possible influence from carp mixing the sediments . The alum treatment series works by treating the existing sediment but new sediment inflow from the watershed. This new sediment accumulation is untreated and can contribute to the internal load which is what we are observing on Spring Lake.

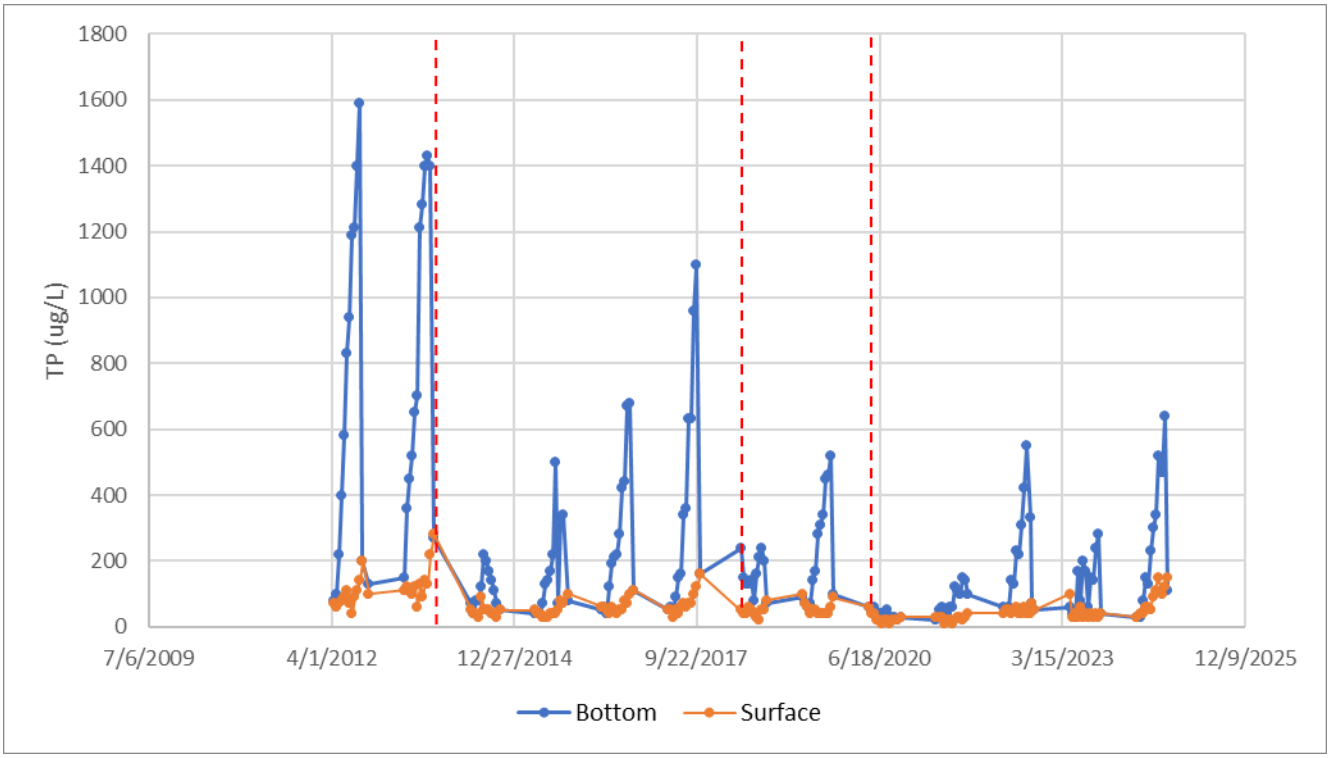

Figure 1: Historic TP summary. Orange represents the surface data and blue represents the bottom data. The red dashed line represents the date of the alum treatment.

Alum Treatment Series

The original plan for the alum dose is outlined in Spring Lake Sediment Core Analysis, Alum Dose Determination and Application Plan, 2012 (Barr 2012). The dose was calculated using the concentration of releasable phosphorus in the Spring Lake sediment. Releasable phosphorus is estimated as redox-P plus the labile organic-P fraction (estimated at 25% the total organic-P fraction). The labile organic phosphorus fraction represents the portion of the total organic-P fraction that will decompose into mobile-P. In 2012 Barr estimated that about 5 percent of the organic phosphorus decays each year and becomes part of the mobile phosphorus pool.

The dose includes alum and sodium aluminate in tandem to reduce pH spikes to protect ecology based on the needed alum application rate. Due to variations in sediment phosphorus concentrations in the lake, two separate alum doses were prescribed for different zones of the lake, Figure 2, 103 grams aluminum per square meter (g Al/m2) or 1,900 gals/acre for the 194-acre Zone 1, and 56 g Al/m2 or 1,000 gals/acre for the 215-acre Zone 2. The average overall dose would be 78 g Al/m2 for the combined 409-acre treatment area.

The goal of the original prescribed dose was an 89% reduction in releasable-P in Zone 1 and a 75% reduction in releasable-P in Zone 2. Using the internal phosphorus release rate of 17 milligrams of phosphorus released per square meter of lake bottom per day used to model Spring Lake as part of

the TMDL, it is estimated that with a 75% to 89% reduction in releasable-P, internal loading would be reduced to 2 to 4 milligrams of phosphorus per square meter per day. This rate is similar to the TMDL-prescribed internal load rate.

The first phase of an alum treatment was completed in late October 2013, 10/22/2013 – 11/1/2013. Subsequent alum treatments were completed in June 2018, 6/21/2018 – 6/26/2018, and May 2020, 5/4/2020 – 5/14/2020. Barr, 2012 recommended the alum application be split into three separate applications to be spread out over approximately 7 or more years. This frequency of the alum treatments was adjusted based on increases in hypolimnetic phosphorus concentrations. The Phase II recommendation report states the 2016 monitoring results show the surface water phosphorus is consistently lower in each from 2013-2016 and was consistently meeting the lake water quality standard with two exceptions—the spring and early summer of 2014 (during the flood event) and the fall of 2015. Even with the small spike in the fall of 2015, it shows that lake water quality has been much improved and has not been subject to the same magnitude of internal loading. Thus, Barr recommended PLSLWD could hold off on the next phase of the alum treatment for another year or two and continue to monitor the lake water quality for deterioration. Barr also recommended that PLSLWD continue to pursue opportunities to implement additional Best Management Practices in the Spring Lake watershed as a large load of phosphorus remains untreated each year, especially during high flows.

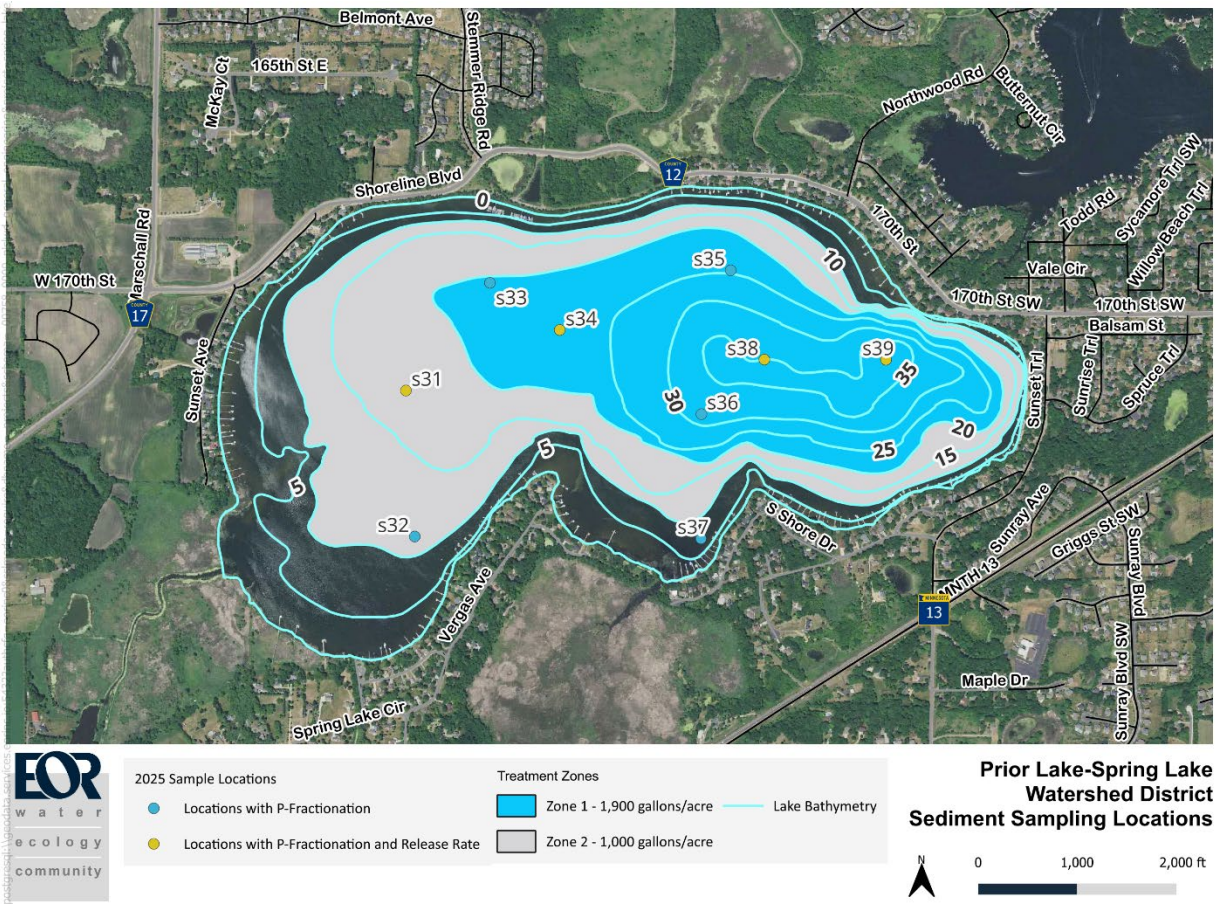

Figure 2: 2024 Sampling and Alum Treatment

Alum Treatment Effectiveness Factors

Alum treatment effectiveness is impacted by several factors that differ amongst lakes and watersheds. Cooke et al. (2005) identified the following complications that limit the long-term effectiveness of an alum treatment:

- **Low doses –** Low doses of alum treatments can reduce effectiveness because not enough P is bound to the alum to reduce the internal load.
- **Focusing of the alum floc layer by wind mixing** – Wind mixing can reduce effectiveness because alum coverage becomes uneven leaving P rich sediments untreated.
- **Interference with macrophytes** – Aquatic plants impact alum effectiveness several ways. They can disrupt floc settling, excessive growth may raise the pH resulting in phosphorus sediment release, plant dieback may produce anoxic areas that release mobile phosphorus, and plant dieback can put phosphorus directly back into the water column.
- **Bioturbation of the floc** – High rough fish densities can negate the effects of an alum treatment by disturbing the floc, exposing underlying P rich sediment. Also, high densities of carp, black bullheads, and even bluegill sunfish can theoretically excrete enough sediment-derived phosphorus to produce algae blooms.
- **Insufficient reduction of external nutrient loading or coverage by new sediment** – Insufficient reduction of external nutrient loading or coverage by new sediment represents the potential limitation to the long-term effectiveness of the alum treatment

In 2012 Blue Water Science produced a report, "Using an Alum Index to Assess the Feasibility of an Alum Application to Spring Lake, Scott County, Minnesota" using the alum index to evaluate the effectiveness of the alum treatment on Spring Lake and concluded that Spring Lake had poor potential for meeting water quality goals from the alum treatment because of the watershed load, carp populations and vegetation. In response, in 2013 Barr Engineering generated a report, "Comparative Analysis of Minnesota Lakes Treated with Alum to Inform Spring Lake Treatment" that compared Spring Lake characteristics to other Minnesota lakes that had received alum treatments to evaluate the potential for the alum treatment success. This report concluded that Spring Lake had similar characteristics to lakes that had successful alum treatments that achieved 10 year longevity. They also offered some recommendations for overcoming some obstacles for the effectiveness of the alum treatment, including the recommendation to split the alum treatment over 7 years to continue work removing external loading and bioturbation from carp populations, and conversion of the high proportion of organic P to mobile P. These reports empathize the factors that impact the effectiveness of alum treatments on Spring Lake.

The remainder of this report will discuss the present study to evaluate the effectiveness of the alum series and make recommendations for future management.

Results

Water Quality

PLSLWD has contracted Three Rivers Park District to monitor water quality in Spring Lake from 2006 through 2024. The lake is monitored 13 times per year, at surface, middle, and bottom locations. Sonde profile measurements are taken at 1-meter intervals.

Overall, the surface water quality on Spring Lake is good and has been meeting the site specific lake standards since the first alum treatment, with the exception of 2017 and 2024, Table 1 and Figure 3. Table 1 shows the TP concentrations attributed to the monitoring data collected from 2012-2024. The first and second rows represent the summer average (April-October) and the growing season average (June -September), respectively. The table then compares data sampled at different dates ranging from early, mid, and late month samples. TP concentrations exceeding the site specific lake standard are highlighted in orange and concentrations at or below the site specific lake standard are highlighted in blue. The red dashed line represents the timing of the alum treatment, where the alignment left of the cell represents spring treatment and the right of the cell represents a fall treatment for the representative year. Blank cells represent where no samples taken during that period. Data in bold represents samples that are influenced by hypolimnetic mixing, meaning the TP concentrations has increased following a mixing event. Mixing events commonly occur during spring and fall turnover, and sometimes during windy storms on shallow lakes. The significance of mixing events on water quality is nutrients from the bottom can become available to sunlight and algae possibly fueling summer blooms.

The first alum treatment showed an immediate improvement in the surface TP concentrations until 2017, Figure 3, and the bottom TP concentration until 2015,Figure 4.

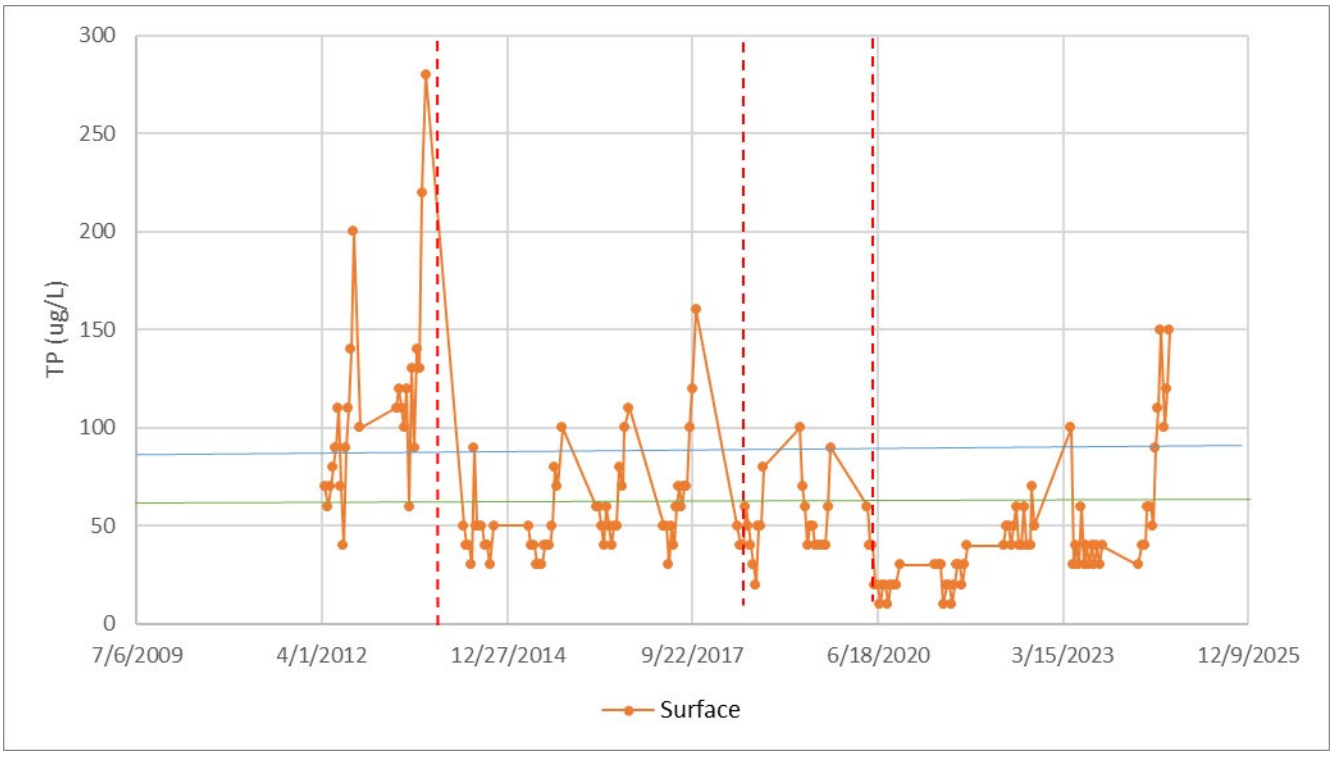

Figure 3: Historic TP summary. Orange represents the surface data. The red dashed line represents the date of the alum treatment. The green line represents the state standard 60 ug/L. The blue line represents the goal concentration from the 2012 feasibility study.

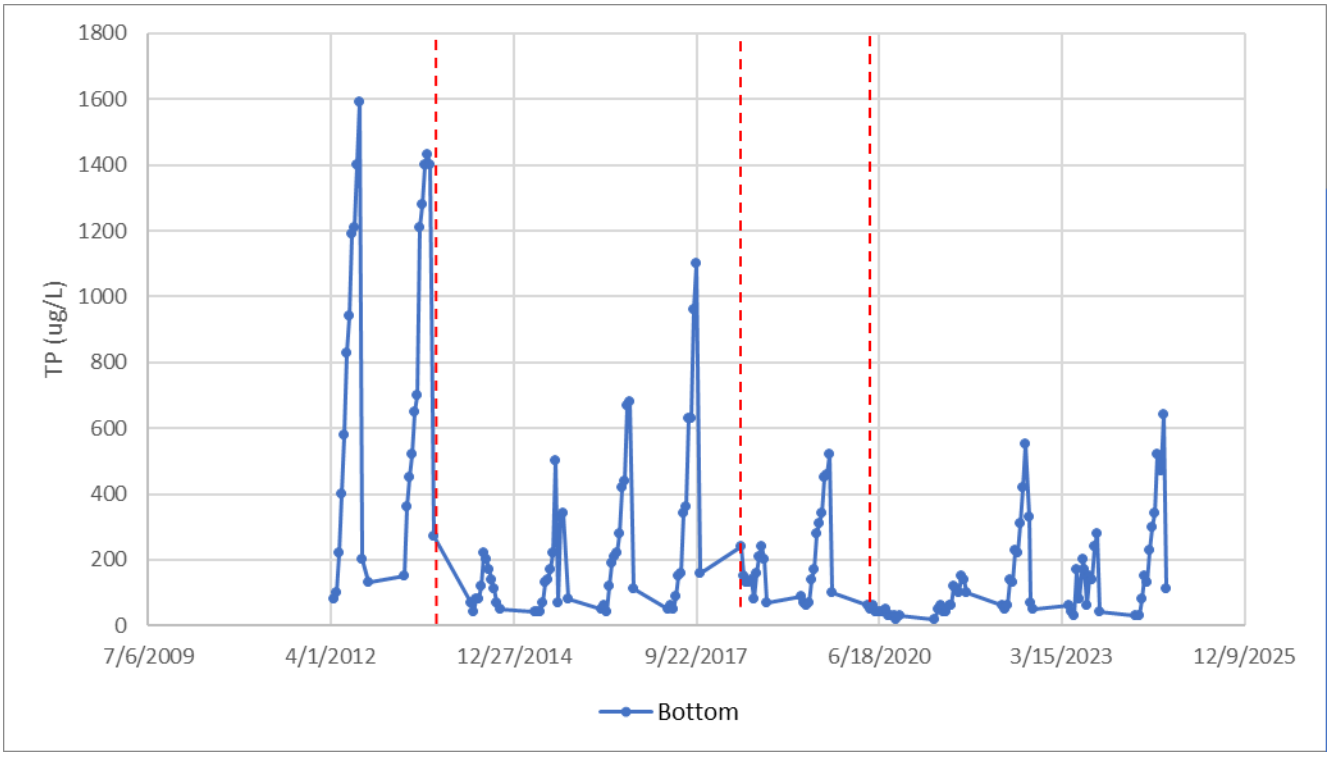

Figure 4: Historic TP summary. Blue represents the bottom data. The red dashed line represents the date of the alum treatment.

In the 2012 feasibility study, Barr stated that an anticipated outcome of the series of alum treatments was that the estimated in-lake total phosphorus concentration would be reduced on average to 85 ug/L (based on all of the 1998 through 2006 annual loading and lake response modeling data provided in the TMDL report) after the full dose alum treatment, (Barr 2012). This has been achieved and generally during the growing season (June- September) sustained since the first alum treatment was completed, Table 1 and Figure 3. The water quality improvement during the growing season is also demonstrated by the transition from samples exceeding the state standard (orange) to samples meeting the state standard (blue), Table 1.

However, the concern has been the effectiveness of the alum treatments as the series has been completed. A similar pattern can be observed after each alum treatment with the first few years of treatment showing suppression of the bottom phosphorus accumulation followed by an increase in maximum concentrations, Figure 4. However, there was a rebound in bottom phosphorus concentration observed one year after the 2013 and 2018 alum treatments and two years after the 2020 alum treatment. It is important to note that 2023 bottom TP does not show the same peak as observed in 2022 and 2024 because there was a mixing event which released the phosphorus that had accumulated in the bottom layer in August.

Although the bottom TP concentrations are not as high as pre-treatment conditions and this had led to a vast improvement in surface water quality, they are still increasing with each subsequent year and do have an influence on surface TP concentrations with intermittent mixing. Lake mixing from wind or temperature changes allows for the high TP concentrations in the bottom layer are mixed into the surface where it can fuel algae blooms. The influence of the internal loading increasing surface TP concentrations is demonstrated in Table 1 in which bold cells represent samples that

have an influence of mixing which showed an increase in phosphorus concentrations in the spring and fall. Table 1 and Figure 3 demonstrate there are peaks in TP concentrations observed in the falls of 2015-2017 and 2024 (not bolded) that were not influenced by the bottom layer and thus are driven by external loading. It appears that Spring lake is able to maintain good surface water concentrations even with these influences, with the exception of some high fall concentrations.

Table 1: Monitoring Summary Based on Site Specific Lake Standard. The blue squares are samples meeting the standard. The orange squares represent samples exceeding the standard. Data in bold represents samples that are influenced by hypolimnetic mixing. The green cells represent the growing season period (June-September). The red dashed line represents the timing of the alum treatment, where the left of the cell represents spring treatment and the right of the cell represents a fall treatment for the representative year. Blank cells represent that there were no samples taken during that period.

Spring Lake Phosphorus Deep Lake State Standard ≤ 60 µg/L 10-Year Average: 44 µg/L	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Sample Period Average	97	138	46	51	64	73	46	59	27	24	48	42	84
Growing Season Average	83	110	50	37	54	59	38	46	19	17	45	37	88
April	**68**			**49**	**56**	**51**		**105**	**57**	**28**	**43**	**99**	**34**
Early May	65	**113**	**52**	**35**	**61**	**49**		**71**	42	34	**52**	**28**	**36**
Late May	82	115	**36**	**39**	48	42	53	**61**	35	31	**46**	**45**	42
Early June	85	112	45	33	49	40	37	45	24	14	36	28	57
Late June	113	103	35	28.5	47	56	38	51	15	16	49	**61**	64
Early July	69	119	**86**	38	44	66	56	54	21	16	61	30	53
Late July	36	93.5	53	40	51	57	42	43	21	12	42	44	90
Early August	90	90	49	35	53	69	35	40	13	20	36	**26**	112
Late August	107	145	35	**48**	80	66	23	41	19	26	48	35	154
Early September	136	127	40	83	68	101	48	45	22	24	43	39	97
Late September	**204**	223	30	74	96	117	51	64	**22**	33	**68**	29	120
October	**104**	**280**	**51**	**104**	114	**163**	**76**	**91**	**32**	39	**47**	**38**	**147**

Sediment Core Analysis

Sediment cores were collected on Spring Lake in 2012, 2016, and 2020 to determine the concentration of phosphorus fractions in the lake's sediment and to calculate an alum dose for a whole lake alum treatment. Sediment was analyzed for the following phosphorus fractions; mobile phosphorus (mobile-P), organic phosphorus (organic-P), aluminum bound phosphorus, and calcium bound phosphorus. The mobile-P fraction represents the iron bound phosphorus fraction, as well as the loosely-sorbed phosphorus fraction. In 2024, EOR collected nine sediment cores from the locations, Figure 2. EOR delivered the sediment cores to the University of Wisconsin Stout (UW Stout). Cores from all nine sediment locations were segmented into six sections: 0-2cm, 2-4cm, 4-6cm, 6-8cm, 8-10cm, 10-20cm. Each section was analyzed for loosely-bound P, iron-bound P, labile organic P, and aluminum-bound P (Al-bound). In addition, four sediment core locations were analyzed for soluble reactive phosphorus release rates. Incorporating release rate analysis is imperative to understanding the load reductions achieved by the alum treatment. The four locations represent a cross section of the alum application area. EOR also recollected sediment cores in the Spring of 2025 to verify that the fractionation results from the 2024 samples. The 2025 core 36 were sent to the St Croix Research Station for analysis.

Figure 5 represents the sediment cores collected in Zone 1 and Figure 6 represents cores collected in Zone 2. In general, after an alum treatment the redox P pool should be reduced. This is not the case in Spring Lake, Figure 5 and Figure 6. Initially it was hypothesized that this was an artifact of a laboratory error thus sediments were re-sampled in spring 2025. However, the initial 2024 results were similar to those re-collected in Spring 2025 . A subset of the samples collected in spring 2025 were sent to another lab, St Croix Research Station for verification. The sample sent to the St Croix Research Station confirmed the results from UW-Stout for the top 4 cm, which are relevant to the influence of the alum treatments, and show similar variability as the 2024 and 2025 cores analyzed but UW Stout. Though these higher concentrations are unexpected they have been confirmed by two different labs and two different sets of cores, thus the redox-P concentrations reported here are representative, however the mechanism to explain this not apparent to either UW Stout and St Croix Research Station researchers. The increase in concentrations could be from bioturbation from carp populations or deposition of external phosphorus loads. This phenomenon has been observed by UW-Stout in other lakes, one example Cedar Lake, Wi, that have been shown to have short alum treatment longevity.

Figure 7 and Figure 8 represents the Al-bound phosphorus results in Zone 1 and Zone 2, respectively. In general, the Al-bound P is higher than the 2020 concentrations which is expected after an alum treatment. The locations of the highest Al-bound phosphorus are 36, 38, 39 in the Zone 1. The lower peak concentrations in Al-bound were observed at 37,32,31 in the zone with the lower dose of alum treatment. The release rates observed from the 2024 cores are at the top range of the stated goal from the 2012 feasibility study, Table 2. A low release rate is generally considered below 2 (mg/m2 d). Zone 2 has the lowest release rate however there is no pretreatment release rate data to compare to see the relative reductions amongst the treatment zones.

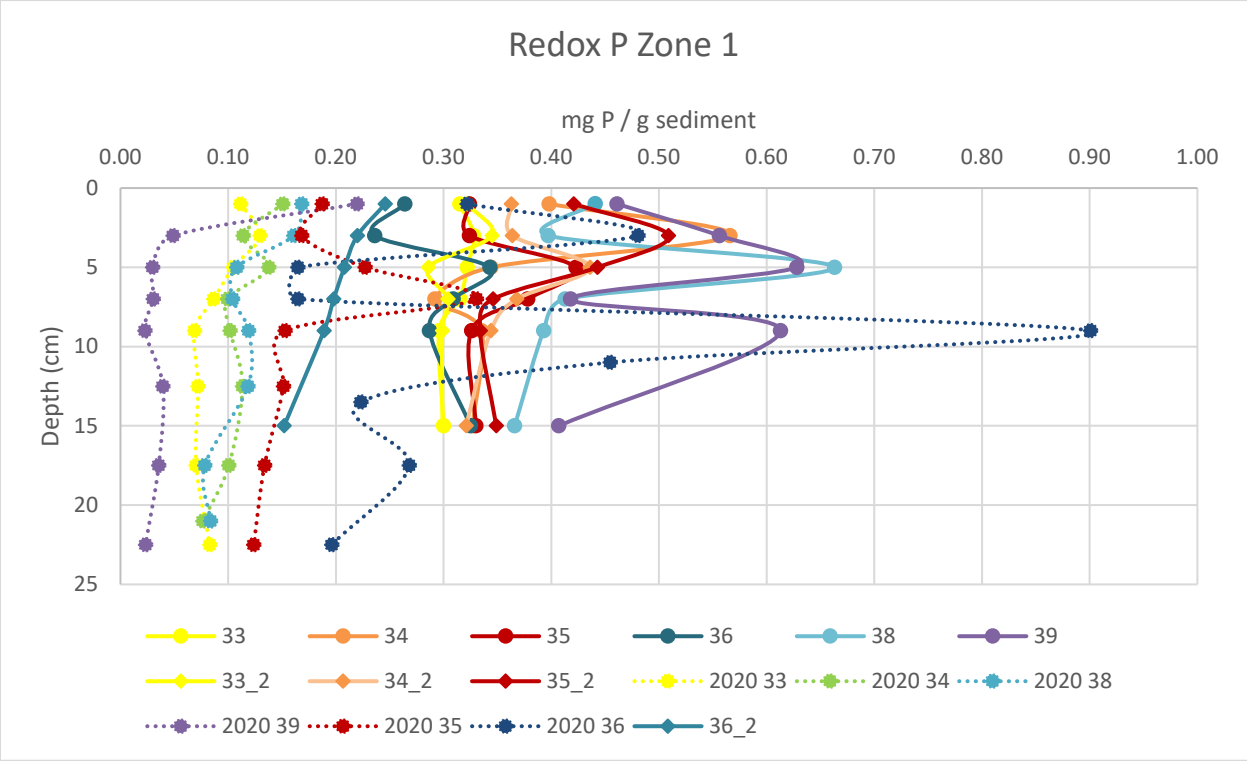

Figure 5: Redox P profile comparison for Zone 1. The dashed lines represent the 2020 data and the solids lines represent 2024/2025 data.

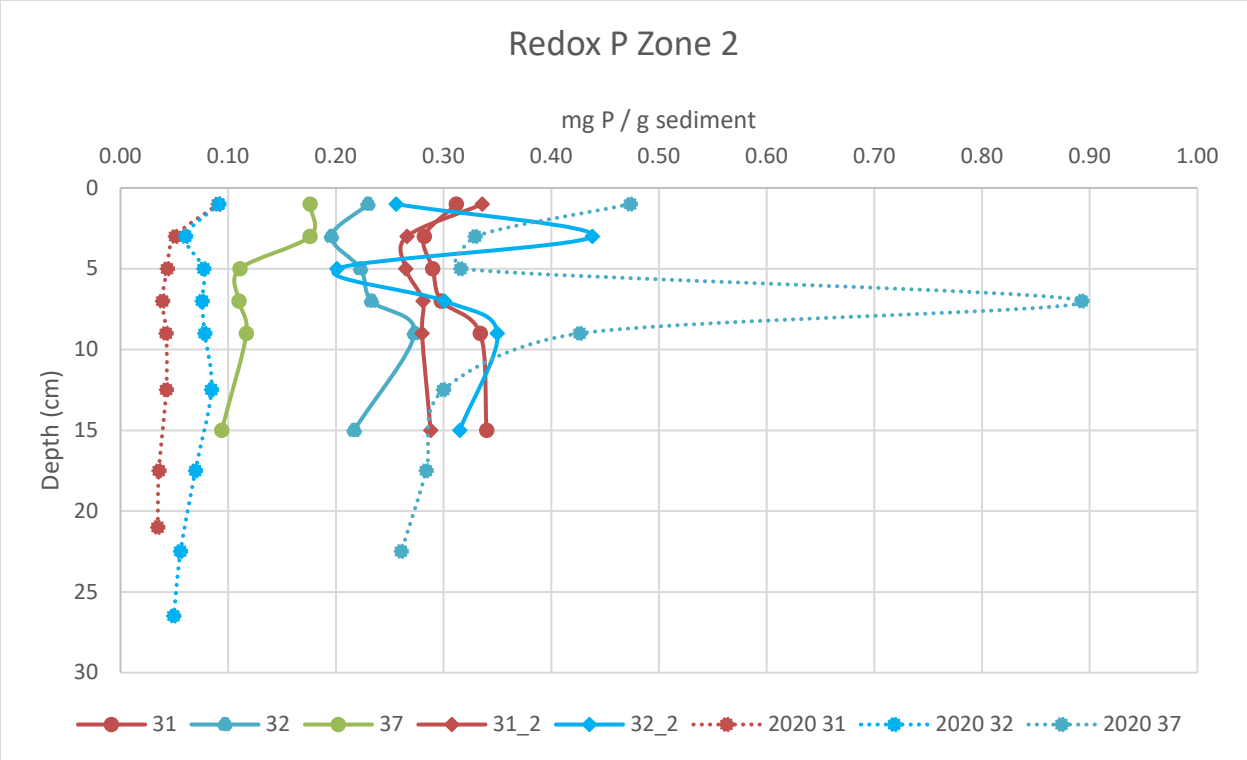

Figure 6: Redox P profile comparison for zone 1. The dashed lines represent the2020 data and the solids lines represent 2024/2025 data.

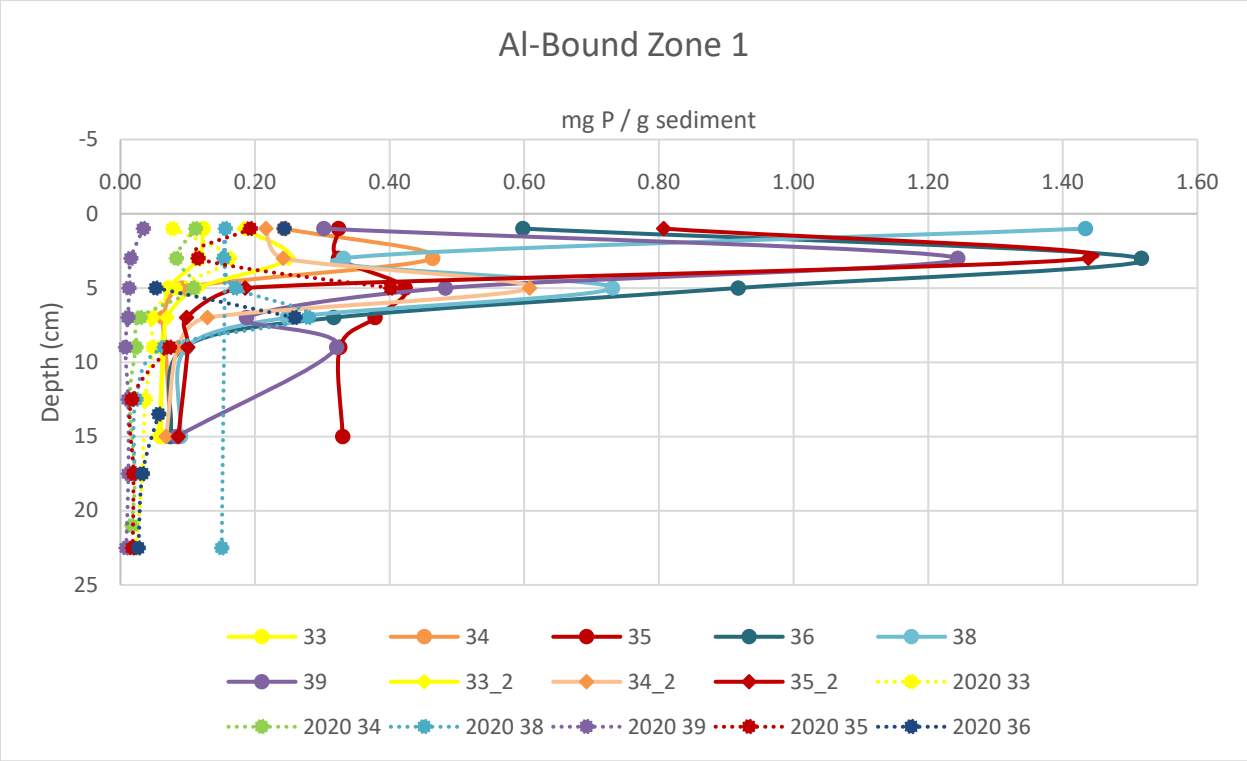

Figure 7: Al-bound P profile comparison for zone 1. The dashed lines represent the2020 data and the solids lines represent 2024/2025 data.

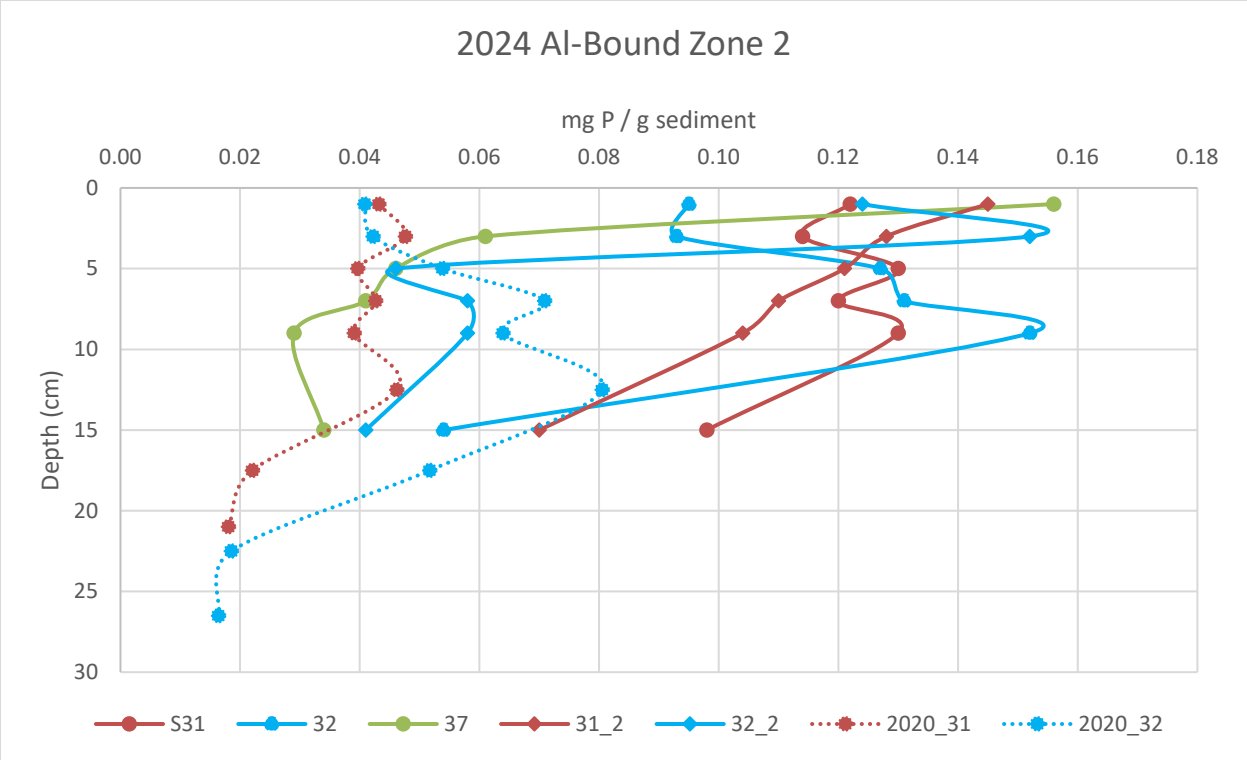

Figure 8: Al-bound P profile comparison for zone 1. The dashed lines represent the2020 data and the solids lines represent 2024/2025 data.

Table 2: Release rate summary

Station		Release Rate (mg/m2 d)
Zone 1 (Deep)	34	4.58
	38	3.37
	39	4.66
Zone 2 (Shallow)	31	1.51

Discussion

The alum treatment series has resulted in improved water quality. Though from the conception of the alum treatment plan (Barr, 2012), the prescribed an alum dose to control internal loading recommended the alum application be split into three separate applications to be spread out over approximately 7 or more years to improve effectiveness. This recommendation serves the following purposes:

- Improves the overall treatment efficiency of each application of alum to the lake sediments
- Allows for further monitoring or study (and subsequent prioritization) of watershed sources of phosphorus under varying climatic conditions
- Allows for further implementation of watershed controls for external phosphorus loading
- Allows for further implementation of rough fish controls for internal phosphorus loading to Spring Lake.

Unfortunately, not all necessary activities were completed to support the long-term effectiveness of the treatment. Additional watershed improvements are still needed, and carp population thresholds were not met, which may jeopardize the protection of alum treatments. This discussion will outline the evidence to support the impact of different factors on the effectiveness of the alum treatment series, Table 3.

Table 3: Effectiveness factor summary

Effectiveness Factor		Applicable to Spring Lake	Evidence
Dosing and application area	Low Dose	Low	Alum dose was appropriate for the sediment conditions
	Wind Mixing	Low	Al-bound coverage is driven by dose Low wind conditions during treatment
Biotic Interference	Interference with macrophytes	Medium	CLP was not in the application area
	Bioturbation of the floc	High	Carp is still above the population threshold for bioturbation
External Load	Watershed Load	High	Still high external load coming into Spring Lake

Dosing and Application Area

Dose

The overall dose was appropriate for the alum treatment based on the Redox-P or Mobile-P. The only notable dosing observation is that in 2018, the dose seemed to have lower effectiveness. After the 2018 dose there was a small decrease in bottom P but then concentrations increased to ~250 mg/L and then in 2019 the P increased to over 400 mg/L which was still less than the pretreatment year. This might be due to the fact that the 2018 dose applied mid-summer. According to the TP time series there was also a dip in TP during the treatment period, Figure 10. This may be evidence that some of the dose was intercepted by water column stripping and thus reduced bonding efficiency in the sediments. This phenomenon was not observed during the other treatments and may be the reason the 2018 alum treatment was not as effective as the 2020 treatment, evidenced by the rebound after one year whereas the rebound was not observed to the same extent for two years after the 2020 treatment. Applications should be avoided in the growing season to avoid water column stripping events.

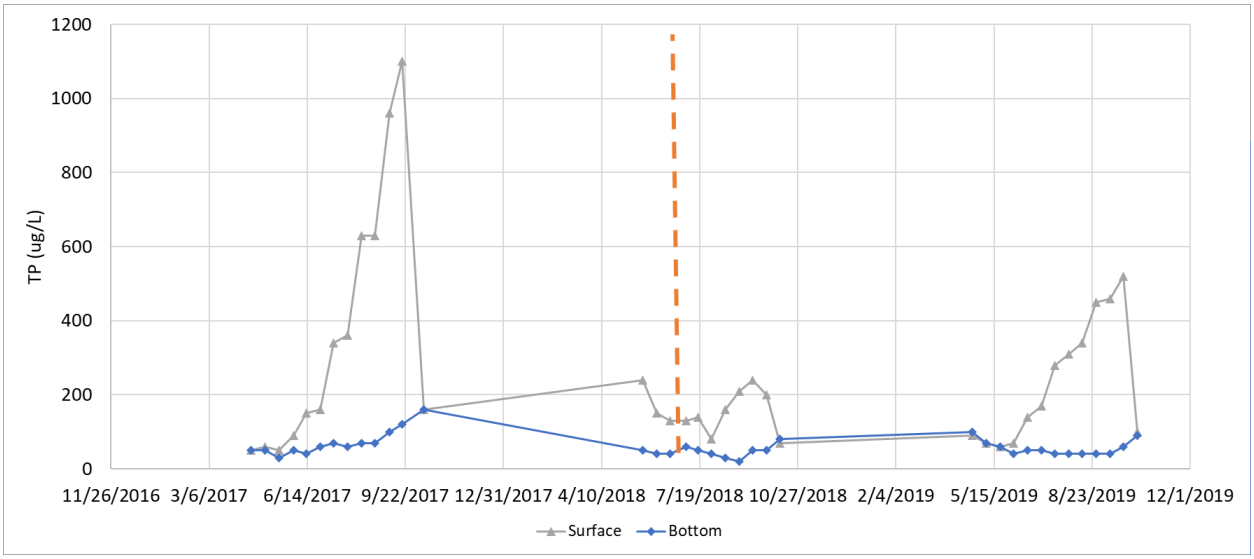

Figure 9: TP concentration time series of measured at surface (blue) and bottom (gray). The orange dashed line represents the date of the alum treatment.

Wind and Precipitation

In general, specifications for alum treatment applications are to apply only if the forecasted 24-hr precipitation is less than 1 in and the wind speed is less than 15 mph to avoid mis-application from drifting of the barge or excessive wave action. These conditions were met during all of the applications. Additionally, Al-bound concentrations were correlated with the dose in the application zone and not effected by wind mixing.

Biotic Interference

Aquatic Plants

According to PLSLWD records, point intercept (PI) surveys and AIS assessments have been conducted regularly since 2008. Early season meandered surveys occur annually to characterize the status of curly leaf pondweed (CLP) and Eurasian watermilfoil (EWM) and to guide treatment for CLP if necessary. Between 2016 and 2024 on average 13.4 acres of CLP have been treated. In addition to AIS assessments, the District contracts PI surveys to assess native aquatic plant population diversity, distribution, and help guide lake management. PI surveys are completed every other year. The number of submerged aquatic plants has increased from 10 in 2015 to 17 in 2023.

According to the 2023 Aquatic Plant Point Intercept Surveys for Spring Lake, Scott Co, Minnesota report by Blue Water Science, results of the summer aquatic plant point intercept survey conducted on August 16 and 19, 2023, found 17 submerged aquatic plant species with including CLP and Eurasian watermilfoil (EWM). Native plants were found around the perimeter of the basin of Spring Lake out to a water depth of 12 feet. Native aquatic plants were estimated to cover of the lake bottom (184 acres). Coontail was the dominant aquatic plant. The 17 aquatic plant species found in this survey represent a good diversity for Spring Lake in late summer. Eurasian watermilfoil was found for the first time at 3 sites in the point intercept survey and at an additional 9 sites with a subsequent meander search in 2021.

Spring Lake has seen CLP herbicide treatments from 2002-2006 and 2016-2024 apart from 2018. Since the introduction of EWM in 2021, additional EWM specific herbicide treatments have been conducted in 2021 and 2022. Plant data for 2023 showed CLP is present in June and August in the southwest bays.

In May 2024, CLP was controlled in the treatment area with some patches of heavy growth found on the south side of Spring Lake. EWM was observed at 4 sites with light growth. On July 2024 CLP was only sampled at 3 sites and Eurasian watermilfoil was found at 11 sites with light growth during the survey.

Overall, the CLP and EWM were generally not observed in the alum treatment area. At this time, it does not appear that aquatic plants have a pronounced impact on the alum treatment as surveys show plant populations were not in the application area. It is important to discuss the role of aquatic plants on internal loading control. Particularly if plants should be removed from the lake as a mechanism for internal loading reductions. On Spring Lake, plant removal for this purpose is not a viable option for the following reasons:

- Plants are observed not in high densities in the deep area of the lake where anoxia can occur This means that decay of plant matter after dying off is happening faster and not necessarily contributing to the P pool that can contribute to internal loading
- if plants are removed, the capacity to absorb the phosphorus that is coming into lake is removed
- If they do not grow back, then that capacity is gone
- If the plants are not using the TP coming into the lake then algae can take advantage of the available phosphorus. Algae blooms contribute more biomass to the P pool in the area of anoxia that turns into internal loading.

Fisheries Results

According to the 2023 Integrated Pest Management Plan, Spring Lake has an elevated carp biomass estimate of 170-250 kg/ha as calculated in the 2022 populations surveys. The District's carp management program includes tracking carp through a variety of methods including trap nets, gill nets, and boat electrofishing. Common Carp data available is from 2014-2021, Figure 9. Carp populations are consistently moderately high. Carp numbers fell in 2017, but have since risen back to 2014 levels, in the range of 190 – 250 kg/Ha which is above the District's biomass goal of 100 kg/ha. For several years, common carp were observed inhabiting and spawning in the ferric chloride system desilt pond. A total of 1,850 bluegills, which are prolific eaters and will prey on carp eggs, were stocked in the desilt pond to function as biocontrol. Bluegill stocking is a management strategy used to reduce recruitment and overall population numbers. District staff also maintained six carp barriers to prevent access to spawning areas. In 2024, these were located at: 12/17 Wetland, Tadpole Pond, Desilt Pond, FeCl Weir, Arctic Lake Outlet, and Northwoods Pond. Carp migration spawning activity will be monitored to see if any additional barriers are needed moving forward. The District's biomass goal for Spring Lake is reduce the carp population to below 100 kg/ha where studies show they are less ecologically damaging. The District's goal in 2025 is to focus efforts on carp removals from Spring Lake.

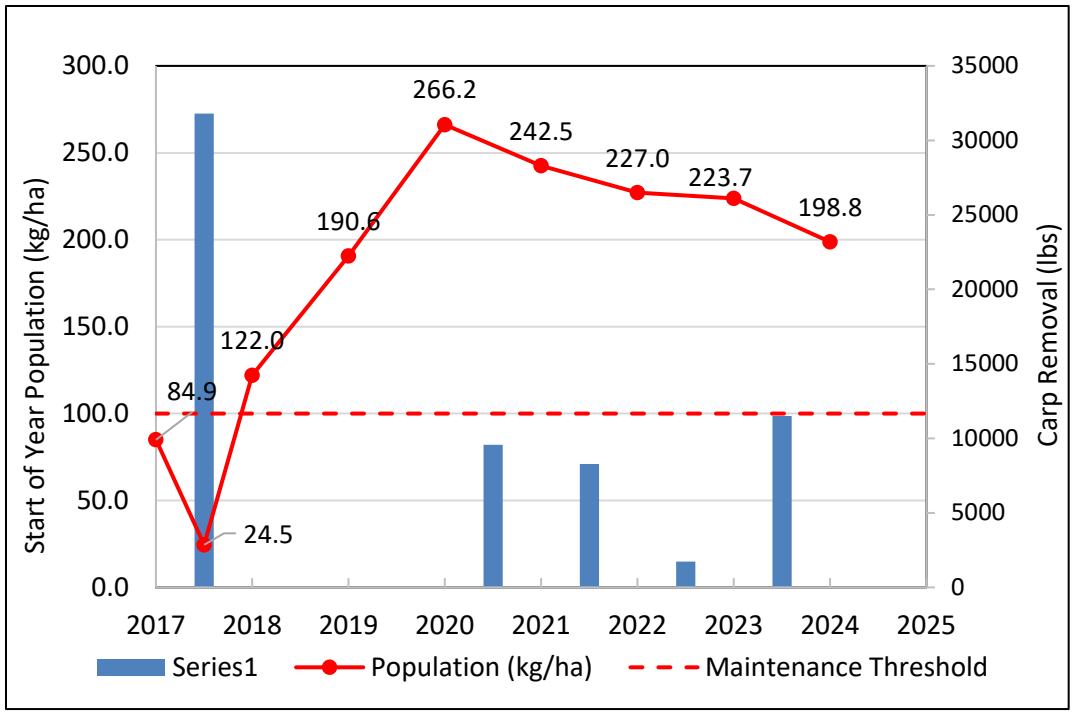

Figure 10: Carp Population Time Series. Series 1 Represents Pounds Carp Removed.

External Loading

Since the original alum treatments feasibility study, there have been some improvements in the Spring Lake watershed. The focus has been on agricultural BMPs, i.e., cover crop and buffer implementation. Additionally, in 2015 a wetland restoration project, known as the 12/17 wetland, was installed that enhances flood control and captures phosphorus and sediment before they reach Spring Lake and other downstream waterbodies. The project restored wetlands and added an iron-

enhanced sand filter to treat runoff from two highways, city roads and an upstream 60-acre agricultural area. This project resulted in 60 lbs/yr reduction. These reductions seem to have improved loading from 2014 to 2015 onward, Figure 11. However, the load reduction is not enough to meet the external load reduction goals from the TMDL which calls for a 2,959 lbs/yr.

As discussed above there are high phosphorus concentrations that are observed in the fall that are likely driven by peaks in external loading. Reductions in these loads will improve surface water quality and slow the accumulation of legacy phosphorus. It is important to understand that phosphorus inflow exists in different forms with different bioavailability and controls. Dissolved phosphorus enters the lake and can be immediately used by algae. Particulate phosphorus settles to the bottom of the lake. Phosphorus bound to the sediments cannot be used by algae but can accumulate in sediments, under anoxic conditions dissolved phosphorus is released from the sediments. External load control can reduce dissolved P and particulate P before it enters the lake both reducing algae blooms fueled by the incoming dissolved P and the dissolved P released from the sediments. Alum treatments can only treat phosphorus that is released from the sediment. Thus, external load controls are more effective than alum treatments for treating different types of phosphorus. Functionally, alum treatments are the final lake management tool after external loading control to clean up long-term legacy loads that have accumulated from historic external loading. On Spring Lake, the alum treatment series have reduced the long-term legacy internal load which resulted in an improvement in water quality. However, new sediment continues to accumulate because of the external load thus internal load continues to persist.

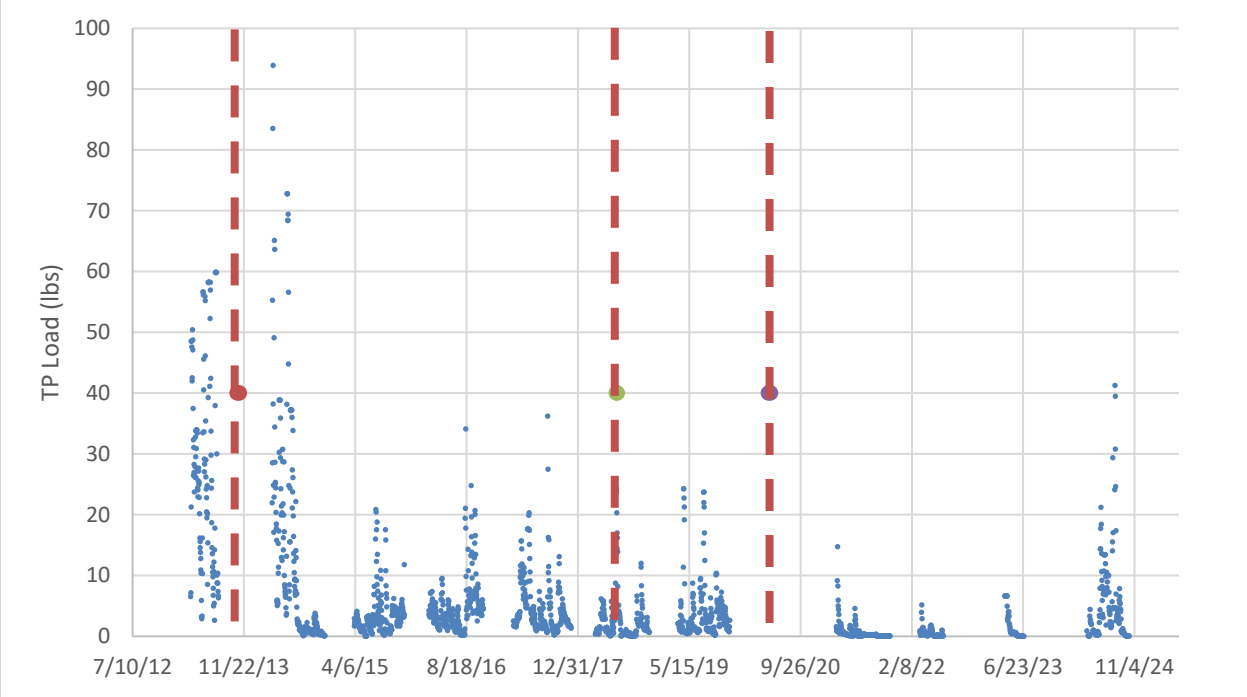

Figure 11: Spring Lake Input TP load from CD3.

Conclusion

There has been a long history of internal loading studies and management on internal loading in Spring Lake. This report summarizes that work and evaluates future recommendations. The following conclusions drive the recommendations below:

- Overall, the water quality in Spring Lake is good and has improved since the alum treatment series began in 2013.
- The bottom TP concentrations are not as high as pre-treatment conditions.
- The release rates observed from the 2024 cores are at the top of the range stated in the goals from the 2012 feasibility study; however, the effectiveness seems to be waning.
- The bottom TP is still increasing a few years after the alum treatment and can have an influence on surface TP concentrations with intermittent mixing.
- It is evident that Spring Lake is able to maintain good surface water concentrations even with these influences, with the exception of some high fall concentrations driven by external loading.
- Even at the onset of the internal load control planning, effectiveness was a concern, citing carp populations and external loading as key factors.
- External loads have not significantly been reduced since the alum treatments began and carp populations are still above the threshold for bioturbation.

Based on the results of this study, EOR recommends delaying further alum treatments until the external load has been reasonably addressed according to the TMDL and carp are below the 100 kg/ha threshold. The bottom phosphorus should continue to be monitored to determine if the maximum TP accumulation continues to increase. The following outlines the possible water quality scenarios and the recommended actions to address them.

Scenario 1 - There is no reason to revisit the internal load, if:

- External load and carp populations are reduced
- Surface water quality goals are being met

Scenario 2 - Internal load control should be reassessed, if:

- External load reductions and carp population control are not feasible
- Surface water quality goals are not met

It is important to note that the alum treatments have been effective for achieving their stated goals of reducing legacy phosphorus. However, the alum treatment effectiveness historically only lasts a few years because of new sediment accumulation. If alum treatments continue without the reduction of external loading, internal load control will likely need to be repeated every few years. Another way to conceptualize this is that by completing the alum treatments under the current conditions, the District is treating the external load within the lake instead of treating it before it enters the lake. This is not ideal because the phosphorus load settles to the bottom of the lake it influences the lake eutrophication. The external phosphorus load can fuel algae blooms in the surface water causing a nuisance and possible risk to human and ecological health. Thus, capturing phosphorus before it enters Spring Lake is the best practice to improve water quality.

PLSLWD Board Staff Report
June 13, 2025

Subject	Draft 2026 Budget Memo
Board Meeting Date	June 17, 2025 **Item No:** W.3
Prepared By	Joni Giese, District Administrator
Attachments	a.) Draft 2026 Budget in Financial Statement Format b.) Draft 2026 Budget Memorandum
Proposed Action	No action requested. For discussion only.

Background

The 2026 budget development process started in April and May with staff meeting with the Board of Managers and the CAC, both individually and jointly, to discuss priorities that will influence the development of the 2026 budget.

Discussion

Attached is the first draft of the 2026 budget that attempts to reflect the input received from the Board of Managers, CAC, along with staff suggestions. The budget reflects board direction received to increase efforts on water quality projects and reduce and/or maintain efforts related to flood mitigation, education and outreach, and aquatic invasive species (AIS) prevention/maintenance.

A primary premise of this draft budget is that in 2026 PLSLWD will deplete its budget reserves above what is needed to cover restricted funds, committed funds, and an emergency buffer. Most upcoming capital projects will require funding from sources other than ad valorem taxes. Potential future funding sources include grant funds and/or bonding. While staff will work to submit grant applications in 2026, it is assumed that several future capital projects will not be candidates for grant funds and that construction of these projects will require a several year build-up of committed funds or bonding. At the workshop staff will share upcoming capital projects and potential funding approaches for these projects. With the assumption that bonding may be required in 2027, should PLSLWD not be successful in securing grant funds, this budget draft includes a $150,000 addition to the debt payment reserve budget item. The intent of this reserve is to avoid a sharp levy spike when bond payments begin. Note that the $150,000 addition to the debt payment reserve essentially equals the entire levy increase for 2026.

Scott County has not yet provided a tax impact statement, which allows the District to better understand the estimated tax rate for residents associated with the District levy. This information is typically distributed in early July and hopefully will be available to the District before the next board meeting.

The intent of this workshop session is to receive initial feedback on potential projects/programs that should be cut and those that should continue to be refined. Staff will bring back a refined draft budget at the July workshop. The budget must be adopted at the August board meeting in order to submit the adopted levy by September 15 in compliance with statutes. After September, the levy can still be reduced but not increased.

Program Element		2026 Source of Funds: 2026 Levy	Budget Reserve	Grant Funds/Fees	2026 Budget	2025 Budget	2024 Budget	2023 Budget
	General Fund (Administration)							
	Revenues							
	Property Taxes	$ 289,000	$ -	$ -	$ 289,000	261,600	$ 252,000	$ 249,200
	Interest	-	-	10,100	10,100	18,400	9,000	3,000
	Other	-	-	-	-		-	-
	Total Revenues	**$ 289,000**	**$ -**	**$ 10,100**	**$ 299,100**	**$ 280,000**	**$ 261,000**	**$ 252,200**
	Expenditures							
	Administrative Salaries and Benefits	$ 160,600	$ -	$ 10,100	170,700	155,500	$ 145,000	$ 138,000
	703 · Telephone, Internet & IT Support	16,000	-	-	16,000	19,500	16,000	16,200
	702 - Rent	29,000	-	-	29,000	28,200	27,500	28,300
	706 · Office Supplies	10,300	-	-	10,300	7,000	8,000	9,000
	709 · Insurance and Bonds	13,400	-	-	13,400	13,000	13,000	14,200
	670 · Accounting	38,200	-	-	38,200	36,300	33,500	31,000
	671 · Audit	11,800	-	-	11,800	11,000	10,500	9,000
	903 · Fees, Dues, and Subscriptions	1,700	-	-	1,700	1,500	1,500	1,500
	660 · Legal (not for projects)	8,000	-	-	8,000	8,000	6,000	5,000
	General Fund (Administration) Expenditures	**$ 289,000**	**$ -**	**$ 10,100**	**$ 299,100**	**$ 280,000**	**$ 261,000**	**$ 252,200**
	Net Change in General Fund	-	-	-	-		-	-

Program Element		2026 Source of Funds: 2026 Levy	Budget Reserve	Funds/Fees	2026 Budget	2025 Budget	2024 Budget	2023 Budget
	Implementation Fund							
	Revenues							
	Property Taxes	$ 1,912,700	$ -	$ -	$ 1,912,700	$ 1,784,850	$ 1,697,000	$ 1,670,736
	Grants/Fees	-	-	100,381	100,381	145,967	34,000	120,664
	Interest	-	-	110,400	110,400	124,300	61,000	67,200
	Budget Reserves	-	1,676,175	-	1,676,175	1,018,908	523,356	362,300
	Total Revenues	**$ 1,912,700**	**$ 1,676,175**	**$ 210,781**	**$ 3,799,656**	**$ 3,074,025**	**$ 2,315,356**	**$ 2,220,900**
	Expenditures							
	Program Salaries and Benefits (not JPA/MOA)	$ 418,600	$ -	$ 110,400	$ 529,000	**$ 504,000**	**$ 485,500**	**$ 492,900**
Water Qual	550 Public Infrastructure Partnership Projects	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Water Qual	550 FeCl Site Improvements	20,000	-		20,000	271,200	158,000	
Water Qual	550 Highway 13 Wetland Excavation	-	19,000	-	19,000	-	-	-
Water Qual	550 Desilt Improvements	56,000	-	-	56,000	-	-	-
Water Qual	550 200 Street Pond Improvements	2,000	35,000	15,000	52,000	41,400	5,600	-
Water Qual	550 Swamp Lake IESF	-	119,600	53,381	172,981	635,300	61,000	
Water Qual	550 Spring Lake West IESF	-	142,975	-	142,975	-	-	-
Water Qual	550 Buck Stream Bank Stabilization	-	-	-	-		223,400	
Water Qual	611 Farmer-led Council	76,000	-	-	76,000	72,000	55,000	54,000
Water Qual	611 Cost-Share Incentives	88,000	-	-	88,000	88,000	68,000	58,000
Water Qual	611 Highway 13 Wetland, FeCl System & Desilt, O&M	80,500	-	-	80,500	214,500	305,000	98,000
Water Qual	611 Carp Management	78,000	-	-	78,000	88,500	96,500	94,000
Water Qual	611 District Owned Parcels Maintenance	30,000	-	-	30,000	1,200	1,200	1,200
Water Qual	611 Buck Stream Stabilization Parcel Maintenance	4,000			4,000	4,000	-	-
Water Qual	611 Alum Internal Loading Reserve	230,000	1,120,000	-	1,350,000	200,000	230,000	220,000
Water Qual	611 Fish Stocking (consolidated with Carp Mgmt in 2025)	-	-	-	-	0	2,000	3,000
Water Qual	626 Planning and Program Development	33,500	-	-	33,500	32,000	27,500	17,500
Water Qual	626 Fish Lake Management Plan Update	-		-	-	-	-	81,300
Water Qual	626 Lake Ridge Stormwater Feasibility Study	-	-	-	-	55,500	60,000	
Water Qual	626 LGU Plan Review	3,000	-		3,000	3,000	4,000	4,000
Water Qual	626 Engineering not for programs	22,000	-	-	22,000	21,000	20,000	15,000
Water Qual	626 Debt Issuance Planning	-	15,000	-	15,000	15,000	-	10,000
Water Qual	626 District Plan Update	65,000	-		65,000	-	2,500	2,500
Water Qual	626 Capital Project Planning (Prev: Upper Watershed Projects)	58,200	199,100	-	257,300	307,800	636,000	524,500
Water Qual	637 District Monitoring Program	75,900	-	-	75,900	89,100	84,500	81,000
Water Qual	648 Permitting and Compliance	65,000	-	-	65,000	65,000	62,000	79,000
Water Qual	648 Update MOAs with cities & county	4,000	-	-	4,000	5,000	5,000	10,000
Water Qual	648 BMP and Easement Inventory & Inspections	35,000	-	5,000	40,000	40,000	47,875	10,000
	WQ TOTAL	**1,026,100**	**1,650,675**	**73,381**	**2,750,156**	**2,249,500**	**2,155,075**	**1,363,000**
Water Storage	550 District-wide Hydraulic & Hydrologic model	4,000	-	-	4,000	4,000	5,000	5,000
Water Storage	626 Comprehensive Wetland Plan Update	19,500	25,500	-	45,000	35,500	35,500	-
	WS TOTAL	**23,500**	**25,500**	**-**	**49,000**	**39,500**	**40,500**	**5,000**
AIS	637 Aquatic Vegetation Management	20,300	-	12,000	32,300	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	15,000	-	15,000	30,000	34000	34,000	32000
	AIS TOTAL	**35,300.0**	**-**	**27,000**	**62,300**	**64,600**	**64,800**	**54,500**
Ed & Out	652 Education and Outreach Program	37,000	-	-	37,000	27,300	38,500	40,000
	E&O TOTAL	**37,000**	**-**	**-**	**37,000**	**27,300**	**38,500**	**40,000**
	PLOC Contribution	**222,200**		**-**	**222,200**	108,125	**38,981**	**185,500**
	Debt (Bond) Payments	**150,000**	**-**		**150,000**	81,000		
	Debt Payment Reserve	-	-	-	-		-	**80,000**
	Total Implementation Fund	**$ 1,912,700**	**$ 1,676,175**	**$ 210,781**	**$ 3,799,656**	**$ 3,074,025**	**$ 2,823,356**	**$ 2,220,900**
	Net Change in Fund Balance Implementation Fund	-	-	-	-			-

	Grant Funds/Fees Anticipated				2026 Budget	2025 Budget	2024 Budget	2023 Budget
	Interest Income (general fund & Implementation fund)			$ 120,500	$ 120,500	**142,700**	$ 70,000	70,200
	648 New Easement Acquisition/Amendment Fees			5,000	5,000	**4,500**	5,000	5,000
Water Qual	**648 Easement amendment/violations fees**			-	-	**-**	2,000	500
	2025 WBIF Grant			32,994	32,994	**104,967**	-	-
	BWSR Clean Water Fund (Programs & Projects) Grant			35,387	35,387			
	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**	-	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**	27,000	20,065
	Total Grant Funds/Fees Anticipated			**$ 220,881**	**$ 220,881**	**288,667**	**104,000**	**$ 190,864**

Budget Summary

Fund Sources/Fund Expenditures	2026 Levy	Budget Reserves	Grants/Rev	Budget Total	2025 Levy	Levy Increase	% Increase
General Fund	$ 289,000		$ 10,100	$ 299,100	261,600		
Implementation Fund	$ 1,912,700	$ 1,676,175	$ 210,781	$ 3,799,656	1,784,850		
Total Fund Sources	**$ 2,201,700**	**$ 1,676,175**	**$ 220,881**	**$ 4,098,756**	**2,046,450**	**$ 155,250**	**7.6%**
Expenditures							
General Fund				299,100			
Implementation Fund				3,799,656			
Total Expenditures				**4,098,756**			

Fund Balance Commitments/Assignments

	2026 (Budget) 12-31-25 Bal	Additions	Reductions	12-31-26 Bal	2025 (Estimate) 12-31-24 Bal	Additions	Reductions	12-31-25 Bal
611 Alum Internal Loading Reserve	$ 1,059,000	$ 230,000	$ (1,120,000)	$ 169,000	$ 910,000	$ 200,000	$ (51,000)	$ 1,059,000
626 Capital Project Planning	$ 199,100	$ 58,200	$ (145,500)	$ 111,800	$ 291,600	$ 16,200	$ (108,700)	$ 199,100
Debt Payment Reserve	$ 180,000	$ 150,000		$ 330,000	$ 180,000			$ 180,000
550 Spring Lake West IESF Reserve	$ 142,975		$ (11,000)	$ 131,975		$ 443,975	$ (301,000)	$ 142,975
	$ 1,581,075	**$ 438,200**	**$ (1,276,500)**	**$ 742,775**	**$ 1,381,600**	**$ 660,175**	**$ (460,700)**	**$ 1,581,075**

PRIOR LAKE-SPRING LAKE WATERSHED DISTRICT

MEMORANDUM

TO: PLSLWD BOARD OF MANAGERS

FROM: JONI GIESE

SUBJECT: 2026 BUDGET (DRAFT)

DATE: 6/17/2025

The following provides background to the 2026 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). Detailed expenses relating to Prior Lake Outlet Channel (PLOC) operations are reflected in a separate 2026 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.

2025 Budget: $155,500

2025 Year End Expense: $155,500 (estimate)

2026 Budget: $170,700

Administrative staff have been focusing intently on archiving District documents and reorganizing electronic filing system, resulting in increased time charged to the general fund.

Estimated salaries and benefits are based on the following assumptions:

- 6% average salary increase
- 9% increase in healthcare insurance premiums
- 5% increase in dental insurance premiums

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

Salaries and payroll taxes (social security and medicare)	$135,100
Benefits (PERA, Health, Dental, Disability, Life Insurance)	35,600
TOTAL:	**$170,700**

2025 Revenue Source(s):

- Levy: $160,100
- Interest Income: $10,100

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.

2025 Budget: $19,500

2025 Year End Expense: $16,000 (estimate)

2026 Budget: $16,000 ($17,100 total with approximately 6% allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

Staff cell phone reimbursements	$3,000
Website hosting and listing fees, Database updates	1,100
IT consultant standard support	11,900
TOTAL:	**$16,000**

2026 Revenue Source(s):

- Levy: $16,000

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.

2025 Budget: $28,200

2025 Year End Expense: $28,200

2026 Budget: $29,000 ($30,850 total with approximately 6% allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

City of Prior Lake lease payments	$29,000
TOTAL:	**$29,000**

2025 Revenue Source(s):

- Levy: $29,000

706 – Office Supplies

Description: This budget item includes general office supplies, copier rental, copies/printing, postage, and annually upgrade ¼ of staff computers.

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

2025 Budget: $7,000.

2025 Year End Expense: $10,000 (estimate).

2026 Budget: $10,300 ($11,000 total with approximately 6% allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

Ricoh copier (rent and copies)	$4,200
New computers	4,700
Postage	450
Other office supplies	950
TOTAL:	**$10,300**

2026 Revenue Source(s):

- Levy: $10,300

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.

2025 Budget: $13,000

2025 Year End Expense: $13,000.

2026 Budget: $13,400 Includes estimated premium increases of 8% for 2026. (Total $14,300 with approximately 6% allocated to PLOC budget).

Specific activities/projects covered by this budget item include:

Property	$2,200
Liability	5,600
Excess Liability	1,700
Auto	400
Workers Compensation	3,500
TOTAL:	**$13,400**

2026 Revenue Source(s):

- Levy: $13,400

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.

2025 Budget: $36,300

2025 Year End Expense: $36,300 (estimate).

2026 Budget: $38,200 (Separate fee allocated to PLOC budget)

Specific activities/projects covered by this budget item include:

Contracted accounting firm	$38,200
TOTAL:	**$38,200**

2026 Revenue Source(s):

- Levy: $38,200

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.

2025 Budget: $11,000 ($14,700 per audit cost per biannual proposal – 25% allocated to PLOC)

2025 Year End Expense: $11,000

2026 Budget: $11,800 ($15,500 total – 25% allocated to PLOC).

Specific activities/projects covered by this budget item include:

Contracted audit firm	$11,800
TOTAL:	**$11,800**

2026 Revenue Source(s):

- Levy: $11,800

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.

2025 Budget: $1,500

2025 Year End Expense: $1,500 (estimate).

2026 Budget: $1,700

Specific activities/projects covered by this budget item include:

Organization memberships	$200
Public notices (not project related)	250
Miscellaneous fees	200
Subscriptions	1,250
TOTAL:	**$1,700**

2026 Revenue Source(s):

- Levy: $1,700

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.

2025 Budget: $8,000

2025 Year End Expense: $8,000 (estimate)

2026 Budget: $8,000

Specific activities/projects covered by this budget item include:

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

2026 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.

2025 Budget: $509,000

2025 Year End Estimate: $492,500 (estimate) Implementation Fund salary costs are low in 2025 due to budgeting for, but not hiring seasonal interns in 2025.

2026 Budget: $512,100. For 2026, 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:

- 6% average salary increase
- 9% increase in healthcare insurance premiums
- 5% 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)	$405,400
Benefits (PERA, Health, Dental, Disability, Life Insurance)	106,700
TOTAL:	**$512,100**

2025 Revenue Source(s):

- Levy: $418,600
- Interest Income: $110,400

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

2025 Budget: $0

2025 Year End Expense: $0

2026 Budget: $0

550 FeCl Site Improvements

Description: This capital project is meant to complete end of lifecycle maintenance required to replace and update major system components of the District's Ferric Chloride system. The primary system infrastructure was replaced in 2024 and 2025 due to concerns for longevity and safety. In order to replace the tank, part of the secondary containment wall needed to be removed. To restore the intended safety function of the secondary containment, retrofitting the existing, and installing a removable containment wall is needed.

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. Retrofitting the secondary containment wall provides safety for minor leaks and spills during tank fills.

How Long in Existence: 2024

2025 Budget: $271,200

2025 Year End Expense: $278,000 (estimated)

2026 Budget: $20,000

Specific activities/projects covered by this budget item include:

Secondary Containment Retrofits	$20,000
TOTAL:	**$20,000**

2026 Revenue Source(s):

- Levy: $20,000

550 - Hwy 13 Wetland Excavation

Description: This capital project is meant to address end of lifecycle maintenance of the Highway 13 Wetland. Construction of the Highway 13 Wetland Enhancement Project was completed in February of 1997 to provide pretreatment for the Ferric Chloride system. In 2024, the Highway 13 Wetland was surveyed and results indicate an excavation is needed. Excavation costs (engineering, permitting, legal, construction) are estimated around $650,000. With engineering and permitting in 2026, the excavation could occur in early 2027.

Why it is Important: The Highway 13 Wetland provides important pre-treatment and settling to the ferric chloride system on County Ditch 13, which is responsible for carrying the majority of pollutants into Spring Lake. The wetland has accumulated 9,500 cubic yards of sediment and requires excavation to maintain its pre-treatment function.

How Long in Existence: 2025

2025 Budget: $100,000 (reclassed from 611- Highway 13 Wetland, FeCl System and Desilt Pond)

2025 Year End Expense: $81,000 (estimated)

2026 Budget: $19,000

2027 Construction: $560,000 (anticipate bonding before constructing)

Hwy 13 Excavation (permitting, legal, landowner compensation in preparation for 2027 construction)	$9,000
Budget reserves for future construction (allocated in 2025, not anticipated to be spent in 2026)	$10,000
TOTAL:	**$19,000**

2026 Revenue Source(s):

- Budget reserves: $19,000

550 – Desilt Improvements

Description: This capital project is meant to improve efficiency and reduce bypass of the District's Ferric Chloride system through modifications at the bypass weir and desiltation pond. The system currently experiences reduced efficiency when Spring Lake is high, and retrofits to the desiltation ("desilt") pond and bypass weir will improve efficiency.

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: 2026

2025 Budget: $40,700 (in 611- Highway 13 Wetland, FeCl System and Desilt Pond)

2025 Year End Expense: $40,700 (estimated)

2026 Budget: $56,000

2027 Construction: $200,000 (attempt to secure grant funds before constructing)

Engineering (Final Design, Incorporate Barrier Design, Permitting)	$50,000
Carp Barrier Design (WSB)	$6,000
TOTAL:	**$56,000**

2026 Revenue Source(s):

- Levy: $56,000

550 – 200th Street Pond Improvements Project

Description: This project is expected to be constructed in the winter of 2025/2026 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.

2025 Budget: $45,000 ($41,400 original budget+$3,600 transfer from 626 Capital Project Planning)

2025 Year End Expense: $10,000 (estimate).

2026 Budget: $52,000

Specific activities/projects covered by this budget item include:

SWCD and Professional Services (Legal, etc.)	$7,000
Pond Construction	$45,000
TOTAL:	**$52,000**

2026 Revenue Source(s):

- Levy $2,000
- Budget Reserves: $35,000
- Grants: $15,000

550 – Swamp Lake IESF

Description: This project is expected to be constructed in 2025, with completion of restoration and grant-required outreach in 2026. The project is included in the District's Swamp Lake IESF Feasibility Study and Water Resources Management Plan (WRMP) to address water quality goals.

Why it is Important: Implementation advances the mission and goals of the District to reduce nutrient loading to Spring Lake as identified in the feasibility study and District's WRMP.

2025 Budget: $635,300

2025 Year End Expense: $525,700 (estimate)

2026 Budget: $172,981

Specific activities/projects covered by this budget item include:

Consultant (As-builts, O&M plan, punch list and contract closeout	$10,000
Construction, Site Restoration + Establishment, Outreach	$162,981
TOTAL:	**$172,981**

2026 Revenue Source(s):

- Budget Reserve: $119,600
- Grant: $53,381

550 – Spring Lake West IESF

Description: The District completed a feasibility study to reduce nutrient loading from the Spring West subwatershed in 2021. An easement for this project is expected to be obtained in 2025. The implementation of this project was selected as a priority water quality project by the Board of Managers in 2023. Progressing design would assist grant applications, although known funding is anticipated to be competitive and/or relatively small. Construction could be advanced as soon as Fall 2026. The project is included in the District's Spring Lake West IESF Feasibility Study and Water Resources Management Plan (WRMP) to address water quality goals.

Why it is Important: Implementation advances the mission and goals of the District to reduce nutrient loading to Spring Lake as identified in the feasibility study and District's WRMP.

2025 Budget: $443,975 (Via Excess Fund Transfer from 550 Swamp Lake IESF)

2025 Year End Expense: $301,000

2026 Budget: $142,975

2027 Construction: $740,000 (attempt to secure grant funds before constructing)

Specific activities/projects covered by this budget item include:

Engineering (Final Design, Permitting, Grant Assistance)	$10,000
Legal	$1,000
Budget reserves for future construction (allocated in 2025, not anticipated to be spent in 2026)	$131,975
TOTAL:	**$142,975**

2026 Revenue Source(s):

- Budget Reserves: $142,975

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. The Lake Friendly Farm program recognizes farms which have demonstrated water quality measures to ensure water is kept clean. Lake Friendly Farm certification, banquet, and payments are now held on even years.

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. The FLC provides one of the most cost-effective nutrient reduction tools in the entire District.

How Long in Existence: 2013

2025 Budget: $72,000

2025 Year End Expense: $72,000 (estimate)

2026 Budget: $76,000

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)	$3,000
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.) + LFF banquet	$3,000
Guest Speaker fees for FLC meetings	$2,000
TOTAL:	**$76,000**

2026 Revenue Source(s):

- Levy: $76,000

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

2025 Budget: $88,000

2025 Year End Expense: $88,000 (estimate).

2026 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**

2026 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 the Highway 13 wetland also acts as a pretreatment basin. The system was redesigned in 2013 becoming compliant with the MPCA NPDES permit. 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. A capital improvement project was completed in 2025 to upgrade the access drive and system components. The ongoing operation and maintenance of the system is reflected in these costs.

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

2025 Budget: $214,500 (later reduced to $100,000 due to fund transfer to 550-Hwy 13 Excavation)

2025 Year End Expense: $100,000 (estimate).

2026 Budget: $80,500

Specific activities/projects covered by this budget item include:

Ferric Chloride chemical deliveries, increased summer dosing	$35,000
System Monitoring to meet MPCA Permits: Lab analysis	$17,500
Utilities, permits, maintenance and equipment	$3,000
Chemical Feedline Locate	$15,000
Weir Erosion Maintenance	$10,000
TOTAL:	**$80,500**

2026 Revenue Source(s):

- Levy: $80,500

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 builds from the 2024 reduction of Upper Prior Lake carp biomass to sustainable levels and a transition to a maintenance phase. In 2026, focused efforts on biomass reductions as well as populations estimates will be performed on Spring Lake to determine if and when management can transition to maintenance phase.

How Long in Existence: Since 2010

2025 Budget: $88,500

2025 Year End Expense: $75,000 (estimate).

2026 Budget: $78,000

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, equipment rental, data management, presentation to Board)	$62,000
Bluegill stocking (Desilt pond next to Spring Lake)	$2,000
Tracking (PIT station maintenance, firmware updates, 10 radio tags, PIT tags, tagging supplies)	$3,800
Program equipment (waders, net repairs, bins, gloves, ice signs, under ice line puller, etc.)	$1,400
Storage shed rental for carp. equipment	$1,700
Barrier maintenance	$600
Nets (Sample, trap, gill, etc.)	$6,500
TOTAL:	**$78,000**

2026 Revenue Source(s):

- Levy: $78,000

611 – District Owned Parcels Maintenance

Description: The District owns three parcels adjacent to Spring Lake. One parcel is located on the north side of the lake and is referred to as the "Spring Lake Demonstration Site" and two parcels on the south side referred to as the "Ducks Unlimited Wetland" and "Frog Farm." The landscape on the Spring Lake Demonstration site has been restored and serves as a demonstration of a healthy lakeshore oak savanna habitat. The Ducks Unlimited Wetland is predominantly a wetland with a small upland portion abutting Spring Lake. The Ducks Unlimited Wetland was donated to PLSLWD for the purpose of natural resource preservation. The plant community in the upland portion is highly impacted by buckthorn. Yard waste and other construction material dumping has become a problem, along with non-authorized recreation vehicle trail use. The Frog Farm is predominantly a wetland.

Why it is Important: It is the District's responsibility to maintain these properties for their intended use and to ensure that the parcels do not pose a hazard to adjacent properties.

How Long in Existence: 1987 (Ducks Unlimited Wetland), 2017 (Spring Lake Demonstration Parcel and Frog Farm parcel);

2025 Budget: $1,200

2025 Year End Expense: $1,200 (estimate).

2026 Budget: $30,000

Specific activities/projects covered by this budget item include:

Ducks Unlimited site restoration and District parcels management plan	$25,000
Buckthorn treatment/removal (Ducks Unlimited-$3,600 removal, Spring Demonstration – $700 treatment)	$4,300
Herbaceous treatment (Spring Lake Demonstration)	$700
TOTAL:	**$30,000**

2026 Revenue Source(s):

- Levy: $30,000

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: 2024

2025 Budget: $4,000

2025 Year End Expense: $4,000 (estimate)

2026 Budget: $4,000

Specific activities/projects covered by this budget item include:

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

2026 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. Spring Lake has received three treatments (2013, 2018, 2020), and Upper Prior Lake was treated in 2020. An alum treatment for Upper Prior Lake is expected to cost between $935,000-$1,120,000 depending on future market costs. Based on sediment core analyses, Upper Prior, Spring and Fish Lake may be candidates for alum treatment. A treatment is required on Upper Prior to satisfy grant requirements. As treatments are implemented, 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)

2025 Budget: $200,000

2025 Year End Expense: $51,000

2025 Year End Commitment: $149,000

Total Committed Funds: $1,059,000 (after 2025 commitment)

2026 Budget: $230,000 (continue to build reserve)

Specific activities/projects covered by this budget item include:

Upper Prior Lake Alum Treatment Phase 2 of 2 ($1,100,000 for treatment, $20,000 for engineering)	$1,120,000
Continue to build reserve	$230,000
TOTAL:	**$1,350,000**

2026 Revenue Source(s):

- Levy: $230,000
- Budget Reserve $1,120,000 (committed funds)

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.

2025 Budget: $32,000

2025 Year End Expense: $33,300 (estimate – includes $1,300 of 2024 expenses, invoices received in 2025 that were inadvertently not coded to 2024 expenses).

2026 Budget: $33,500

Specific activities/projects covered by this budget item include:

Software/other subscriptions	$7,500
Training (staff and managers)	$13,000
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:	**$33,500**

2026 Revenue Source(s):

Levy: $33,500

626 – Lake Ridge Feasibility Study

Description: The Lake Ridge Estates Stormwater Feasibility Study ("Lake Ridge Feasibility Study") investigated 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: The study determined that projects to address external loads within the project area were not feasible. It refined PLSLWD understanding of the drainage area to Fish Lake.

2025 Budget: $55,500

2025 Year End Expense: $50,000 (estimate).

2026 Budget: $0

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. This budget item will likely increase in the next couple of years as other LGU's start their Metropolitan Council required ten-year plan updates.

2025 Budget: $3,000

2025 Year End Expense: $1,000

2026 Budget: $3,000

Specific activities/projects covered by this budget item include:

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

2026 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.

2025 Budget: $21,000

2025 Year End Expense: $21,000 (estimate).

2026 Budget: $22,000

Specific activities/projects covered by this budget item include:

Engineer bi-monthly attendance at staff coordination meetings	$4,000
Engineer attendance at board meetings	$6,000
Misc. assistance to staff and partners	$12,000
TOTAL:	**$22,000**

2026 Revenue Source(s):

- Levy: $22,000

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 or not be successful in obtaining grant funding on several projects in 2026 for implementation in either 2026 or 2027, 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.

2025 Budget: $15,000

2025 Year End Expense: $0 (estimate)

2026 Budget: $15,000

Specific activities/projects covered by this budget item include:

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

2026 Revenue Source(s):

- Budget Reserve: $15,000

626 - District Plan Update

Description: The District approved the 2020-2030 Water Resources Management Plan (WRMP) 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, 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. The District is planning to a full update the Water Resources Management Plan earlier than originally planned in order for District initiatives to be reflected in municipal partners' 2050 Comprehensive Plans. It is anticipated that the plan update process will take three years (2026 – 2028) and will cost $200,000.

2025 Budget: $0

2025 Year End Expense: $0

2026 Budget: $65,000

Specific activities/projects covered by this budget item include:

Consultant to Prepare WRMP Update (Year 1 of 3)	$65,000
TOTAL:	**$65,000**

2026 Revenue Source(s):

- Levy: $65,000

626 – Capital Project Planning

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

2025 Budget: $307,800

2025 Year End Expense: $108,700 (estimate).

2026 Budget: $257,300

Specific activities/projects covered by this budget item include:

Fish Lake – external load actions (grid sampling, etc.)	$18,000
Feasibility Studies (new and/or update). Potential projects include Buck Chemical, MB13 site, flood projects	$80,000
Projects TBD (primary focus water quality projects, flood projects as opportunity arises)	$111,800
District Engineer Assistance	$22,500
SWCD Liaison Assistance	$15,000
Legal	$10,000
TOTAL:	**$257,300**

2026 Revenue Source(s):

- Levy: $58,200
- Budget Reserve: $199,100 (committed funds)

637 - District Monitoring Program

Description: The Monitoring and Research Program encompasses a range of District-led activities designed to support data-driven water resource management. This includes the planning and implementation of lake sampling by District staff and volunteers; monitoring of lake levels and water chemistry; precipitation tracking; operation of the District's weather station; and comprehensive stream monitoring, including chemistry, flow, level, synoptic assessments, diagnostic assessments, and effectiveness studies. The program also includes database and data management, equipment acquisition and maintenance, support for Total Maximum Daily Load (TMDL) studies, and the preparation of technical reports. Detailed guidance and protocols for these activities are outlined in the District's Long-Term Monitoring Plan, which is a component of the 2020 Water Resources Management Plan.

Why is it Important: The PLSLWD Monitoring and Research Program is essential for protecting and managing local water resources through consistent, science-based data collection. It supports informed decision-making, regulatory compliance, and adaptive management by tracking lake and stream conditions, precipitation, and water quality trends. The program also fosters transparency and community engagement, helping the District respond effectively to environmental changes and prioritize impactful projects.

How Long in Existence:
Lake Chemistry: 2004; CAMP, 1997
Stream Monitoring: ≤1991

Lake Level Monitoring: 1970
Precipitation Monitoring: ≤1989
Zoo/Phytoplankton: 2020

2025 Budget: $89,100

2025 Year End Expense: $75,500 (estimate).

2026 Budget: $75,900

Specific activities/projects covered by this budget item include:

Lake Chemistry Monitoring: Lab analysis, CAMP contract, winter chloride analysis	$17,400
Zoo/Phytoplankton Monitoring: Collection and lab analysis	$2,350
Lake Level Monitoring: Logger service, website graphing, equipment hardware & maintenance	$2,350
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 (Swamp IESF,HAAS, etc); $1,600 to SWCD for one Sutton Drone survey; and monitoring equipment.	$4,000
Equipment, Boat and Truck O&M: Miscellaneous equipment including well tubes, calibration solution, hardware, equipment servicing, gas, truck maintenance, batteries, trailer maintenance, and winterization.	$4,600
Data Management: Contracted database services	$6,000
TOTAL:	**$75,900**

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

2026 Revenue Source(s):

- Levy: $75,900

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.

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.

2025 Budget: $65,000.

2025 Year End Expense: $47,000 (estimate).

2026 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**

2026 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.

2025 Budget: $5,000

2025 Year End Expense: $7,900 (estimate). Original assumption was staff performing majority of work, which changed to having consultants perform majority of work in order to wrap up this task in a timely manner. Working to establish final equivalency agreements with Prior Lake and Scott County and Savage in 2025.

2026 Budget: $4,000

Specific activities/projects covered by this budget item include:

Legal ($1,000) and engineering ($3,000) services associated with negotiating and preparing MOAs.	$4,000
TOTAL:	**$4,000**

2026 Revenue Source(s):

- Levy: $4,000

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.

2025 Budget: $40,000

2025 Year End Expense: $40,000 (estimate)

2025 Budget: $40,000

Specific activities/projects covered by this budget item include:

Scott SWCD Program Coordination Services	$29,000
Engineering Services	$4,000
Legal Assistance	$3,000
Materials & equipment: signs, posts, recording fees, etc.	$4,000
TOTAL:	**$40,000**

2025 Revenue Source(s):

- Levy: $35,000
- Easement Acquisition/Amendment/Enforcement Fees (estimated): $5,000

**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:

- Education efforts 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, and events such as workshops and volunteer opportunities.
- 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)

On April 24, 2024, the Federal Register published the Department of Justice's final rule updating its regulations for Title II of the Americans with Disabilities Act (ADA). The rules call for all state and local governments to bring their web content and social media applications into compliance with the Web Content Accessibility Guidelines (WCAG), Version 2.1, Level AA. Special districts government, such as PLSLWD, have until April 26, 2027, to bring web content and social media applications into compliance.

Why it is important: 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 and 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. In 2025, the District's education and outreach program was 0.8% of the approved budget which impacts reputability, progress, and resident relationships.

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

2025 Budget: $27,300

2025 Year End Expense: $27,300 (estimate).

2026 Budget: $37,000

SCWEP	5,000
Educational tours, events & materials	19,500
CAC (meeting costs)	1,000
WCAG Version 2.1 Level AA compliance	5,500
Website Hosting & Maintenance	6,000
TOTAL:	**37,000**

2026 Revenue Source(s):

- Levy: $37,000

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.

2025 Budget: $4,000

2025 Year End Expense: $4,000 (estimate).

2026 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**

2026 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 has learned the new LiDAR for Scott County is available but will require additional processing in order to be used.

The new LiDAR data will 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 or 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.

2025 Budget: $35,500

2025 Year End Expense: $10,000 (estimate)

2026 Budget: $45,000

Specific activities/projects covered by this budget item include:

Update the Comprehensive Wetland Plan	$45,000
TOTAL:	**$45,000**

2026 Revenue Source(s):

- Levy: $19,500
- Budget Reserves: $25,500

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 (percentage 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.

2025 Budget: $30,600

2025 Year End Expense: $28,000 (estimate).

2026 Budget: $32,300

Specific activities/projects covered by this budget item include:

CLP Delineations and Assessments	$7,800
Summer Point Intercept Survey	$11,500
CLP treatments	$12,000
Biobase Subscription	$1,000
TOTAL:	**$32,300**

2025 Revenue Source(s):

- Grant(s): $12,000 (Scott County – Lower Prior, Spring and Fish Lakes, as needed)
- Levy: $20,300

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

2025 Budget: $34,000

2025 Year End Expense: $34,000 (estimate).

2026 Budget: $30,000

Specific activities/projects covered by this budget item include:

Contract boat inspections on Spring, Fish, Upper Prior, and Lower Prior Lakes	$30,000
TOTAL:	**$30,000**

2025 Revenue Source(s):

- Levy: $15,000
- 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

2025 Budget: $108,125

2025 Year End Expense: $108,125 (estimated)

2026 Budget: $222,171

In 2025, the PLSLWD successfully implemented a large project to line a 0.4-mile, 36-inch pipe, extending out from the PLOC outlet structure. Ninety percent of pipelining costs were covered by a state grant. In 2026, PLOC allocation includes PLSLWD's proportionate share of the Segment 1 bank stabilization project 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 2026	$222,200
TOTAL:	**$222,200**

2026 Revenue Source(s):

- Levy: $222,200

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 2026 to cover the cost of upcoming capital projects.

Estimated future construction costs for District projects that are not included in the budget include:

Highway 13 Excavation:	$560,000	(Assume not eligible for grant funds)
Desilt Pond Improvements:	$200,000	(Staff will attempt to secure grant funds)
Spring Lake West IESF:	$740,000	(Staff will attempt to secure grant funds)
Additional Alum Treatments	unknown	(Fish Lake-may be eligible for grant funds)
		(Spring Lake- assume not eligible at this time)

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

2026 Budget: $150,000

Specific activities/projects covered by this budget item include:

Build up fund to help transition into debt payments without creating a spike in the levy	$150,000
TOTAL:	**$150,000**

2025 Revenue Source(s):

- Levy: $150,000