Riley-Purgatory-Bluff Creek Watershed District
Board of Managers Regular Meeting
Wednesday, April 4, 2018
5:30pm Regular Board Meeting
& Workshop
DISTRICT OFFICE
18681 Lake Drive East
Chanhassen

Tentative Agenda

1. **Call to Order**

2. **5:30pm Board Workshop: Rules and 2018 Workplan** **Information**

3. **7:00pm Approval of the Agenda** (Additions/Corrections/Deletion) **Action**

4. **2017 Audit** **Information**

5. **Lotus Lake Alum** **Information**

6. **Matters of general public interest** **Information**

   Welcome to the Board Meeting. Anyone may address the Board on any matter of interest in the watershed. Speakers will be acknowledged by the President; please come to the podium, state your name and address for the record. Please limit your comments to no more than three minutes. Additional comments may be submitted in writing. Generally, the Board of Managers will not take official action on items discussed at this time, but may refer the matter to staff for a future report or direct that the matter be scheduled on a future agenda.

7. **Reading and approval of minutes** **Action**
   Board of Manager Meeting, March 15, 2018

8. **Consent Agenda**
   (The consent agenda is considered as one item of business. It consists of routine administrative items or items not requiring discussion. Any manager may remove an item from the consent agenda for action.)
   a. Accept Staff Report
   b. Accept Engineer's Report (with attached Inspection Report)
   c. Approve and release 2017 Annual Report
   d. Approve permit modification to permit 2018-008 Staring Lake Park Play Court with staff recommendations

e. Approve permit 2017-073 Preserve Village in Eden Prairie with staff recommendations
f. Approve permit 2018-007 Lake Lucy Lane Drainage Improvement Project in Chanhassen with staff recommendations
g. Approve permit modification to permit 2017-069 Eden Prairie Center Scheels Redevelopment.
h. Approve and authorize administrator to enter into agreement with Wenck Associates for Alum Plans and Specification for Lotus and Rice Marsh Lake proposal
i. Approve and authorize administrator to enter into agreement with Wenck Associates for Hyland Lake Alum dose and cost estimate proposal
j. Award Chanhassen High School Reuse Project to Peterson Company pending the City of Chanhassen executing Cooperative agreement with Engineer's recommendation

9. Citizen Advisory Committee **Information**

10. Action Items **Action**
    a. Accept February Treasurer's Report
    b. Approve Paying of the Bills
    c. Send 10-year plan to BWSR for approval (Resolution 2018-02)
    d. Lake Susan Park Pond Project update
    e. Conditional approval LSWMP for Chaska until conditions are met
    f. John Gulliver Research Proposal

11. Discussion Items **Information**

    a. 50th Anniversary Planning staff update
    b. Boundary change update

12. Upcoming Events **Information**

- Lower Riley Creek Stabilization and Restoration Informational Meeting, April 11, 7:00pm, District Office
- Citizen Advisory Committee monthly meeting, April 16, 6:00 pm, 18681 Lake Drive East, Chanhassen.
- Board and City of Eden Prairie joint workshop, April 17, 5:30pm, Heritage Rooms, City of Eden Prairie, 8080 Mitchell Road, Eden Prairie
- Regular Board Meeting, May 2nd, 7:00 pm, 18681 Lake Drive East, Chanhassen

Technical Memo

WENCK
Responsive partner.
Exceptional outcomes.

To: Claire Bleser, Riley Purgatory Bluff Creek Watershed District

From: Brian Beck, Wenck Associates, Inc.
Joe Bischoff, Wenck Associates, Inc.

Date: March 28, 2018

Subject: Lotus Lake Aluminum Sulfate Dosing Analysis

Lotus Lake is a eutrophic, deep lake, located at the headwaters of Purgatory Creek in Chanhassen, MN. In 2007, the Minnesota Pollution Control Agency (MPCA) listed Lotus Lake as impaired for excess nutrients. Lotus Lake is considered dimictic, which means it stratifies during the warm summer period, which causes anoxia throughout the growing season. The most recent Use Attainability Assessment (UAA) for Lotus Lake estimated that internal phosphorus loading accounts for 68% (732 lbs/yr) of the total annual phosphorus budget (Barr 2017; Figure 1). Thus, the primary goal of this technical memorandum is to develop a cost estimate for an aluminum sulfate (alum) treatment on Lotus Lake to reduce internal phosphorus loading.

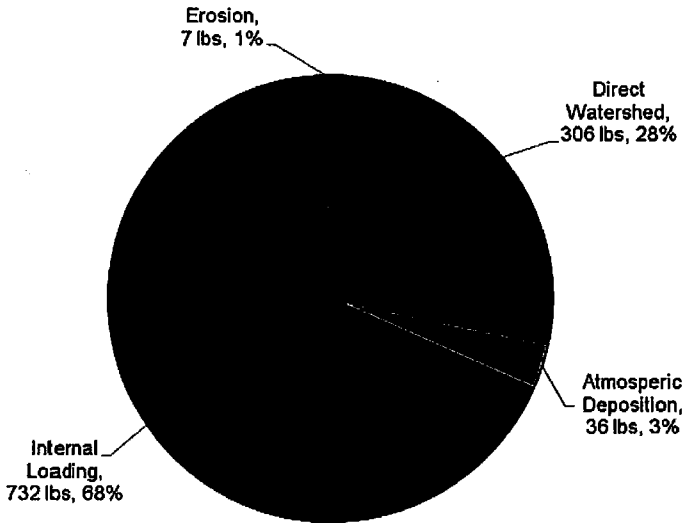


Figure 1. Lotus Lake phosphorus budget from Lotus Lake UAA (Barr 2017)

To evaluate internal phosphorus release and sediment chemistry, a gravity sediment coring device (Aquatic Research Instruments, Hope ID) equipped with an acrylic core liner (6.5-cm ID and 50-cm length) was used to collect sediment in October, 2017 (Figure 2). Anoxic phosphorus release rates were measured in the deep arms of Lotus Lake (Stations 50 and 30; Figure 2) and oxic release rates were measured in shallow central region of Lotus Lake (Station 20; Figure 2). Additional sediment cores were sectioned vertically at 1-cm intervals over the upper 6-cm layer, 2-cm from 6-10 cm and 2.5-cm intervals below 10 cm to evaluate variations in sediment physical-textural and chemical characteristics (Figure 2).

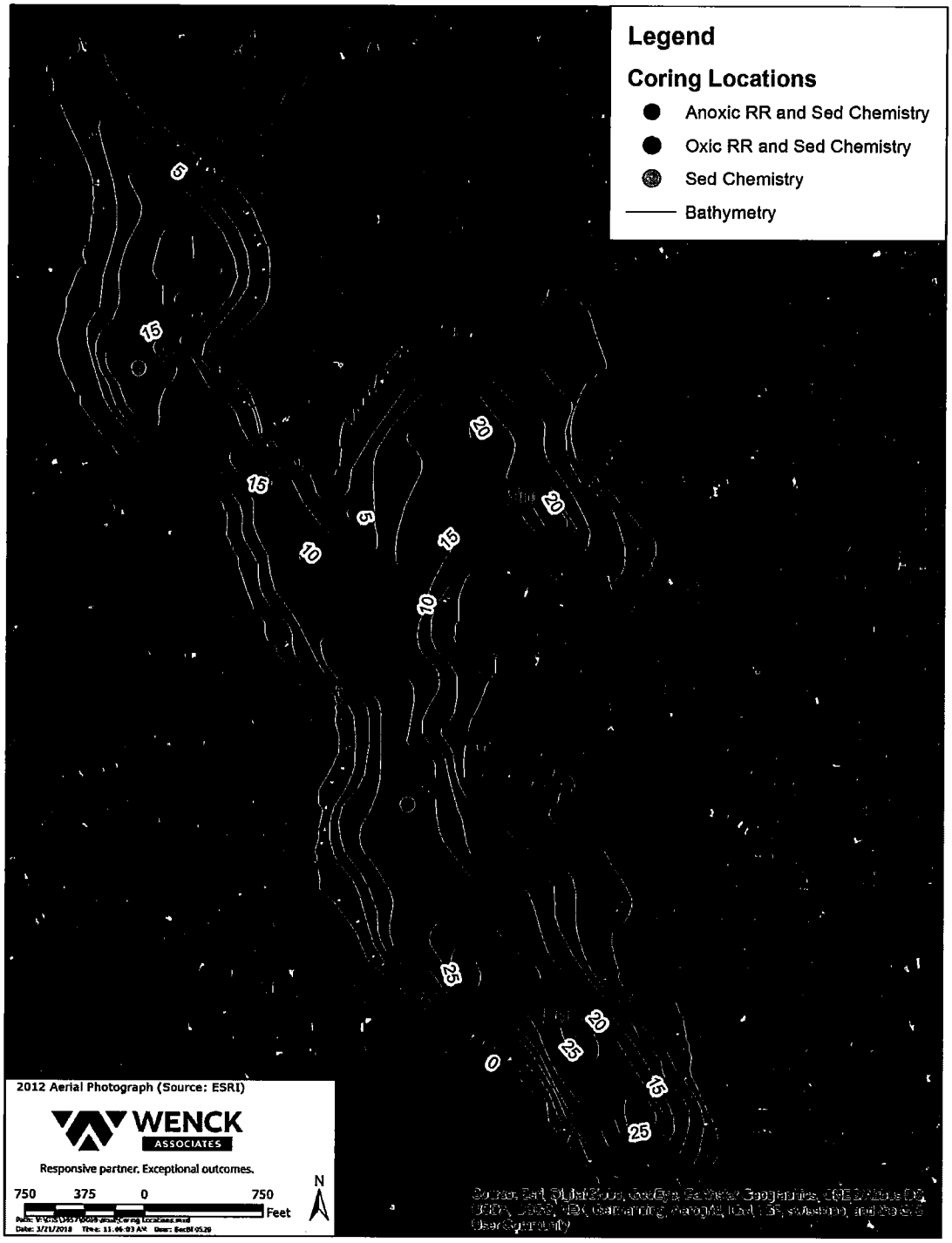


Figure 2. Lotus Lake sediment coring locations.

Water Column Phosphorus Processes

Water column process often dictate how a lake processes phosphorus from internal and external sources. Lake stratification and mixing are the primary process that govern how a lake process phosphorus from sediment phosphorus release. Lotus Lake stratifies during the warm growing season, which results in low dissolved oxygen in the hypolimnion (Figure 3). The hypolimnetic depth changes throughout the year but reaches a maximum in late June and persists until early September (Figure 3).

Low dissolved oxygen concentrations in the hypolimnion cause phosphorus release from sediments. The release of phosphorus from sediments results in hypolimnetic phosphorus build up throughout the summer (Figure 4a). Lotus Lake typically mixes in late summer (Figure 3), which results in hypolimnetic water enriched with phosphorus to mix with surface water. These mixing events lead to late season algal blooms, which are a signature of lakes with high internal loading issues (Figure 4b).

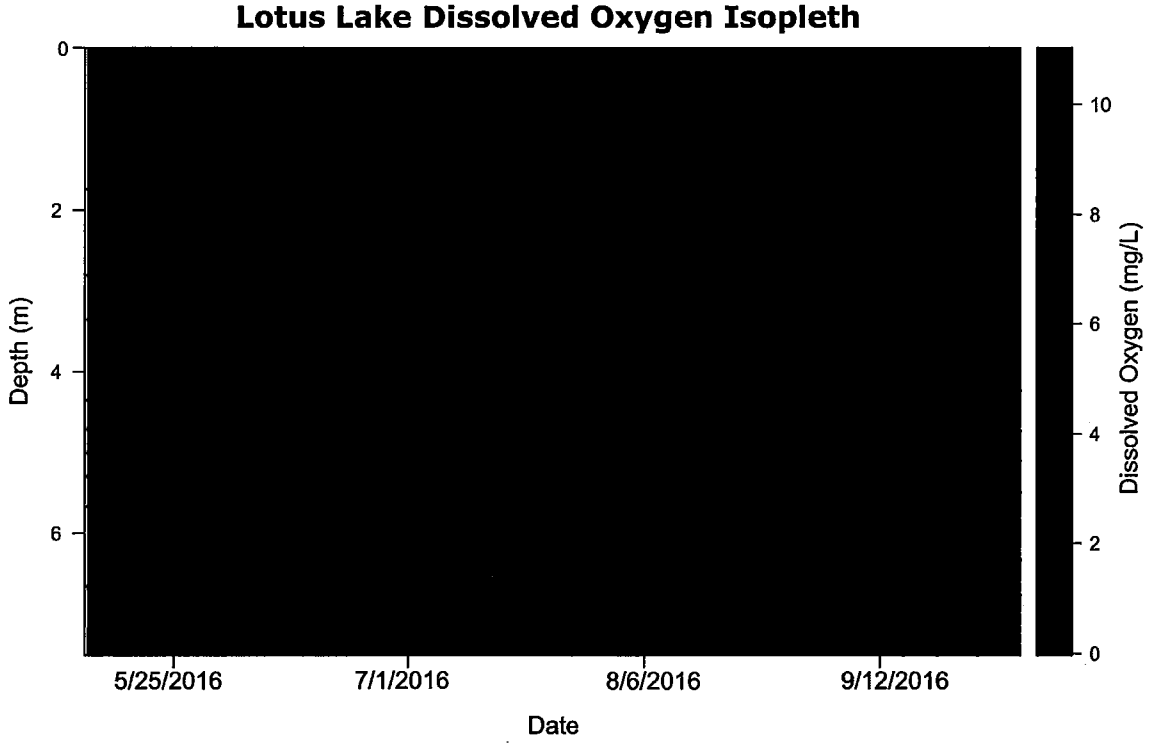


Figure 3. Isopleth depiction of Lotus Lake dissolved oxygen concentrations in 2016

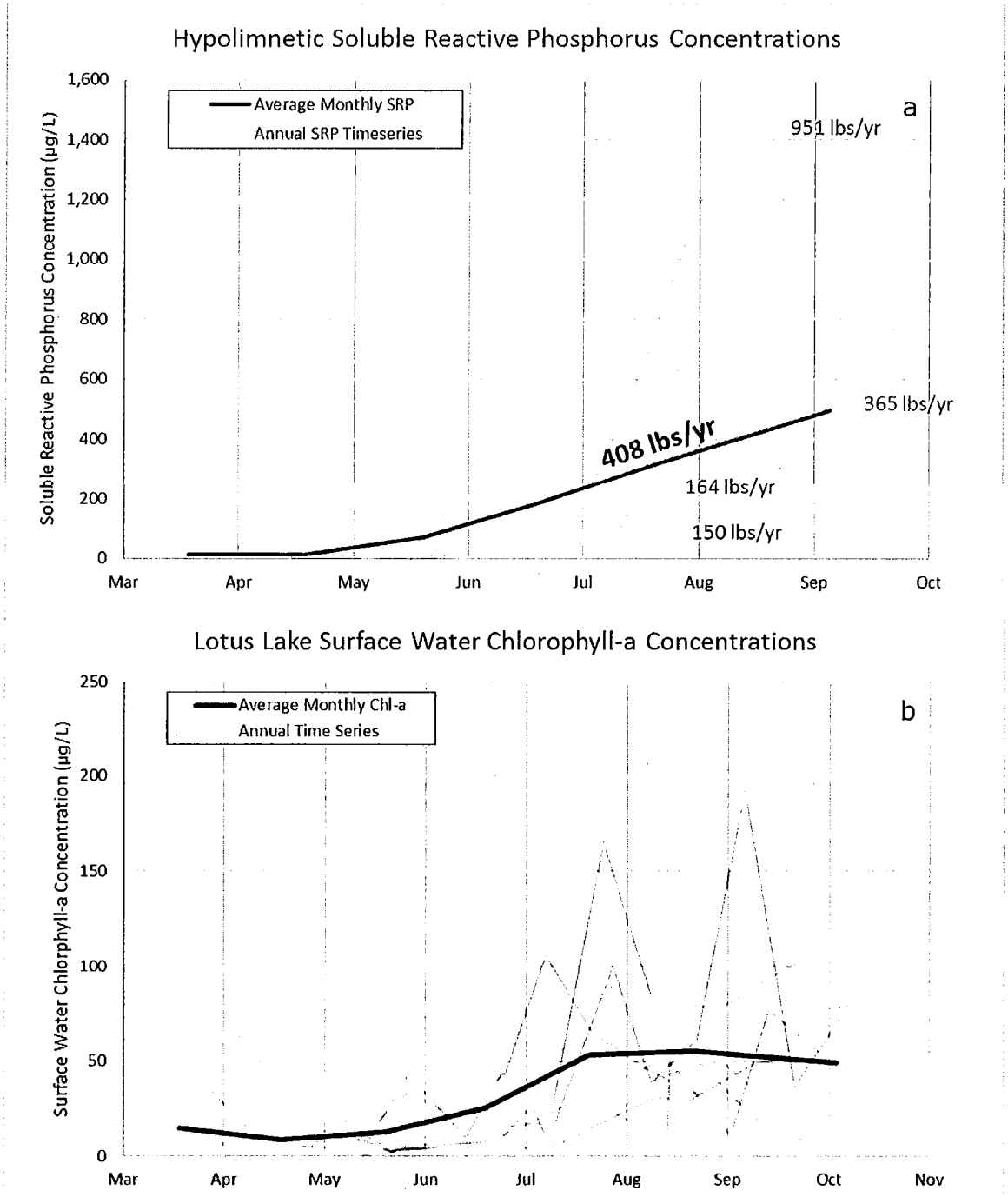


Figure 4. Lotus Lake hypolimnetic soluble reactive phosphorus (a) and chlorophyll-a (b) recent time series. Light gray numbers located on the soluble reactive phosphorus chart represent annual internal loading from deep regions of the lake, while the bolded black number represents the average annual loading.

Phosphorus Release Rates

The 2017 Lotus Lake UAA estimated that internal loading comprises 68% of the internal load (Barr 2017). Our phosphorus release rate measurements confirmed that sediments in Lotus Lake are releasing phosphorus at an elevated rate in both deep locations (Figure 5). Other lines of evidence such as elevated hypolimnetic phosphorus and elevated surface water total phosphorus during fall turnover provided more evidence that internal loading is occurring and impacting surface water quality. This analysis confirms that reducing internal loading would substantially reduce the total phosphorus loading to Lotus Lake.

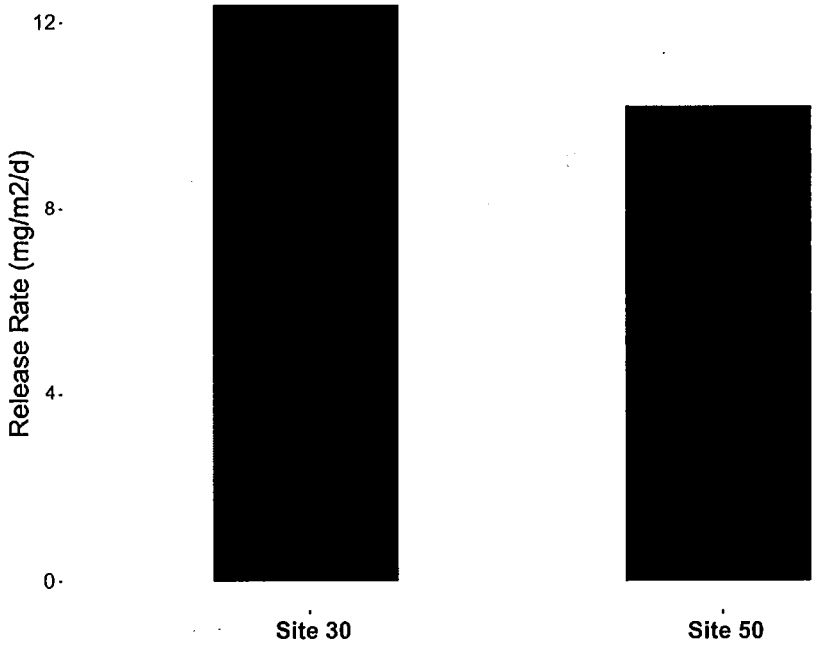


Figure 5. Anoxic phosphorus release rates at site 30 and 50 in Lotus Lake

Sediment Chemistry

Typically, iron-bound and loosely-bound P (redox-P) are the fractions of phosphorus associated with sediment P release during periods of low dissolved oxygen (<2 mg/L). Sediments with more iron-bound or redox-P typically have higher phosphorus release rates. Sediments that have high internal release rates typically have a large peak of iron-bound P near the sediment-water interface.

Results from sediment coring on Lotus indicate that sites 30 and 50 (deep sites) have redox-P peaks from 0-4 cm and 0-7 cm, respectively (Figure 6). The sites from the shallow portion of the lake (Sites 10, 20, and 40) lack a redox-P peaks, which suggests that phosphorus release at these sites are lower than the deep sites. Thus, areas deeper than 15 ft in the eastern arm and 20 ft in the southern arm of Lotus Lake would benefit most from an alum treatment since they have the largest redox-P peaks (Figure 6).

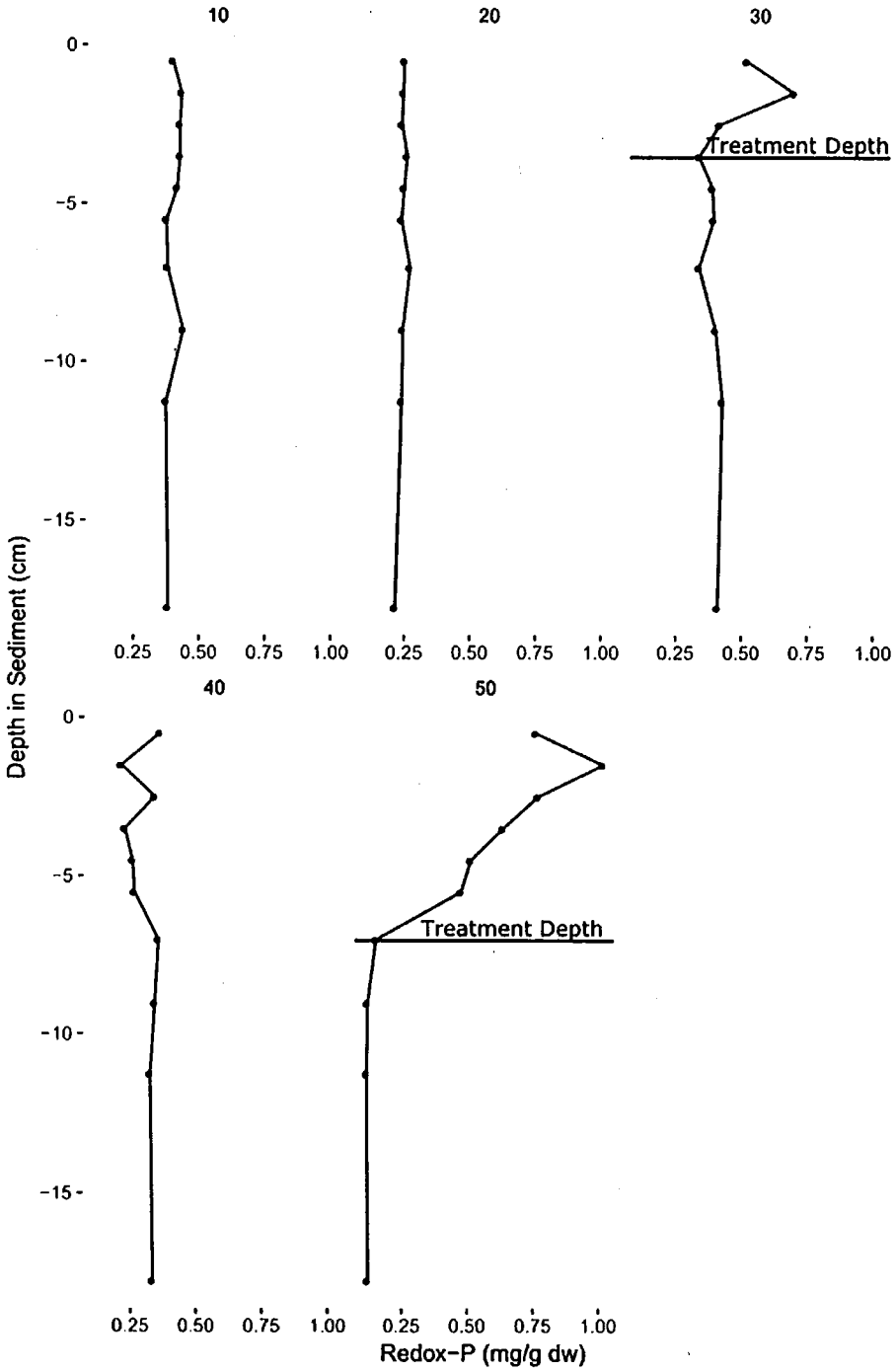


Figure 6. Lotus Lake sediment chemistry profiles for stations 10-50.

Aluminum Sulfate Dose Recommendation

Two factors are typically considered when determining the area that will be treated with alum, which include redox-P concentration and the average depth of anoxia. Dissolved oxygen data indicates that the two deep areas of Lotus Lake regularly experience low dissolved oxygen conditions. Each deep area deep area requires a unique alum dose since redox-P concentrations are different at each site (Figure 5). Furthermore, the depth of the redox-P peak is 7 cm at Site 50 and 4 cm at Site 30.

Based on this information, Wenck recommends applying 70 g Al/m^2 in Zone 1 and 222 g Al/m^2 in Zone 2 (Figure 7). Wenck recommends two half applications on Lotus Lake. This process will increase the effectiveness and longevity of the alum application by increasing the time that fresh alum is exposed to the uppermost sediment layer containing high redox-P. Routine monitoring should occur between the alum applications to track the progress of the alum application. The total cost of the recommended alum treatment is $260,000 which includes bidding, specs, application observation, and follow up monitoring (Table 1).

In addition to alum dose measurements, the maximum allowable dose was measured for Lotus Lake. This is a measurement of the maximum non-buffered alum dose possible without driving the pH below 6.0 in the water column. This measurement indicated that the maximum allowable dose during the alum application for Lotus Lake is 15 mg Al/L, which is much higher than the actual prescribed dose of 3.5 mg Al/L. It is unnecessary to use a buffered alum solution since Lotus Lake water column is well buffered, which will ensure that pH will stay well above 6 during the alum application.

The focus of the alum application is in the deep region of the lake since these areas have the largest contribution to internal phosphorus loading. The dose Wenck outlined will reduce internal phosphorus loading in deep regions of Lotus Lake by 400-500 pounds per year; However, it is important to note that shallow regions of the lake may also contribute to internal loading, but to a smaller degree.

Wenck recommends continued surface and hypolimnetic water quality monitoring in years following the alum treatment to confirm water quality improvements in Lotus Lake. Wenck also recommends that anoxic release rates be measured at stations 20, 30, 40, and 50 after the initial alum application to assess if dosing in deep regions of the lake will sufficiently lower internal phosphorus loading to Lotus Lake. The combination of water quality and sediment release rate date will help assess if the second alum application will need to expand into shallower regions of Lotus Lake.

Table 1. Lotus Lake alum application cost estimate

Item	Unit	Quantity	Unit Cost	Total Cost
Initial Aluminum Sulfate Application	Gal AlSO4	55,490	$1.80	$100,000
Second Aluminum Sulfate Application	Gal AlSO4	55,490	$1.80	$100,000
Application observation and monitoring				$15,000
Bidding, Permitting, and Specifications				$20,000
Follow Up Monitoring				$25,000
Total Cost Estimate				**$260,000**

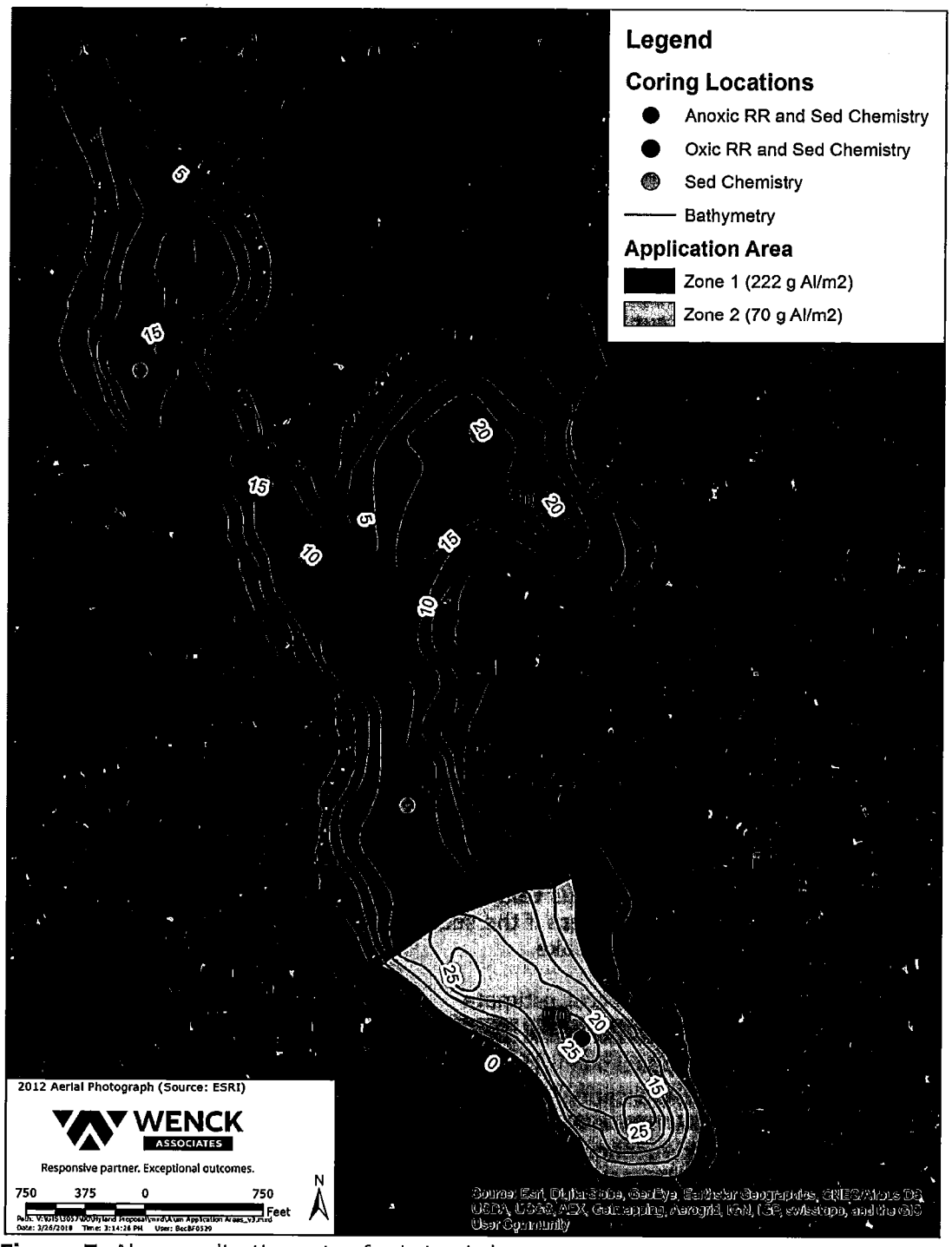


Figure 7. Alum application rates for Lotus Lake

References

Barr Engineering. 2017. Lotus, Silver, Duck, Round, Mitchell, Red Rock Use Attainability Analysis Update; Lake Idlewild and Staring Lake Use Attainability analysis; and Lower Purgatory Creek Stabilization Study. Technical Report.

MEETING MINUTES

Riley-Purgatory-Bluff Creek Watershed District

March 15, 2018, Board of Managers Public Hearing and Monthly Meeting

PRESENT:

Managers:	Richard Chadwick, Secretary	
	Jill Crafton, Treasurer	
	Dorothy Pedersen, Vice President	
	Dick Ward	
	Leslie Yetka, President	
Staff:	Claire Bleser, District Administrator	
	Zach Dickhausen, Water Resources Technician	
	Joshua Maxwell, Water Resources Coordinator	
	Louis Smith, Attorney (Smith Partners)	
	Scott Sobiech, Engineer (Barr Engineering Company)	
Other attendees:	Paul Bulger, CAC	Bryan Maloney, LRIA
	Mike Colehour, Minnetonka Resident	JoAnn Syverson, LLCA
	Ryan Majkrzak, Chanhassen Resident*	David Ziegler, CAC; Eden Prairie Resident
	*Indicates attendance only at Monthly Meeting	

1. Call to Order

President Yetka called to order the Thursday, March 15, 2018, Board of Managers Public Hearing and Monthly Meeting at 7:04 p.m. in the District Office, 18681 Lake Drive East, Chanhassen, MN 55317.

2. Approval of Agenda

President Yetka pulled item 9b – Channel Protection Update - from the agenda. Administrator Bleser requested the addition of a Consent Agenda item to authorize the Administrator to enter into an agreement with the Carver County Soil and Water Conservation District for technical services and a new 9b - Legislative Update. Manager Chadwick moved to approve the agenda as amended. Manager Pedersen seconded the motion. Upon a vote, the motion carried 5-0.

3. 10-Year Management Plan Public Hearing

President Yetka introduced Administrator Bleser to talk about the 10-Year Plan.

Administrator Bleser presented the plan. She provided a brief overview of the physical watershed such as its size and communities, listed the Board members, committees, and staff. Administrator Bleser talked about the input gathering process for the 10-Year Plan update and described how that input was the basis of building the plan's goals and strategies. She summarized the 13 District goals identified in the plan and explained that the goals are

grouped into the categories of Administration, Date Collection, Education & Outreach, Planning, Regulatory, Water Quality, and Water Quantity.

Administrator Bleser went through the prioritization variables used to identify the projects included in the Plan. The prioritization variables included Goals, Habitat Restoration, Partnerships, Pollution Management, Public Access and Education, Streambank/Shoreline Restored/Stabilized, Sustainability, Volume Management, and Watershed Benefits. Administrator Bleser explained the prioritization process and how 175 projects were weighed against the variables and then reviewed against project considerations such as logistical constraints, including partnership and coordination opportunities. She reported that after all these evaluation processes, 34 projects were identified to be included in the updated 10-Year Plan.

She said that 10 of the 34 are Riley Creek projects, 7 are Bluff Creek projects, and 17 are Purgatory Creek projects. President Yetka opened the public hearing.

Ms. Joann Syverson, Chanhassen resident and Lotus Lake Conservation Alliance board member, commented that she appreciates that the 10-Year Plan has a focus on lakes and that Lotus Lake projects are included in the plan. She asked about the process for swapping out of the Plan any projects, and the funds for those projects, that have been identified but do not come to fruition with new projects that might be identified in the future. Ms. Syverson also asked if the plan factors in inflation and maintenance costs. There was a discussion about the plan amendment process and the process that proposed projects go through to be approved and get funded, such as the feasibility study process. Administrator Bleser noted that the projects identified in the 10-Year Plan will be reviewed over time and that regarding project maintenance the District develops agreements with project partners or utilizes long-term maintenance funds.

Mr. Paul Bulger, Eden Prairie resident, thanked the Board for embarking on the 10-year plan update and for engaging the community. He remarked that 8 of the 17 entities that commented on the draft plan asked that the goals and objectives in the plan would reflect more of a smart goal or quantitative measure that is time bound. Mr. Bulger noted that the revised plan did make steps to quantify the removal to be achieved by projects and how the plan will work with the adaptive management plan. He said that in his experience regulatory bodies express rules and objectives that are time bound and have specific quantitative measures of what they are trying to achieve. Mr. Bulger remarked that the District is trying to reach certain water quality standards for shallow lakes and other water bodies and resources and those don't seem to be factored in to the 10-year plan's goals and objectives. He said that a lot of the goals state that the District will assess and monitor but do not go the next step and identify how the goals will be met and make the commitment to meet those goals. Mr. Bulger talked about the plan's figure 9-2 and suggested improving that graphic to make it clearer to the public how the decisions are being made. He noted his surprise that managers haven't commented on the need for smart goals and requested that managers comment on public record regarding their position on smart goals. Mr. Bulger raised the topic of Governor Dayton's goals for ground water and nitrate levels for certain areas around the state. He talked about how the goals are measurable and time bound. Mr. Bulger had specific comments about section 9-12 groundwater and said that it doesn't talk about the bedrock system or how to protect the bedrock system.

The managers and Administrator offered comments in response.

President Yetka called for additional public comments. Upon hearing none, President Yetka closed the public hearing at 7:46 p.m.

4. Matters of General Public Interest

No matters of general public interest were raised.

5. Reading and Approval of Minutes

a.i February 7, 2018, RPBCWD Board of Managers Monthly Meeting

Manager Pedersen requested a change on page 2, paragraph 2, to replace the word "hoping" with "encouraging." She also requested a correction to a misspelling on page 2, paragraph 5. Manager Pedersen noted that on page 3, paragraph 7, a correction should be made to change "Mr. Lori" to "Ms. Lori." Manager Crafton pointed out a misspelling on page 5, item 10a, in the final paragraph.

Manager Ward moved to approve the minutes as amended. Manager Crafton seconded the motion. Upon a vote, the motion carried 5-0.

6. Consent Agenda

Manager Yetka read aloud the Consent Agenda items: 7a – Accept Staff Report; 7b - Accept Engineer's Report (with Attached Inspection Report); 7c – Approve Permit 2018-008 Staring Lake Park Play Court with staff recommendations; 7d – Approve Permit 2016-013 Reconstruction of Soccer Field #11 at Miller Park with Staff Recommendations; 7e – Approve Permit 2017-072 O'Reilly Auto Parts in Eden Prairie with Staff Recommendations; 7f – Approve Permit 2018-011 Maloney Shoreline Stabilization on Lake Riley with Staff Recommendations; 7g - Approve Permit 2018-014 - Eden Prairie Road Reconstruction with staff recommendations; 7h - Approve hire of new Outreach and Office Assistant; 7i – Authorize the District Administrator to Enter into an Agreement with the Carver County Soil and Water Conservation District for Technical Services.

Manager Chadwick asked staff to comment on the status of 2018 alum treatment projects. Administrator Bleser responded that the feasibility study for the Rice March Lake alum treatment is complete and the treatment is planned for fall 2018. She said that the feasibility study for the Lotus Lake alum treatment is still in progress, but if the project is feasible, then it would also take place fall 2018.

Manager Chadwick moved to approve the Consent Agenda. Manager Crafton seconded the motion. Upon a vote, the motion carried 5-0.

7. CAC

Mr. Ziegler noted that the Board has the CAC meeting minutes in the meeting packet. He reported that the CAC approves the direction of the 10-Year Plan. Mr. Ziegler pointed out that the CAC recommends that the Board review the prioritization tool every three years and that the projects are also reviewed every three years based on current data. He reported that the CAC is in favor of the rules change as presented to the CAC by Mr. Jeffery although the CAC is concerned whether handling a two-year rain event is enough.

Administrator Bleser pointed out that the prioritization tool wouldn't really change over time, but logistical factors could. The Board discussed the topic of when to review the projects included in the 10-Year Plan. Engineer Sobiech commented that staff is constantly on the lookout for new technology regarding the projects.

President Yetka said that she hears the Board saying that the District will review the 10-Year Plan projects at year 3 instead of year 5 as currently stated in the Plan.

8. Action Items-

a. Accept January Treasurer's Report

Manager Crafton reported that that she and staff have been working with Redpath on updating the format of the treasurer's report and they are making good progress. Manager Crafton moved to accept the January Treasurer's report. Manager Ward seconded the motion.

Manager Pedersen suggested that a footnote be added on page 2 to note when the levy funds are anticipated to be received. The Board agreed that it would be a good addition to the report. Manager Chadwick noted that there wasn't a letter from the Treasurer in this month's meeting packet certifying the Treasurer's Report. He asked if the Treasurer and Administrator certify the Treasurer's Report. Manager Crafton said yes. Manager Chadwick asked about the work performed by Barr Engineering that was reflected in the most recent invoice because the invoice seemed like a large cost. Engineer Sobiech and Administrator Bleser talked about the work performed by Barr Engineering as reflected in the invoice. Manager Chadwick had several more questions and comments. Upon a vote, the motion carried 5-0.

b. Approve Paying of Bills

Manager Crafton moved to pay the bills. Manager Ward seconded the motion. Upon a vote, the motion carried 5-0.

c. Adopt Resolution Assuming WCA LGU Administrative Responsibility in Deephaven

Administrator Bleser introduced the resolution for the District to assume Wetland Conservation Act local governmental unit administrative responsibility in the City of Deephaven. She reported that the Deephaven City Council has adopted a resolution as well. She went through the history of the District relinquishing its role, in late 2000, as the officer of the Wetland Conservation Act. Administrator Bleser explained that Deephaven then arranged with the Minnehaha Creek Watershed District to take on that role for Deephaven regarding our watershed area.

Manager Ward moved to adopt Resolution 2018-01Affirming Acceptance and Responsibility for Wetland Conservation Act Administration in the City of Deephaven. Manager Pedersen seconded the motion.

Upon a roll call vote, the motion carried 5-0.

Manager	Aye	Nay	Abstain	Absent
Chadwick	X			
Crafton	X			
Pedersen	X			
Ward	X			
Yetka	X			

d. Authorize President to Enter into Cooperative Agreement with the City of Chanhassen for the Lake Susan Park Pond

Administrator Bleser asked the Board to authorize the Board President to enter into an agreement with the City of Chanhassen for the Lake Susan Park Pond project. Manager Pedersen moved to authorize President Yetka to enter into an agreement with the City of Chanhassen for the Lake Susan Park Pond Project subject to non-substantive revisions to the agreement. Manager Crafton seconded the motion. There was a discussion about the 20-year term of the project's maintenance agreement. Upon a vote, the motion carried 5-0.

e. Authorize President to Enter into Cooperative Agreement with the City of Chanhassen and ISD 112 for the Chanhassen High School Capture and Reuse System

Administrator Bleser gave an update on the project timeline and noted a modification about the pipeline encroachment. Manager Pedersen moved to authorize President Yetka to enter into a cooperative agreement with the City of Chanhassen and Independent School District 112 for the Chanhassen High School Capture and Reuse System. Manager Crafton seconded the motion. Upon a vote, the motion carried 5-0.

9. Discussion Items

a. 50th Anniversary Planning

Administrator Bleser announced that the District's Education and Outreach theme this year is "Come explore with us." She talked about the year-long theme and listed activities planned. Administrator Bleser noted that one activity planned is a celebration of the watershed's anniversary through a celebration of community. Administrator Bleser said that staff investigated renting a room at the Chanhassen Dinner Theater and holding a community dinner there. She went into details about costs and the possible date of July 31, which is the District's birthday. She noted that if the Board is interested in doing this event at the Chanhassen Dinner Theater on that date, it is time to make the District's reservation and send the down payment in to the theater. The Board talked about the idea and indicated interest in a celebration of community event but asked staff to look into lower cost venues, such as asking the City of Eden Prairie about its Garden Room.

b. Legislative Update

Attorney Smith reported that five bills have been introduced to the state legislature including one bill introduced just this week. He reviewed the five bills and their file numbers with the Board.

c. Upcoming Meetings

President Yetka read aloud the list of upcoming meetings and events, noting that the March 26th CAC meeting time will be 6 p.m. and not 5:30 p.m. as listed on the agenda. The Board added a workshop starting at 5:30 p.m. on April 4 at the District Office prior to the Board's Regular Monthly Meeting at 7 p.m.

10. Upcoming Events

- CAC Monthly Meeting, Monday, March 26, 6:00 p.m., District Office, 18681 Lake Drive East, Chanhassen
- Board of Managers Workshop at 5:30 p.m. and Regular Monthly Meeting at 7:00 p.m., Wednesday, April 4, District Office, 18681 Lake Drive East, Chanhassen

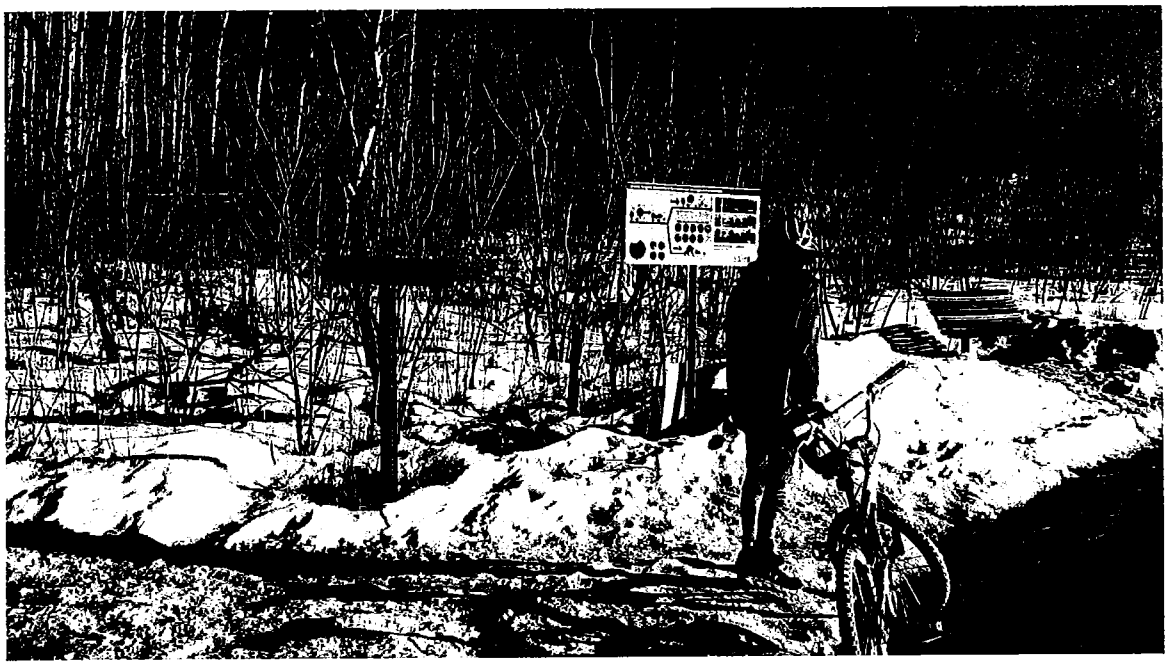
11. Adjourn

Manager Ward moved to adjourn the meeting. Manager Crafton seconded the motion. The meeting adjourned at 8:59 p.m. Upon a vote, the motion carried 5-0.

Respectfully submitted,

Richard Chadwick, Secretary

RPBCWD Staff Report
April 4, 2018



A passer by learning about the restoration at scenic heights.

Administrative

10-Year Plan
Timeline
November 15 – release of the plan out for comments
December 6 – 6:00pm Informational session
January 15 – end of written comment period
February 7 - response to comments to board for approval (we need 10 days in between response to comments and public hearing)
March 15 – Public Hearing
April 4 – release for 90 day

50th Anniversary Celebration: Come explore with us!
2019 marks the 50th anniversary of the formation of the Riley Purgatory Bluff Creek Watershed District. District staff continue to formulate plans for the 50th. Staff looked at different alternatives besides Chanhassen Dinner Theater. We will provide an update to the managers at the board meeting.

Administration
No new update

Aquatic Invasive Species
Upcoming conferences:
Upper Midwest Invasive Species Conference (Request for abstract are due April 11-2018)
October 15-18 | Mayo Civic Center | Rochester, MN

Staff Bleser and Maxwell are working with Freshwater Scientific to coordinate surveys for this Spring and Summer. Administrator Bleser is working with DNR AIS specialist to determine if the District needs to renew Lake Vegetation Management Plans (LVMPs) for Mitchell Lake and Lake Susan. Based on surveys that will be taken and past history on application, we do not anticipate the treatment being greater than 15% of lake which would not require an LVMP to be made.

Annual Report
Final Annual Report is enclosed in the packet.

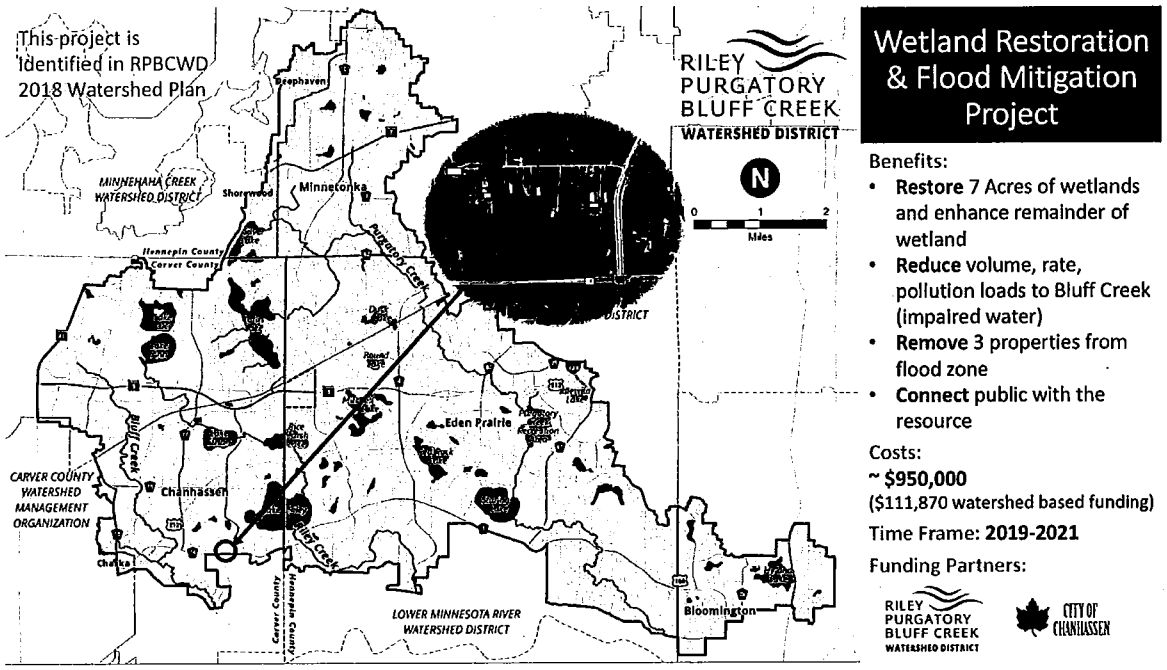
Audit
Audit is enclosed in the packet.

Budget
No changes

Data Requests and Research Extensions
Lake County Water Authority from Florida has asked the District for the bidding documents used for the Lake Riley Alum. They are planning on doing a multi-phase alum application on a 4000 acre lake.

Eric Fieldseth of Minnehaha Creek Watershed District requested and was sent information required to apply for scientific permits for common carp management.

Grants
The District is moving forward in moving the Wetland Restoration and Flood Mitigation Project and Chloride Education and Incentive Program forward for targeted watershed grant funding with BWSR.



50/50 split	
Carver County Watershed Management Organization	$517,979
Buffalo Creek Watershed District	Not eligible - does not have a water management plan
Lower Minnesota River Watershed District	$25,472
Minnehaha Creek Watershed District	$93,879
Riley-Purgatory-Bluff Creek Watershed District	$111,870
Total	**$749,200**

In the case of Hennepin County funding, all water management organizations have generally accepted putting some funds directly to developing a chloride strategic plan and developing an incentive program. All entities in the Minnesota Basin are interested in pooling money and developing an incentive program. A chloride subcommittee was formed and met to discuss further this approach. Below are notes from the meeting.

Questions:
Set aside a percentage of the county-wide allocation – 10%?

Determine the coordinating agency or group – Hennepin County?
Can funds be used for a contract specialist to do the legwork?

First Year:
1. Develop strategic plan
   - Define stakeholders and audiences
   - Identify education and outreach and other needs
   - Identify materials/curriculum to be developed
   - Develop strategies to address needs, including communication plan
   - Develop Implementation Plan
2. Implement strategic plan

Second Year:
1. Review and revise strategic plan as necessary
2. Implement strategic plan

Potential implementation strategies:
Workshops for applicators
Outreach to property managers
Promote contracting by application rather than tonnage applied
Build strategic partnerships (e.g., MNLA, BOMA)
Sponsor preconference certification workshop at MNLA conference
Press releases, newsletter, website – advertising?
Curriculum development (update current, add refresher course)
Hands-on training
Provide opportunities for story telling and info sharing between road authorities
Small grants for equipment upgrades, other

Next meeting with Hennepin County Wds and WMOs will be held with Hennepin County March 30th.

MAWD
Summer tour planning is still continuing. We are coordinating with MAWD, CCWMO and LMRWD. Wednesday night will be the barge tour on the Minnesota River. Thursday morning, the tour will be heading into CCWMO, specifically Waconia and then over to Chaska for lunch. The afternoon will be at Lake Riley where participants will get hands on experience by exploring 4 stations that reflect our lake management decision tree. Friday morning will be a professional development day.

Permitting
This past month, there were three (3) permit issued administratively. Permit #2018-006 was issued for the construction of a single family residence at 16200 Pine Street in Minnetonka. Permit #2018-009 was issued to the MN Department of Transportation for landscaping in the

interchange at 494 and T.H. 5. Permit #2018-010 was issued for the directional drilling of gas pipeline in Eden Prairie.

There are currently ten (10) additional applications in various stages of review. Staff has also met with two other development teams this month to discuss potential upcoming projects.

Citizens Advisory Committee

March meeting

The Citizens Advisory Committee met Monday, March 19, for their regular monthly meeting and annual orientation. Draft minutes are included in the board packet.

Technical Advisory Committee

The TAC met February 28th. Staff Jeffery and Engineer Sobiech met with representatives from Eden Prairie and Minnetonka to further discuss comments and concerns raised by the TAC. Staff is reviewing the appropriate path forward based upon concerns raised by the TAC, CAC, as well as the Board of Managers.

Programs and Projects

District-Wide

Cost-share program

Application for 2018 Cost-share grants are open. As the snow is clearing, staff are beginning to schedule site visits for new potential projects. The district will be co-hosting a community meeting with the Lake Riley Improvement Association on May 9th. This meeting is similar to the one hosted with the Lotus Lake Conservation Alliance and will focus on how community members can take action to protect clean water and what resources are available to help them in their good work.

MPCA Community Resiliency Grant

Staff has not yet completed reporting but anticipate having it done in April.

Regulatory Program

Rules Update

Based upon conversations with the Technical Advisory Committee (TAC), the Citizens' Advisory Committee (CAC), as well as the Board of Managers, staff is evaluating what, if any, path forward for the Channel Protection Rule exists. Staff is recommending that the Channel Protection Rule be removed from consideration at this time so that more time can be spent addressing the concerns expressed by various stakeholders.

The bulk of other changes have been made, vetted by the TAC and the CAC, and brought back to both bodies for review. It is staffs' intention to update the SONAR and bring the final version of the rules, with all revisions, to the managers at the May 3, 2018 meeting and request authorization to distribute the rules for agency review.

Permit and Plan Review Update
In addition to the permits before the Board this evening, there are eleven (11) additional permits in various stages of completeness, being reviewed by staff. Of these, eight (8) were received since the last meeting. The other four applications are all lacking information necessary to complete the review. This has been communicated with the applicants. No permits have been issued administratively since the March 15th meeting.

Total Maximum Daily Load
No new updates.

Data Collection (J. Maxwell)

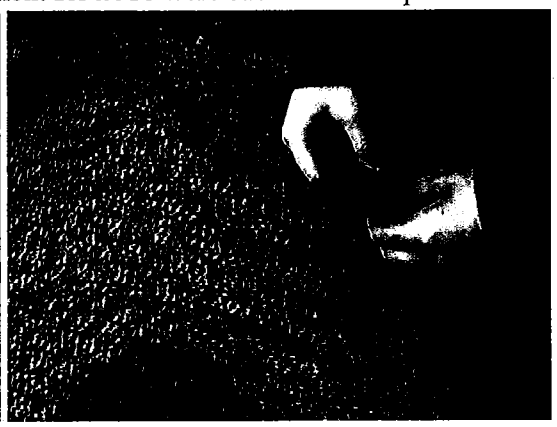
Rice Marsh Aeration
Staff was notified by the City of Chanhassen that a resident went fishing and noticed dead bluegills when drilling holes on Rice Marsh Lake. Staff investigated and determined that a winter kill had occurred sometime in early March. The aeration unit has been working and a large hole in the ice has been open all year. However, due to the shallowness of the lake, amount of snow cover and vegetation decomposition, a winterkill still occurred. Staff contacted Daryl Ellison (Area Fisheries Supervisor) and discussed the possibility of stocking bluegills in 2018 and installing surface agitation unit similar to the units operated by the city of Eden Prairie on Mitchell and Red Rock. Daryl expressed support of both actions. Because a healthy bluegill population within Rice Marsh Lake is an important part of controlling common carp populations in the Riley Chain of Lakes, staff has reached out to private fish hatcheries and aeration companies.

Winter Field Season
Winter sampling occurred on the Purgatory Chain of Lakes early this month. Duck Lake also experienced a winterkill. Staring Lake oxygen levels were low as well and the lake may require aeration in future winters.

Staff is continuing to work with RMB Environmental Lab representatives to discuss logistics around their new office location in Bloomington. The new location will be able to process water samples for parameters with short holding times and allow District staff to easily access supplies needed for sampling. RMB will also be using a courier service to deliver samples which will give staff longer in-the-field time, preventing scheduling issues that arose with our current delivery services. Staff have also been working with Barr Engineering to correct the Survey123 app, the District's automated data entry form. This will allow staff to enter data directly into an iPad or phone, allowing it to be instantly uploaded to the database instead of entering field sheet data into excel spreadsheets. Staff met with Limnotech and completed assembly and setup of six EnviroDIY stations this month which will be deployed in creeks and for educational applications. The units can be accessed remotely and are relatively cheap as compared to other monitoring equipment. Staff also purchased components for two EnviroDIY units that will be used for lake level sensors to replace the units that no longer work. Staff will be assembling these units in April.

Common Carp Management
During the end of October, staff tagged 12 common carp in Staring Lake and two common carp were tagged and released in both the Upper and Lower Purgatory Creek Recreational Areas. Staff tracked the fish multiple times in March. Due to the lack of fish in Staring, commercial seining would most likely have had limited success and therefore is not suggested by staff. Of all the water bodies in the District, the Upper Purgatory Creek Recreational Area had the highest concentration of carp, but is to shallow to effectively conduct winter seining.

In preparation for the upcoming field season, staff and service learning students have been mending carp nets to ensure the greatest capture efficiencies. Additionally, all permit applications regarding common carp management for 2018 were submitted this past month.



Creek Restoration Action Strategy

Staff will be replacing "lost" bank pins at our regular stream monitoring sites with an additional placement of pins on the southwest side of Silver Lake to assess erosion rates in 2018. Barr Engineering and District staff submitted the CRAS to the Center for Watershed Protection for publication and received preliminary review comments back this month. Staff Maxwell has addressed the comments and has submitted the document to undergo a second review.

University of Minnesota Grant
Proposal is included in the packet for discussion.

WOMP Station - Metropolitan Council
Staff visited the WOMP stations twice this month. On March 14th, staff attended the annual meeting of WOMP cooperators held at the Metropolitan Council Metro Plant location.

Education and Outreach (M. Jordan)

Volunteer program
A volunteer newsletter is being sent out.

Service Learners
Service learners from the University of Minnesota continue to work toward their volunteer hours for the term. Their work includes supporting data collection and capturing photographs of the resources in the district.

Adopt a Dock Program
Plates are cleaned and ready to go out. Staff are contacting past volunteers to see if they will participate again this year. Plates will go out later in April once lake ice has cleared.

Master Water Stewards Program
The most recent class for this year's cohort was focused on their capstone projects. Stewards have broken into groups, selected their project ideas and are in the planning stages. For the in-the-ground component, two groups are looking to do rain-gardens, and one to do a vegetated swale. Ideas for educational campaigns range from storm-drain adoption to a neighborhood assessment of the impact of redirecting downspouts. Staff will be working with stewards throughout the spring to support their projects. Staff are beginning to promote and recruit for next year's master water stewards cohort.

Citizen Advisory Committee
See CAC section above.

Minnetonka High School Capstone Mentorship
Staff met with the student interested in doing their capstone at the watershed. Following an interview, staff and the student worked to define their interests, district needs, and a potential project. The student submitted an application to the Minnetonka High School capstone program, and will notify staff when a decision is made. The student has interests in both natural resources and art. The project outlined in the application would work to combine the two through learning and applying standard principles of environmental communication and interpretation and using them to design materials that communicate science topics to a general audience.

Communication Program
Annual Communication
This project is completed for 2017. 2018 planning will begin in summer.

Lake Riley Community Actions for Clean Water Meeting
In partnership with the Lake Riley Improvement Association and the cities of Chanhassen and Eden Prairie, the district is hosting a community meeting for the Lake Riley watershed on May 9.

Lower Riley Creek Restoration
Postcards were designed, printed, and mailed to residents within 500 feet of the restoration project and access routes. The cards invited them to an informational meeting on April 11th. 8.5"x11" signs with the same information were printed, laminated, and posted at the four entrances to the Riley Creek Conservation Area, so that individuals who visit the area can also find out about the session.

Speakers Bureau
The speakers bureau is a project of a subcommittee of the Citizens Advisory Committee. The members have begun to collect existing presentations and ideas. They will be creating outlines and then formulating presentations with staff support. Staff have met with members to discuss existing materials and gaps that would be filled with sub-committee support.

Stormwater Practice Maintenance Certification Workshop
Staff Maxwell was again invited and accepted leading an exercise at the annual Stormwater Practice Maintenance workshop held by the University of Minnesota on April 30th and May 1st.

Tabling at community events
Two watershed district volunteers hosted a table for the district at the Eden Prairie, Home, Yard and Garden expo on March 17. The topic they educated around was alternative turfgrasses.

Water Resources Report
Fact sheets are now posted on the website, and are being printed and distributed.

Website & Newsletter
Staff continue to work in the website update. A volunteer newsletter is being sent out.

Youth Outreach
Earth Day Mini-Grants
The Earth Day mini-grant application period for 2018 closed. Ten applications were received this year, up from six last year and three the first year. If the number of applications continues to increase next year, the application selection may either need to become more competitive, or the the amount budgeted for the grants increased. All ten applications had merit, however one of them was from a school well outside this watershed district and so could not be funded. The other nine applications were reviewed and approved for funding. Projects ranged from funding a trip to a nature center to participate in water resource programming, to purchasing snowshoes for kindergarteners to use in exploring Duck Lake in the winter, and purchasing sampling nets to collect and study macro-invertebrates in Bluff Creek. Of the 9 funded applications, 8 were classroom teachers and one was a media specialist. Three applicants were from Prairie View Elementary, two were from Cedar Ridge Elementary, one from Scenic Heights Elementary, one from Bluff Creek Elementary, One from Chanhassen Elementary, and one from Chanhassen High School. Applicants could apply for up to $250. The grants are a reimbursement program.

Staring Outdoor Center partnership
The Animal Open House is coming up on April 7th. Unfortunately this year we will not be able to collect and show fish from Staring Lake because the lake is still frozen. Staff are looking into collecting and showing macro-invertebrate instead.

Volunteering
See the volunteer section for how the district has been engaging high-school students in volunteer opportunities.

Continuing Education Program
Winter & Turf Maintenance Training
The Turf Maintenance training was held on March 22nd at the district office. Twenty-six turf maintenance professionals attended and learned how to maintain healthy lawns while protecting water quality. Promotions for the Smart Salting Level 2, April 17th continue. The Parking Lots and Sidewalks training will be held in late August.

Local Leaders Program
Summer Tour
Planning for the MAWD Summer Tour continues. Further details can be found under the MAWD heading at the top.

Businesses and Professionals Program
Professional luncheon series
The first of the three luncheon series has been scheduled and promotions begun for it. The Realtor's Luncheon is titled "Homes on the water: answers to common home-buyer questions." The one-hour luncheon targets residential realtor's with the aim of providing information about local water resources, regulation and best practices, and resources for both home-buyers and realtors. Eight realtors have registered in one week of promotion.

Bluff Creek One Water

Chanhassen High School
Chanhassen High School Cooperative Agreement have been finalized by ISD 112. It will be going in front of council April 9 for Chanhassen. More info in packet.

Bluff Creek Tributary Restoration
Staff distributed to the City of Chanhassen a draft of the corridor enhancement plan.

Riley Creek One Water

Lake Susan Park Pond

Staff is still working with the City of Chanhassen to finalize Cooperative Agreement. More info in board packet.

Riley Creek

Informational meeting was set to April 11th at 7:00pm. Postcards were sent to resident located near the project site. Signs were also posted at trail entrances near the site.

Purgatory Creek One Water

Fire Station 2

No new updates.

Purgatory Creek at 101

No new updates.

Scenic Heights School Forest

Staff visited the school forest restoration project on March 13. Most of the invasive species like buckthorn had been removed, as well as sick and undesirable trees. Through the process, many small desirable trees and shrubs were revealed. These included several pagoda dogwood, black cherry, and red dogwood. The red dogwood had been planted around the pond by volunteers several years prior but had been obscured by invasive species. Now that the canopy has been opened up, these trees and shrubs should have move light and an easier time thriving. Staff purchased two time-lapse cameras and installed them at the school forest (with principal approval). The hope is that the cameras will help to capture the changes in the school forest over time. After the project, they will be used at other district sites and projects. Staff met with the art teacher at the school forest and together they have begun planning an art project to engage the students and teachers more closely in the restoration project.

Professional Workgroups and Continuing Education

Harmful Algal Bloom Workshop

Staff Maxwell and Staff Bleser will be attending a Harmful Algal Bloom Workshop sponsored by the University of Minnesota on March 29th. The goal of this workshop is to connect Minnesotans with researchers, agencies, and water resources professionals working to understand the impacts of harmful algal blooms (HABs) on our lakes and streams.

RILEY
PURGATORY
BLUFF CREEK
WATERSHED DISTRICT

2017
ANNUAL REPORT

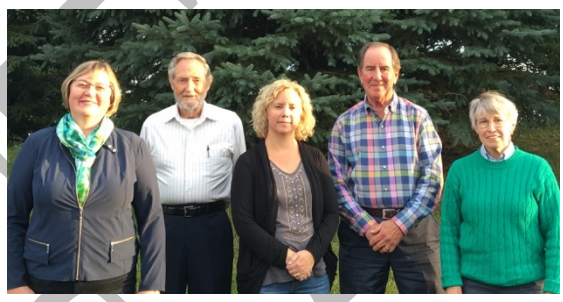
TABLE OF CONTENTS

CONTACTS

The RPBCWD is governed by a five-person board of managers, advised by a Citizens Advisory Committee (CAC) and Technical Advisory Committee (TAC), and its daily operations are carried out by a team of employees and consultants. Contact information for each is listed below.

BOARD OF MANAGERS

The board of managers are listed by their position, and with their appointing county and term end-date noted. Four managers are appointed by the Hennepin County Commissioners and one by the Carver County Commissioners. They serve three-year terms. In 2017, two managers retired (Bisek and Forster), and two new managers were appointed (Pedersen and Ward).



President (middle)
Leslie Yetka - Hennepin 7/31/19
17452 Hampton Court
Minnetonka, MN 55345
Home: (952) 933-3281
Email: lyetka@rpbcwd.org

Vice President (far left)
Dorothy Pedersen – Hennepin 7/31/20
6155 Ridge Road
Shorewood, MN 55331
Home: (952) 933-2141
Email: dpedersen@rpbcwd.org

Treasurer (far right)
Jill Crafton - Hennepin 7/31/18
10351 Decatur Avenue South
Bloomington, MN 55438
Home: (952) 944-5583
Email: jcrafton@rpbcwd.org

Secretary (left)
Richard Chadwick - Carver 7/31/18
9530 Foxford Road
Chanhassen, MN 55317
Home: (952) 445 2425
Email: rchadwick@rpbcwd.org

Manager (right)
Dick Ward - Hennepin 7/31/20
8625 Endicott Trail
Een Prairie, MN 55347
Home: (612) 759-9150
Email: dickward@rpbcwd.org

Retired manager
Perry Forster - Hennepin 7/31/2017
9505 Highview Drive
Eden Prairie, MN 55347
Home: (952) 934-0938

Retired manager
Mary Bisek - Hennepin 7/31/17
4700 Sparrow Road
Minnetonka, MN 55345
Home: (612) 599-4479

CITIZEN ADVISORY COMMITTEE

The CAC is a volunteer advisory board comprised of community members. As representatives of citizen interests, members support the district's board of managers in their mission to protect, manage, and restore water resources. They provide recommendations to aid decision making, communicate concerns from the public, and help educate the community. The board of managers annually appoints members to the CAC. The 2017 CAC members were:

From left to right: Matt Lindon, Pete Iversen, Anne Deuring, Sharon McCotter, David Ziegler, Joan Palmquist and Paul Bulger

Chair
David Ziegler
16729 Baywood Terrace
Eden Prairie, MN 55346

Vice Chair
Sharon McCotter
7000 Utica Lane
Chanhassen, MN 55317

Secretary
Joan Palmquist
8905 Cove Point Road
Eden Prairie, MN 55347

Member
Jim Boettcher
7476 Crocus Court
Chanhassen, MN55317

Member
Paul Bulger
15807 South Lund Road
Eden Prairie, MN 55346

Member
Matt Lindon
9026 Belvedere Drive
Eden Prairie, MN 55347

Member
Peter Iversen
8002 Island Road
Eden Prairie, MN 55347

Member
Anne Deuring
17149 Chiltern Hills Road
Minnetonka, MN 55345

TECHNICAL ADVISORY COMMITTEE

The technical advisory committee (TAC) includes representatives of cities, counties, state and other agencies. Agencies represented on the committee vary from the Metropolitan Council, to the Minnesota Department of Natural Resources, and local cities. They provide technical advice on district projects and programs, including its regulatory program. The board of managers annually appoints members to the TAC. The 2017 TAC members were:

Name and position	*Organization*	*Address*
Steve Christopher *Board Conservationist* (651) 296-2633	Board of Water and Soil Resources	520 Lafayette Road North Saint Paul, MN 55155
Matt Lindon *Citizen Advisor*	Citizen Advisory Committee	9026 Belvedere Drive Eden Prairie, MN 55347
Paul Moline (952) 361-1825	Carver County	Government Center Administration Building 600 East Fourth Street Chaska, MN 55318
Mike Wanous *Administrator* (952) 466-5230	Carver County Soil & Water Conservation District	11360 Highway 212, Suite 6, Cologne, MN 55322
Steve Segar *Water Resources Engineer* (952) 563-4867	City of Bloomington	1700 West 98th Street Bloomington, MN 55431
Paul Oehme *City Engineer/Director of Public Works* (952) 227-1169	City of Chanhassen	7700 Market Boulevard P.O. Box 147 Chanhassen, MN 55317
Matt Clark *City Engineer* (952) 448-9200	City of Chaska	One City Hall Plaza Chaska, MN 55318
Robert Bean Jr. *Water Resources Engineer* (952) 448-8838 x2607	City of Deephaven (Bolton & Menk, Inc.)	2638 Shadow Lane, Suite 200 Chaska, MN 55318
Leslie Stovring/ Dave Modrow *Water Resources Coordinator/ Water Resource Engineer* (952) 949-8327	City of Eden Prairie	8080 Mitchell Road Eden Prairie, MN 55344

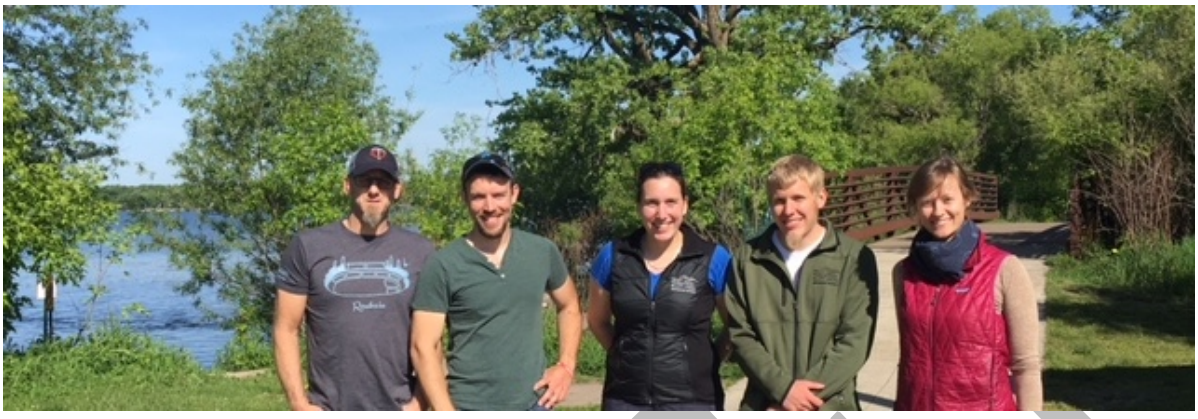
Tom Dietrich *Water Resources Engineering Coordinator* (952) 939-8239	City of Minnetonka	14600 Minnetonka Boulevard Minnetonka, MN 55343
Bill Alms (763) 231-4845	City of Shorewood (WSB Engineering)	701 Xenia Avenue South, Suite 300 Minneapolis, MN 55416
Karen Gallas *Land & Water Unit* (612) 348-2027	Hennepin County	701 Fourth Ave S, Suite 700, Mpls MN 55415
Linda Loomis *District Administrator* (763) 545-4659	Lower Minnesota River Watershed District	6677 Olson Memorial Highway Golden Valley, MN 55427
Joe Mulcahy *Water Resources*	Metropolitan Council	390 North Robert Street St. Paul, MN 55101
Jennie Skancke/ Jason Spiegel *Area Hydrologist* (651) 259-5790	Minnesota Department of Natural Resources	1200 Warner Road St. Paul, MN 55106
Chris Zadak *Watershed Division* (651) 757-2837	Minnesota Pollution Control Agency	520 Lafayette Rd. N. St. Paul, MN 55155
Melissa Jenny/Ryan Malterud *Senior Project Manager* (651)290-5286	US Army Corps of Engineer	St. Paul District Regulatory Branch 180 Fifth Street East, Suite 700 St. Paul, Minnesota 55101-1678

Other staff members from agencies or local government units are welcome to join us at our meetings.

2017 TAC Members: Back Row:
Paul Oehme (Chanhassen), Mike Wanous (Carver County Soil and Water Conservation District), Steve Segar (Bloomington), Tom Dietrich (Minnetonka), Vanessa Strong (Chanhassen), Leslie Stovring (Eden Prairie), Dave Modrow (Eden Prairie), Front Row: Bill Alms (Shorewood), Jennie Skancke (MDNR), Steve Christopher (BWSR), Bob Bean (Deephaven), Rod Rue (Eden Prairie).

EMPLOYEES AND CONSULTANTS

The watershed district employs five full-time staff members.



Left to right: Terry Jeffery, Zach Dickhausen, Claire Bleser, Josh Maxwell and Michelle Jordan

Administrator
Claire Bleser, PhD
cbleser@rpbcwd.org
952-687-1348

Permit coordinator & project manager
Terry Jeffery
tjeffery@rpbcwd.org
952-807-6885

Community outreach coordinator
Michelle Jordan
mjordan@rpbcwd.org
952-607-6481

Water resource coordinator
Josh Maxwell
jmaxwell@rpbcwd.org
952-607-6486

Water resource technician
Zach Dickhausen
zdickhausen@rpbcwd.org
952-607-6036

The District also contracts with consultants to provide engineering, legal, accounting, and auditing services.

District engineer
Scott Sobiech, BARR Engineering Co
4300 MarketPointe Drive, 200
Edina, MN 55435
Telephone: (952) 832-2755
Facsimile: (952) 832-2601
Email: ssobiech@barr.com

Legal
Louis Smith, Smith Partners PLLP
Old Republic Title Building
400 Second Avenue South, Suite 1200
Minneapolis, MN 55401
Telephone: (612) 344-1400
Facsimile: (612) 344-1550

Accounting
Dan Cavanaugh, JMSC Futurity, P.A.
5000 West 36th Street, #240
St. Louis Park, MN 55416
Telephone: (952) 697-3577
Facsimile: (952) 697-3566
Email: dan@jmscfuturity.com

Auditing
Peggy Moeller, Redpath and Company
4810 White Bear Parkway
White Bear Lake, MN 55110
Telephone: (651) 426-7000
Facsimile: (651) 426-5004
Email: pmoeller@hlbtr.com

INTRODUCTION

When it rains, water that falls on the landscape follows a natural path downstream to a waterbody or watercourse. This area of land is the body's watershed. Anything that happens within a watershed impacts the lakes, creeks, wetlands, or ponds it feeds. Watershed districts are special units of government with boundaries based on watersheds, and are charged with protecting and improving our communities' water resources. The Riley-Purgatory-Bluff Creek Watershed District (District) was established on July 31, 1969, by the Minnesota Water Resources Board acting under the authority of the Minnesota Watershed Act of 1955.

Watershed districts are led by district residents and water professionals who focus on managing local water resources. Districts partner with local communities to identify top priorities and plan, implement, and mange efforts, which protect and improve local water resources. Watershed districts educate and engage residents in protecting and improving local water resources, and the efforts they undertake benefit the quality and quantity of water in local, as well as downstream watersheds and communities.

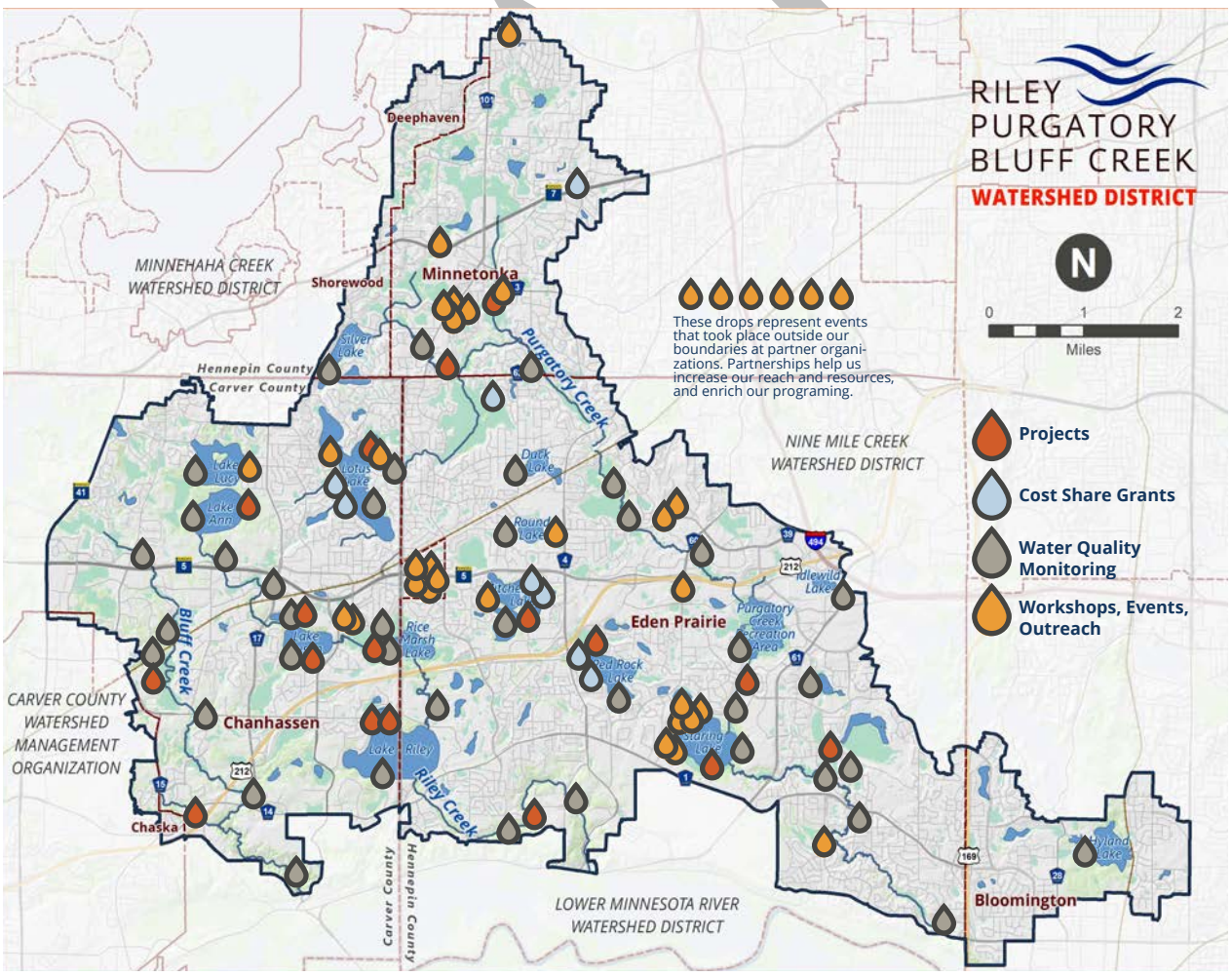
The following report is a summary of District activities in 2017.

2017 SUMMARY

Each year, the watershed district creates a work-plan with goals and objectives for its projects and programs. The plan is a guide for the year, and a way to track progress. This summary describes the district's accomplishments toward fulfilling its 2017 work-plan. The map below highlights the locations of projects, cost-share grants, data collection, and education and outreach activities.

The summary has nine sections:

Administration & Planning
Regulatory
Aquatic Invasive Species
Incentive Program
Data Collection
Education & Outreach
Bluff Creek Watershed
Purgatory Creek Watershed
Riley Creek Watershed



ADMINISTRATION & PLANNING

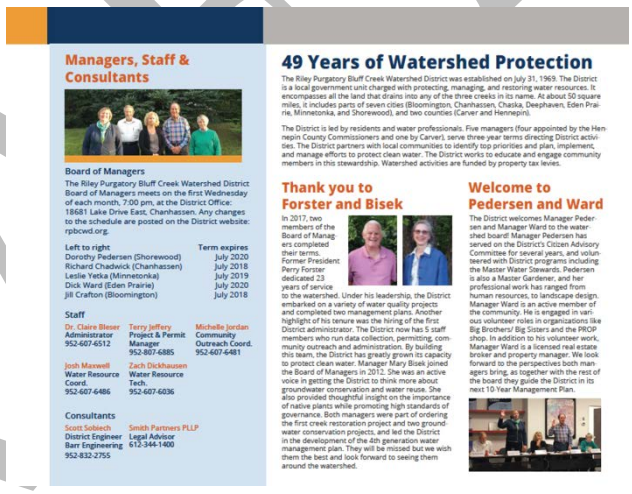
The District's administration and planning efforts are integral to achieve the goals set by the RPBCWD Plan and the Board of Managers. Effective execution of RPBCWD projects, programs, and other strategies requires sound fiscal management, adequate staff capacity and expertise, and planning efforts that are informed by past performance and adaptable to an evolving future.

ANNUAL COMMUNICATION

Every year, the District creates and distributes an annual communication. This publication contains general watershed district information, highlights from the year, and ways that the community can engage in the District's work.

This year, the annual communication was in the form of a twelve-month wall calendar. It featured photos from around the watershed, and tips for protecting and conserving clean water. Approximately 1500 copies were distributed. These were sent to local leaders, placed at local gathering spaces like city centers and libraries, and handed out at community events.

A copy of the communication can be found at:
http://rpbcwd.org/library/annual-reports-and-communications/



BIENNIAL SOLICIATION OF INTEREST PROPOSALS

Under Minnesota Statutes §103B.227, subd 5, the District must issue a biennial solicitation for legal, technical, and other professional services. The District issued a formal solicitation for accounting, engineering, and legal service in 2017. The District retained JMSC Futurity as its accountant and Smith Partners, PLLP as its legal counsel. BARR Engineering was selected as District Engineer in May 2017. Included in our pool of consultant were Wenck Associates, Limnotech, SRF, HDR, Next solicitation will be issued in 2019. Redpath and Company conducted the District's annual financial audit.

EVALUATION OF CAPITAL IMPROVEMENT PROGRAM

As part of the District's development of the 2018 10-year management plan, the District has evaluated and prioritized all District capital improvement project. Out of 175 projects identified, the District with input from our partners was able to identify 34 projects to be implemented within the next 10 years beginning in 2018. Three new projects (Lotus Lake Internal Control, Rice Marsh Lake Internal Control, Duck Lake Watershed Load Control) were identified for the 2018 year in addition to completing projects that were active in 2017 (Chanhassen High School Reuse, Lake Susan Park Pond Capture and Reuse, Lower Riley Creek Restoration and Stabilization, and Scenic Heights Habitat Restoration).

STATUS OF LOCAL PLAN ADOPTION AND IMPLEMENTATION

The District did not receive Local Surface Water Management Plans to review.

FINANCIAL STATUS

The District's fund balances and financial status are included in the District's Annual Audit. The Annual Audit is included as Appendix D to this report. The District's audited financial report was prepared by Redpath and Company, a certified public accounting firm. As required by Minnesota Rules §8410.0150, subp. 2, the Audited Financial Report includes classification and reporting of revenues and expenditures, a balance sheet, an analysis of changes in final balances, and all additional statements necessary for full financial disclosures. The 2017 Audited Financial Report may be found on our website at http://www.rpbcwd.org/library/annual-reports-andcommunications/.

2017 ANNUAL AUDIT

The District's annual audit can be found at the following website:
http://rpbcwd.org/library/annual-reports-and-communications/

2017 ANNUAL BUDGET

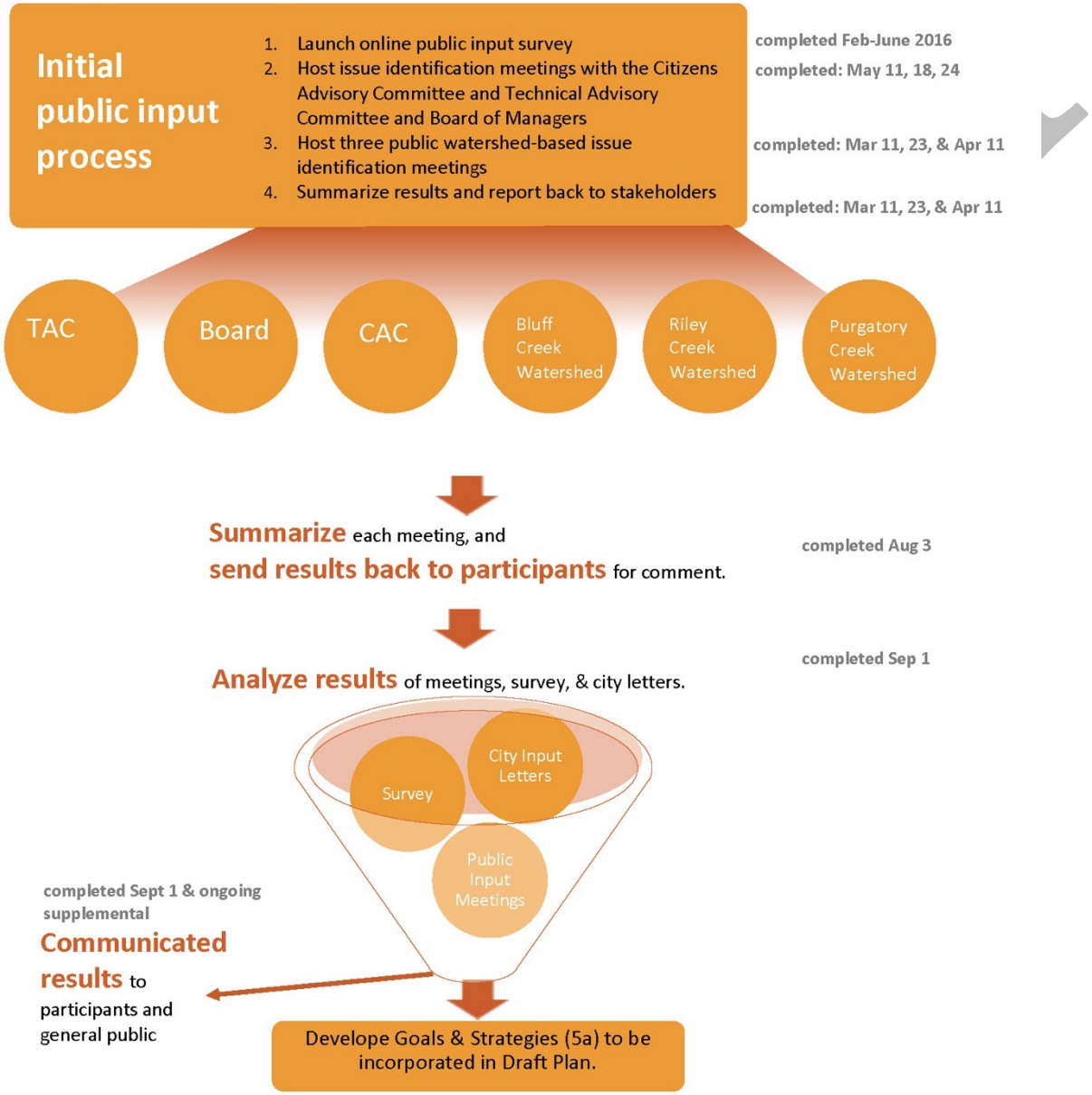
The District adopted its 2017 Annual Budget in September 2016 (see following figure).

LEVY	2015 LEVY	Actual Expenditures 2015	2016 LEVY	Actual Expenditures 2016	2017 LEVY	Actual Expenditures 2017	2018 LEVY
REVENUES							
Plan Implementation Levy	$ 2,431,500.00	$ 2,417,053.77	$ 2,481,500.00	$ 2,481,500.00	$ 2,859,000.00	$ 2,815,901.75	**$ 3,420,000.00**
Permit	15000	20100	15000	10540	15000	47400.1	**20000**
Grant Income		84,934.01					
Data Collection Income		8,830.50		1000			
Other Income		535.17		18.83		29450.24	
Investment Income						15239.98	
Past Levies							
Partner Funds							
TOTAL REVENUE	$ 2,446,500.00		$ 2,496,500.00	$ 2,493,058.83	$ 2,874,000.00	$ 2,907,992.07	**$ 3,440,000.00**
EXPENDITURES							
		Administration					
Accounting and Audit	$ 32,500.00	$ 31,134.72	$ 34,000.00	$ 25,559.79	$ 39,500.00	$ 39,530.80	**$ 40,000.00**
Advisory Committees	$ 4,500.00	$ -	$ 4,500.00	$ 147.45	$ 4,000.00	$ 5,694.50	**$ 4,000.00**
Insurance and bonds	$ 10,000.00	$ 3,191.64	$ 10,000.00	$ 7,649.28	$ 12,000.00	$ 10,587.22	**$ 12,000.00**
Engineering Services	$ 96,000.00	$ 100,824.23	$ 103,000.00	$ 3,358.62	$ 103,000.00	$ 82,712.20	**$ 103,000.00**
Legal Services	$ 130,000.00	$ 125,161.49	$ 75,000.00	$ 58,343.88	$ 75,000.00	$ 71,017.59	**$ 75,000.00**
Manager Compensation	$ 18,500.00	$ 12,394.36	$ 18,500.00	$ 7,180.05	$ 18,500.00	$ 18,526.80	**$ 19,000.00**
Dues and Publications	$ 3,500.00	$ 5,275.00	$ 3,500.00	$ 4,000.00	$ 8,000.00	$ 6,734.00	**$ 8,000.00**
Office Cost	$ 79,500.00	$ 68,161.04	$ 67,500.00	$ 46,851.83	$ 95,000.00	$ 156,031.87	**$ 100,000.00**
Permit Review and Inspection	$ 150,000.00	$ 155,420.03	$ 100,000.00	$ 122,299.66	$ 90,000.00	$ 187,739.66	**$ 90,000.00**
Recording Services	$ 15,000.00	$ 11,975.49	$ 15,000.00	$ 4,305.51	$ 15,000.00	$ 12,233.47	**$ 15,000.00**
Staff Cost	$ 248,500.00	$ 231,359.64	$ 265,500.00	$ 154,537.56	$ 450,000.00	$ 395,619.65	**$ 434,000.00**
Subtotal	$ 788,000.00	$ 744,897.64	$ 696,500.00	$ 434,233.63	$ 910,000.00	$ 986,427.76	$ 900,000.00
		Programs and Projects					
		District Wide					
10-year Management Plan			$ 100,000.00	$ 43,813.28	$ 82,000.00	$ 107,115.25	**$ 5,000.00**
AIS Inspection and early response	$ 50,000.00	$ 53,364.43	$ 75,000.00	$ 61,563.71	$ 75,000.00	$ 18,572.30	**$ 75,000.00**
Buffer Demonstration Site	$ 15,000.00	$ -					
Cost-share	$ 130,000.00	$ 90,549.93	$ 150,000.00	$ 63,983.08	$ 200,000.00	$ 47,509.65	**$ 200,000.00**
Creek Restoration Action Strategy	$ -	$ 36,467.55					
Creek Restoration Action Strategies Phase 2			$ 25,000.00	$ -	$ 20,000.00	$ 11,487.00	**$ 20,000.00**
Data Collection and Monitoring	$ 170,000.00	$ 172,636.26	$ 180,000.00	$ 109,171.73	$ 180,000.00	$ 165,526.96	$ 180,000.00
District Groundwater Assessment					$ 30,000.00	$ 29,568.50	
District Wide Floodplain Evaluation - Atlas 14/SMM model	$ 110,000.00	$ 117,996.50	$ 55,000.00	$ 73,243.00	$ 30,000.00	$ 3,632.26	**$ 30,000.00**
Education and Outreach	$ 65,000.00	$ 41,550.66	$ 114,000.00	$ 43,412.78	$ 114,000.00	$ 98,653.27	**$ 115,000.00**
Plant Restoration - U of M	$ 75,000.00	$ 43,212.04	$ 75,000.00	$ 37,746.04	$ 75,000.00	$ 52,500.55	**$ 40,000.00**
Repair and Maintenance Fund *					$ 100,000.00	$ 25,000.00	
Survey and Analysis Fund *				$ 24,165.26			
Community Resilience MPCA						$ 28,426.55	
Wetland Management*							**$ 150,000.00**
Groundwater Conservation*							**$ 130,000.00**
Lake Vegetation Implementation							**$ 75,000.00**
Opportunity Project*							**$ 100,000.00**
TMDL - MPCA			$ 30,000.00	$ 1,165.45	$ 10,000.00	$ 1,028.00	**$ 10,000.00**
Subtotal	$ 615,000.00	$ 555,777.37	$ 804,000.00	$ 458,264.33	$ 916,000.00	$ 589,020.29	$ 1,130,000.00
		Bluff Creek					
Bluff Creek Fish Passage and Creek Stabilization #	$ -	$ 19,466.54		$ 3,633.00		$ 29,666.68	
Bluff Creek Tributary*						$ 54,621.46	
Chanhassen High School *			$ 5,000.00	$ 11,137.10	$ 68,000.00	$ 99,384.77	$ 75,000.00
Subtotal	$ -	$ 19,466.54	$ 5,000.00	$ 14,770.10	$ 68,000.00	$ 183,672.91	$ 75,000.00
		Riley Creek					
Chanhassen Town Center#	$ 15,000.00	$ 11,286.50		$ 6,354.50		$ 12,605.56	
CLP Treatment - Lake Riley/Susan (WQ)	$ 12,000.00	$ 4,905.60	$ 10,000.00	$ 2,138.85	$ 10,000.00	$ 3,074.30	
CLP Treatment - Riley (WQ)	$ -	$ -	$ 10,000.00	$ 3,850.00	$ 10,000.00	$ 7,173.37	
Lake Lucy Iron Enhanced #	$ 50,000.00		$ 400,000.00	$ 62.32			
Lake Lucy Plant Management Plan	$ -	$ 466.81					
Lake Lucy Spent Lime	$ -	$ 3,152.16					
Lake Riley - EWM Treatment	$ 10,000.00	$ 3,430.72	$ 10,000.00	$ 4,819.00	$ 25,000.00	$ 22,325.20	
Lake Riley - Alum Treatment 1st dose *	$ 200,000.00	$ 19,375.53	$ 60,000.00	$ 215,289.49		$ 2,598.31	
Lake Susan Alum Feasibility			$ 11,500.00	$ 11,005.32			
Lake Susan Improvement Phase 1 *	$ 50,000.00	$ 49,538.10		$ 191,522.47			
Lake Susan Water Quality Improvement Phase 2 *~	$ 150,000.00	$ 9,331.68		$ 1,301.30		$ 93,292.64	$ 80,000.00
Rice Marsh Lake Alum Feasibility Phase 1	$ -		$ 11,500.00	$ 11,005.52			
Rice Marsh Lake Paleolimnology	$ -	$ 19,563.00					
Rice Marsh Lake Water Quality Improvement - Feasibility Phase 1					$ 20,000.00		
Rice Marsh Lake Winter Fish Kill Prevention (WQ)	$ 15,000.00	$ 1,656.41	$ 15,000.00	$ 732.02	$ 10,000.00	$ 1,008.68	
Rice Marsh Lake/Lake Riley UAA	$ -	$ 79,499.09					
Rice Marsh Lake in-lake phosphorus load							$ 150,000.00
Riley Creek Restoration (Reach E and D3) *~	$ -		$ 265,000.00	$ 75,787.18	$ 600,000.00	$ 61,225.60	$ 400,000.00
Subtotal	$ 502,000.00	$ 202,205.60	$ 793,000.00	$ 523,867.97	$ 675,000.00	$ 203,303.66	$ 630,000.00
		Purgatory Creek					
Fire Station 2 (Eden Prairie)	$ -	$ -	$ -		$ 20,000.00	$ 19,025.36	
Purgatory Creek Rec Area- Berm/retention area - feasibility/design					$ 50,000.00		
Hyland Lake UAA					$ 20,000.00	$ 20,247.45	
Lotus Lake in-lake phosphorus load control							$ 345,000.00
Lotus Lake - Feasability Phase 1					$ 20,000.00	$ 1,197.96	
Mitchell Lake Plant Management (CLP - WQ)	$ 15,000.00	$ 3,482.81	$ 15,000.00	$ 3,905.25	$ 15,000.00	$ 2,261.83	
Purgatory Creek at 101*	$ 250,000.00	$ 78,840.28		$ 27,057.53		$ 39,098.00	
Purgatory Creek Lakes UAA *	$ 200,000.00	$ 94,836.50	$ 50,000.00	$ 147,192.50			
Red Rock Lake Plant Management (CLP - WQ)	$ 15,000.00	$ 12,382.81	$ 15,000.00	$ 7,097.78	$ 15,000.00	$ 4,064.89	
Silver Lake Restoration - Feasibility Phase 1					**$ 20,000.00**	$ 8,996.88	
Silver Lake Paleolimnology	$ 22,000.00	$ 19,125.00		$ 2,188.00			
Scenic Heights						$ 51,042.94	
Hyland Lake in-lake phosphorus load control							**$ 20,000.00**
Duck Lake watershed load							**$ 220,000.00**
Staring Lake - Plant Management - EWM Treatment and CLP	$ 8,000.00	$ 7,968.00			**$ 20,000.00**	$ 9,823.98	
Subtotal	$ 510,000.00	$ 216,635.40	$ 80,000.00	$ 187,441.06	$ 180,000.00	$ 155,759.29	$ 585,000.00
		Reserve/Contingency					
Reserve *2017 Annual Report. Riley Purgatory Watershed Dis*	$ 16,500.00		$ 108,000.00		$ 135,000.00	$ -	**$ 100,000.00**
TOTAL EXPENDITURE	**$ 2,431,500.00**		**$ 2,486,500.00**	$ 1,618,577.09	**$ 2,884,000.00**	**$ 2,118,183.91**	**$ 3,420,000.00**
EXCESS REVENUES OVER (UNDER) EXPENDITURES	$ 15,000.00		$ 10,000.00		$ (10,000.00)	$ 789,808.16	$ 20,000.00

10-YEAR MANAGEMENT PLAN

In 2016, the Riley Purgatory Bluff Creek Watershed District began the process of updating its 10-Year Management Plan. The plan guides all the District's actions, from monitoring to water quality projects, over a 10-Year period. Updating a management plan is not a small task. It requires a lot of data, analysis and prioritization, and input from stakeholders like city and state organizations, and the community. Since kicking off the process the District has made a lot of progress. At the end of 2017, the District was able to finally release its first draft to the public. Follow the District's journey below.

Plan process details



Draft plan & first review

5. Develop first draft based on data collected in the initial public input process, best available science, and board direction
6. Continue to work with Citizens Advisory, and Technical Advisory Committees
7. Release draft plan for agency and public review
8. Review and respond to comments

Fall 2017

5. Develop first draft based on data collected in the initial public input process, best available science, and board direction

a. Draft mission, vision, goals and strategies — completed Sept 2016
   a. Staff develop draft
   b. Board of Managers reviews draft
   c. CAC & TAC reviews draft
b. Develop prioritization tool — completed Feb 2017
   a. Staff develop draft
   b. Solicit and incorporate feedback
      i. Review with CAC, Board, TAC
   c. Finalize tool
      i. Review with CAC, Board, TAC
c. Solicit & summarize community input for updating education and outreach plan — completed May 2017
d. Review district boundaries
e. Write first draft of plan — completed Nov 2017

6. Continue to work with Citizens Advisory, and Technical Advisory Committees

a. Internal review of draft plan — Projected: Summer 2017
   a. Board of Managers reviews draft (final comments anticipated in August)
   b. CAC & TAC review draft (anticipated release September 7)
b. Board reviews comments and directs revisions

7. Release draft plan for 60 day agency and public review — completed: Nov 2017

a. Release for review
   a. Send to agencies for review
   b. Release to public for review
   c. Host information session for the public
   d. Board, CAC, & TAC review
b. Host public hearing — projected: March 2018

8. Review and respond to comments

a. Respond to comments received in 60 day review
b. Release for 90 day plan review — projected: Beginning of 2018

Final plan review & approval

9. Revise plan based on comments
10. Revise and submit final plan to Board of Water and Soil Resources
11. Adopt final plan

Projected: Mid 2018

2018 WORKPLAN

Administration	
Accounting and Audit	Coordinate with Accountant for the development of financial reports. Coordinate with the Auditor.
Internal Policies	Work with Governance Manual and Employee Committees to review bylaws and manuals as necessary
Advisory Committees	Engage with the Technical Advisory Committee on 10 year plan and emerging topics Engage with the Citizen Advisory Committee on the 10 year plan and annual budget and emerging topics. Facilitate recruitment of CAC members for 2019.
District-Wide	
Regulatory Program	Review regulatory program to maximize efficiency. Engage Technical Advisory Committee and Citizen Advisory Committee on possible rule changes. Implement regulatory Program.
Aquatic Invasive Species	Review AIS monitoring program Develop and implement Rapid Response Plan as appropriate Coordinate with LGUs and keep stakeholders aware of AIS management activities. Manage and maintain the aeration system on Rice Marsh Lake as per the Riley Chain of Lakes Carp Management Plan
Cost-Share	Review applications and recommend implementation. Review program to determine efficiencies and needs. Recommend modification as necessary.
Creek Restoration Action Strategy	Review updates to the field CRAS analysis.
Data Collection	Review and evaluate Data Collection program.
District Hydrology and Hydraulics Model	Coordinate maintenance of Hydrology and Hydraulics Model Coordinate model update with LGUs if additional information is collected.
Education and Outreach	Implement Education & Outreach Plan, review at year end. Manage partnership activities with other organizations. Coordinate Public Engagement with District projects.
Groundwater Conservation	Work with other LGUs to monitor assess and identify gaps.

	Engage with the Technical Advisory Committee to identify potential projects.
Lake Vegetation Management	Work with the University of Minnesota or Aquatic Plant Biologist, Cities of Chanhassen and Eden Prairie, lake association, and residents as well the Minnesota Department of Natural Resources on potential treatment. Implement herbicide treatment as needed. Secure DNR permits and contrat with herbicide applicator. Lakes the District is monitoring for treatment include: Lake Susa, Lake Riley, Lotus Lake, Mitchell Lake, Red Rock Lake and Staring Lake.
Opportunity Projects	
Total Maximum Daily Load	Continue working with Minnesota Pollution Control Agency on the Watershed Restoration And Protection Strategies (WRAPS). Engage the Technical Advisory Committee .
Repair and Maintenance Grant	Develop and formalize grant program.
University of Minnesota	Review and monitor progress on University of Minnesota grant. Identify next management steps.
Watershed Plan	Finalize the 10-year plan refresh. Finalize boundary changes. Engage CAC and TAC. Engage the public .
Wetland Management	Identify potential restoration/rehabilitatable wetlands and wetland requiring protection.
Bluff Creek One Water	
Chanhassen High School Re-use	Continue to work with all partners. Implement Project. Finalize and implement E and O for project
Bluff Creek Tributary Restoration	Implement and finalize restoration.
Riley Creek One Water	
Lake Riley Alum	Continue to monitor the waters.
Lake Susan Improvement Phase 1	Continue to monitor spent lime treatment facility.
Lake Susan Improvement Phase 2	Implement Project Finalize and implement E and O for project Final report of grant
Rice Marsh Lake Alum Treatment	Implement Alum Treatment. Notify stakeholders. Develop Education and outreach materials for stakeholders.

	Work with City of Eden Prairie and City of Chanhassen.
Lower Riley Creek Stabilization	Coordinate agreement and acquire easements if needed for the restoration of Lower Riley Creek reach D3 and E. Review implementation of project from feasibility to implementation. Develop Public Engagement for project and signage of restoration.
Purgatory Creek One Water	
Duck Lake Raingarden Project	Work with the City to incorporate WQ improvement on Improvement on Duck Lake Trail.
Fires Station 2	Evaluate and Monitor Project
Hyland Lake Internal Load control	Complete Hyland Lake internal phosphorus load control feasibility study.
Lotus Lake – Internal Load Control	Complete Lotus Lake internal phosphorus load control feasibility. Evaluate Invasive plant species in Lotus Lake. Determine timing of Alum application pending plant findings.
Purgatory Creek at 101	Review restoration site and determine if maintenance is required.
Scenic Heights	Implement restoration effort. Work with the City of Minnetonka and Minnetonka School District on Public Engagement for project as well as signage.
Silver Lake Restoration	Finalize Feasibility Work with the City of Chanhassen for Design and implementation
Professional Services	
Presentations	Present District findings at local, regional and national conferences.
Minnesota Association of Watershed District	Host 2017 Summer Tour

REGULATORY PROGRAM

Regulation plays an important role in managing water resource problems. For instance, municipal land use planning and zoning powers are invaluable for ensuring that land uses are compatible with the surrounding environment. The District's current regulatory program was adopted by the Board of Managers in November of 2014. It implements a watershed approach to potential impacts to water resources that ensures a consist level of protection across the watershed.

The program includes thirteen rules, A-M, which can be viewed in detail on the District's website: rpbcwd.org/permits/.

REGULATORY PROGRAM

Regulation ensures proper integration of water resource protection when development and redevelopment projects occur.

Regulation plays a very important role in managing water resource problems. For instance, municipal land use planning and zoning powers are invaluable in ensuring that land uses are compatible with the surrounding environment. City planning and zoning also establish best practices for preventing potentially harmful drainage patterns that may pollute our waters.

The various rules adopted by the Board of Managers on November 5, 2014 and are the backbone of the District's regulatory program. The rules apply to land and water resource-disturbing activities. Any person or entity undertaking an activity that triggers one or more District regulatory thresholds must obtain the required RPBCWD permit prior to commencing the activity.

The table below is summary of all permitting activities that occurred in 2017.

Summary		Estimated		
Permit Type	Number	Total TSS (lbs)	Total TP (lbs)	Volume (cft)
Governmental	21	3,212	19.5	24,090
Private Development	16	20,426	65.7	98,697
Ex. Single Family	31	Not Computed		
Withdrawn/ Review in Progress	5	Not Computed		
TOTAL	73	23,638	85.2	122,787

The District also hosted a builder's workshop on April 26 to help builders learn about the District's permitting program.

The regulatory program prevented sediment pollution, reduced food for algae ad helped slow down and soak in water it falls.

100 Dump trucks of sediment

110 Tons less algae

Infiltrated enough water to fill TCF Bank stadium **84** ft deep

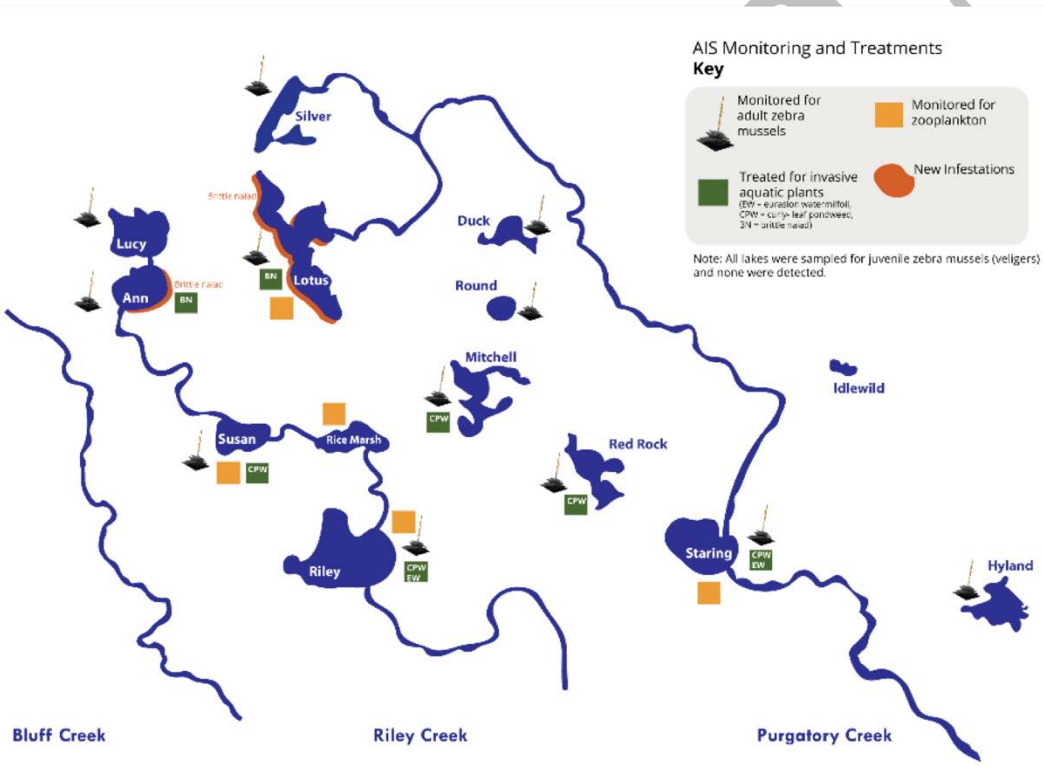
AQUATIC INVASIVE SPECIES

The District understands the importance of AIS monitoring, inspections, and preventions. The District also recognizes that it is more cost effective to prevent an infestation than to restore a resource after an AIS has established itself. The AIS program is to help support AIS inspections, AIS monitoring and rapid responses to a new infestation.

AQUATIC INVASIVE SPECIES

Inspecting and implementing early response to protect and maintain the ecology of water resources.

The District understands the importance of AIS monitoring, inspections, and preventions. The District also recognizes that it is more cost effective to prevent an infestation than to restore a resource after an AIS has established itself. The AIS program is to help support AIS inspections, AIS monitoring and rapid responses to a new infestation.



The District with help of 15 volunteers monitored our lakes for zebra mussels. None were found in 2017.

In addition, the District performed two rapid responses on Lotus and Lake Ann for brittle naiad new infestation. Seven other treatments were performed for curlyleaf pondweed and eurasian watermilfoil, please see map for details.

The District continues to manage carp in the Riley Creek Watershed through our aeration unit on Rice Marsh Lake. We are currently in identifying a solution for Purgatory Creek.

Don't Forget!

Clean, Drain, Dry

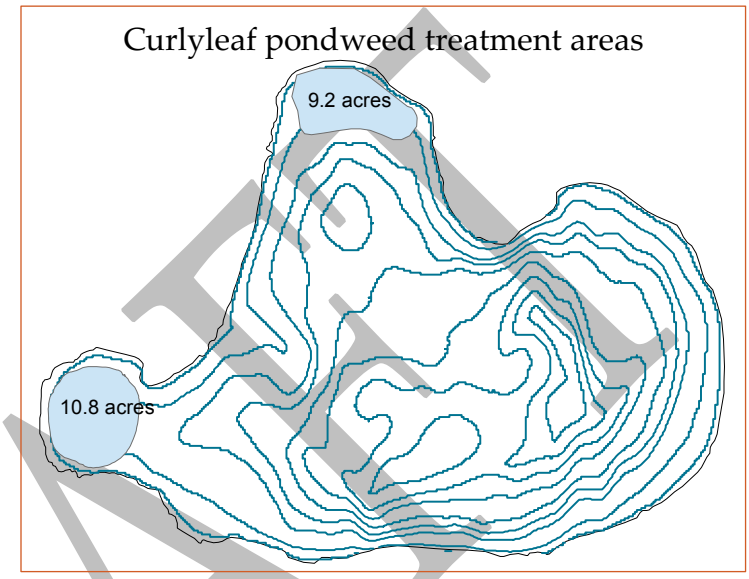
Help keep our waters safe from these invaders by pulling the plug, wiping it clean and letting it dry.

LAKE VEGETATION MANAGEMENT

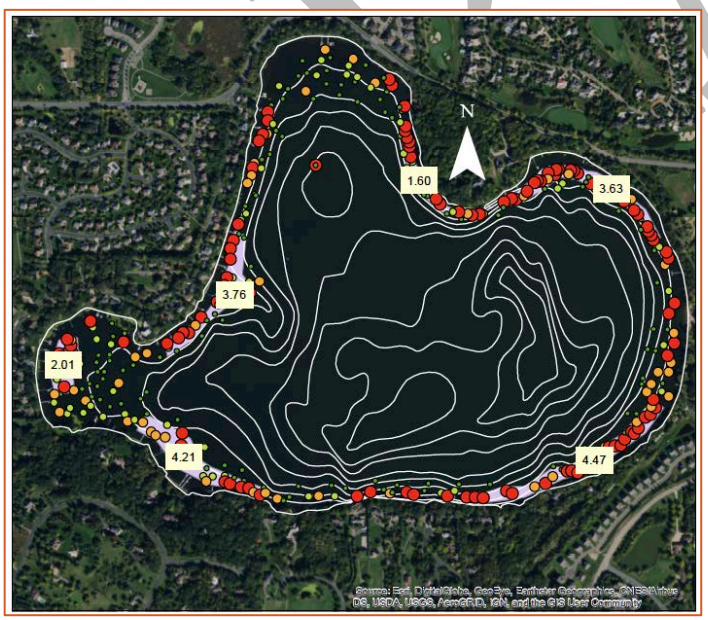
In 2017, the District conducted herbicide treatments on aquatic invasive species as part of 4 vegetation management plans and 1 rapid response plan.

Lake Vegetation Management Plans

Lake Riley

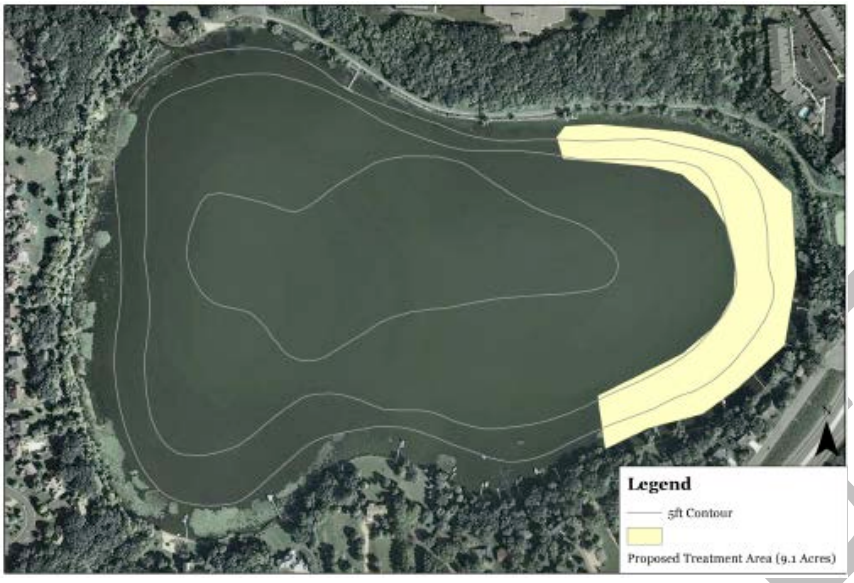


As part of a restoration effort post-carp removal and after the alum treatment, the District has been monitoring and targeting herbicide treatments for both curlyleaf pondweed and eurasian watermilfoil. In 2017, the District conducted two herbicide treatments on Lake Riley. The first treatment treated 20 acres for curlyleaf pondweed and the second treated close to 20 acres of eurasian watermilfoil. These treatments are part of an effort to restore the native vegetation post carp removal and management. The District will continue to monitor and assess the need for herbicide treatment for these invasive species.



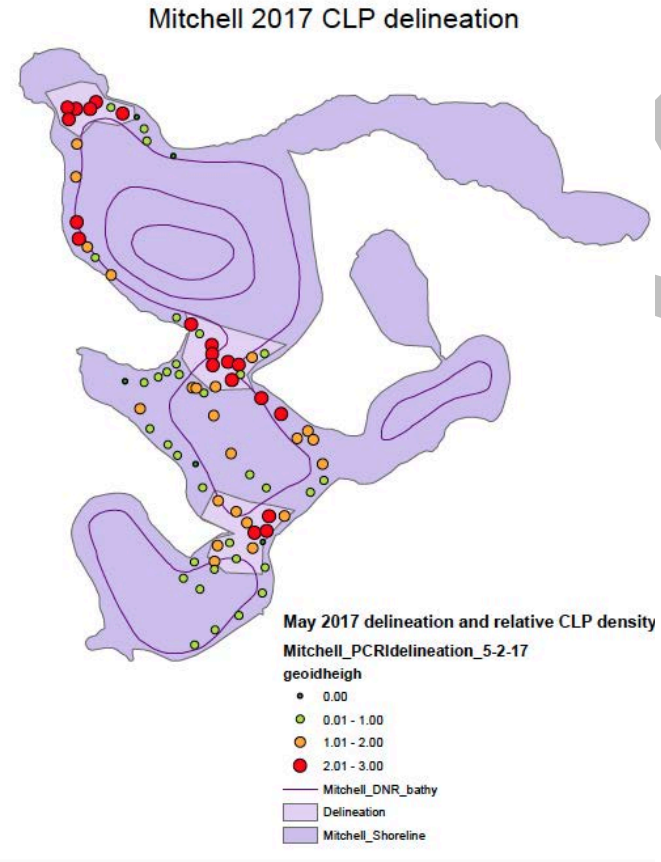
Eurasian watermilfoil treatment

Lake Susan



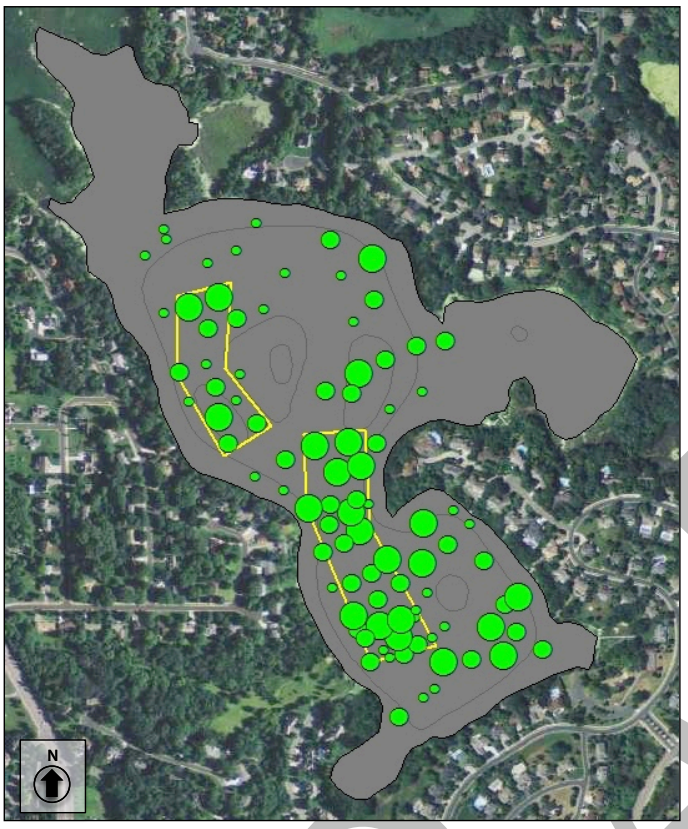
Over 9 acres are curleyleaf pondweed were treated on Lake Susan. The treatment is part of an effort to restore the native plant population in Lake Susan post carp control and prior to a future alum treatment. We will continue to monitor curlyleaf pondweed in 2018 to determine if there is a need to do additional treatments.

Mitchell Lake



In 2017, the District treated 9.7 acres of Mitchell Lake for curlyleaf pondweed. In addition, the City of Eden Prairie conducted 15 acres of mechanical harvesting. This treatment is part of a vegetation management plan to manage curlyleaf pondweed drafted between the City of Eden Prairie and the Watershed District. The District and the City of Eden Prairie will reevaluate the plan in 2018.

Red Rock Lake



Red Rock Lake is classified as a shallow lake by the Minnesota Pollution Control Agency. In 2015, the District along with the city of Eden Prairie completed a public engagement process to develop a plant management plan for Red Rock Lake. Part of the plan identified the need for managing curlyleaf pondweed and as such the District has taken leadership in managing for this invasive plant. Thirteen acres were treated in May for curlyleaf pondweed. The District will be surveying the aquatic plant community to determine if there is a need to treat in 2018.

Rapid Response

Lake Ann and Lotus Lake

Brittle Naiad, also known as Brittle Waternymph, is an aquatic plant which easily breaks into pieces that can spread the plant to new locations. This plant can form dense mats that can outcompete native species and interfere with recreational activities such as boating, swimming, and fishing. The District conducted a rapid response plan to treat Lake Ann and Lotus, using a herbicide known as diquat, on 0.25 and 2.42 acres of the water body respectively. The Lake Ann treatment was located near the beach on the northeastern shore.

COMMUNITY RESILIENCY

RPBCWD IS PREPARING!

Making Adaptation Plans for Minnesota's Changing Climate

Riley Purgatory Bluff Creek Watershed District participated in a workshop series to identify opportunities to build resilience related to local climate change. Climate change is one of the greatest challenges facing society today. In Minnesota, there is a risk due to increases in extreme heat, extreme rainfall, higher summertime dew points, warmer winters, and the intensity of severe storms. Outcomes from the workshop are being used to inform recommendations in the Riley Purgatory Bluff Creek Watershed District Ten Year Plan.

The Climate Adaptation Planning Process *The workshop series walked RPBCWD participants through the first three stages of climate planning, shown above. The workshop began the process of brainstorming strategies to address RPBCWD's climate concerns to be incorporated into the District's Ten Year Plan. Implementation and operation of solutions to follow.*

WORKSHOP SPONSORS

Minnesota Pollution Control Agency · Riley Purgatory Bluff Creek Watershed District · 9 Mile Creek Watershed District · Freshwater Society · Metropolitan Council · Barr

RPBCWD's Top Climate Hazards

Climate hazards are natural events or patterns related to climate change that can cause harm to people, infrastructure, and the environment. Workshop participants identified the following four hazards as the ones of most concern in Riley Purgatory Bluff Creek Watershed District:

Extreme Precipitation

An increase in large storm events is documented in Minnesota. Riley Purgatory Bluff Creek Watershed District experienced this issue in June of 2014. Duluth's staggering 2012 extreme precipitation event demonstrated the serious impacts of such storms.

Drought

Climatologists point out that within Minnesota's normal range of weather extremes is the drought of the dustbowl days in the 1930s. Although there is no recent trend for drought (except for 2012), Riley Purgatory Bluff Creek Watershed District can expect drought to occur again. Long-term predictions of greater than ten years show an increased likelihood of drought.

Extreme Heat

Although not currently experiencing abnormal heat events, Riley Purgatory Bluff Creek Watershed District is experiencing greater summer humidity, which pushes up the heat index and makes it harder to cool off. Extreme heat is predicted for the not-too-distant future.

Warmer Winters

Riley Purgatory Bluff Creek Watershed District is currently experiencing an increase in winter nighttime low temperatures. Consequences include better survival of invasive species and the loss of winter recreational activities as snow and ice season shortens.

Climate Impacts & Recommendations for RPBCWD

Participants of the workshops focused on three sectors of the community and impacts from locally changing climate:

1. Impacts to Society
2. Impacts to the Environment
3. Impacts to Built Infrastructure

Participants listed solutions to these impacts and set priorities. The top ranked priorities for actions to bolster resilience are listed below.

Source: Milwaukee Community Journal

SOCIETY

1

Primary areas of concern for people in Riley Purgatory Bluff Creek Watershed District include impacts to vulnerable populations such as the elderly, disadvantaged children, and the disabled in times of emergency. Also of importance is maintaining access routes to nursing homes and hospitals during emergency events. A dwindling drinking water supply may become an issue during times of drought.

WORKSHOP RECOMMENDATIONS

Protecting RPBCWD's People:

- Continue to work with cities to alert them of potential flooding of streets during extreme storm events — Be certain that routes for emergency vehicles (especially to hospitals) remain open.
- Establish an education program to make citizens aware of the causes of aquifer drawdown and how to prevent future drinking water shortages — Create education and incentive programs that encourage the storage and reuse of stormwater. Work where possible to promote state regulations that allow for the use of grey water within and outside of buildings.
- Translate EMS emergency response instructions into different languages spoken within the District — Work with organizations such as the non-profit PROP to access and educate vulnerable populations on District and climate related issues.

ENVIRONMENT

2

Primary impacts of concern to the environment in Riley Purgatory Bluff Creek Watershed District include aquifer drawdown with increased water demand as the population grows and during dry periods. It is suggested that implementing rainwater gardens across the District along with other forms of green infrastructure (such as a robust urban tree canopy) will allow for water to soak into the ground and recharge the aquifer, while trees will help keep the city cool during hot summers. Invasive plant and animal species such as buckthorn, curly-leaf pondweed, and zebra mussels are a concern because of their complete takeover of their environment and elimination of biodiversity. Another concern includes warming lake temperatures.

WORKSHOP RECOMMENDATIONS

Protecting RPBCWD's Natural Environment:

- Educate citizens about the issue of local aquifer draw-down — Encourage potable water conservation, especially through the reduction of lawn irrigation. Consider implementing stormwater and grey water reuse systems where they make sense.
- Educate constituents on the impacts of warming lakes through warmer winter minimum temperatures — Discuss impacts on water quality, recreation, and fish habitat. Consider mitigation progams.
- Conduct a study to identify slopes along the Minnesota River valley that are vulnerable to failure — Create an action plan to protect people, structures, and infrastructure in high risk areas.
- Continue to conduct public education on problematic invasive plant and animal species — Partner with environmental agencies and cities to control the most destructive species.

3 INFRASTRUCTURE

Primary impacts of concern to the built infrastructure in Riley Purgatory Bluff Creek Watershed District include providing protection to homes in areas of high risk from landslide and flooding. There is also a concern of future damage to culverts at critical road crossings during extreme weather events, as well as interest in addressing erosion within Riley creek.

Source: Spiekel On Line

WORKSHOP RECOMMENDATIONS

Protecting RPBCWD's Built Infrastructure:

- Repair erosion damage at points within Riley creek where stormsewers enter the channel — Also, continue to promote the use of BMPs such as pavement reduction, implementation of rainwater gardens and stormwater reuse systems to reduce the volume of water flowing into the creek via stormsewers.
- Conduct a study to identify culverts at greatest risk of damage during extreme storm events — Work with cities to replace the most vulnerable culverts in the District.
- Recognize that aging stormwater ponds are losing storage capacity because of sediment accumulation — Continue to identify those ponds that have lost the greatest amount of stormwater storage and assist in the revitalization of these ponds.
- Conduct a study in conjunction with local municipalities of those slopes vulnerable to landslides due to saturated soils — Assist them in protecting homes along the slopes.
- Continue to work with home owners in areas expected to flood in the future to help them prepare for potential extreme weather situation

Moving Forward

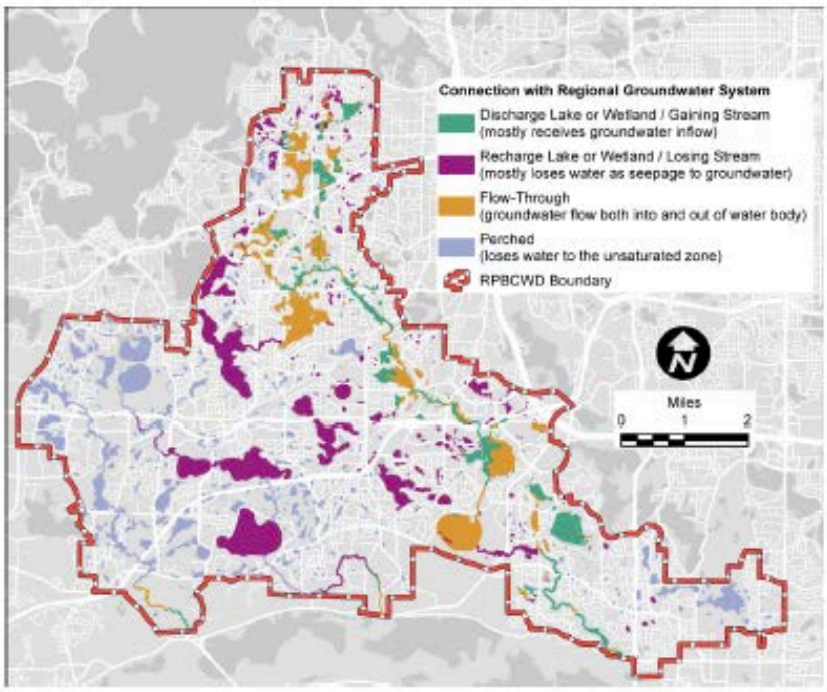
Riley Purgatory Bluff Creek Watershed District is in the planning process to adapt to Minnesota's changing climate and the multiple impacts that the community will experience. Proactive planning is the economically efficient route to climate adaptation, rather than reacting to the impacts of heat, storms, ice, and warm winters as they occur.

The purpose of the workshops was to build relationships across the community, create a shared knowledge base, and harvest potential strategies. They were intended to be the first of many community conversations to make RPBCWD resilient in the face of climate change. This planning effort is being used to inform Riley Purgatory Bluff Creek Watershed District's Ten Year Plan, which is in the works.

GROUNDWATER ASSESSMENT

SUMMARY

A groundwater/surface water interaction and slope stability study was performed for the Riley Purgatory Bluff Creek Watershed District (District). This study used publically available GIS datasets to evaluate: 1) the connection of regional groundwater and surface water across the district; 2) the vulnerability of surface waters to changes in the groundwater system; 3) areas that are most conducive for large-scale infiltration; and 4) the current slope stability across the District and areas where the risk of slope failure is greatest in the presence of increased infiltration.

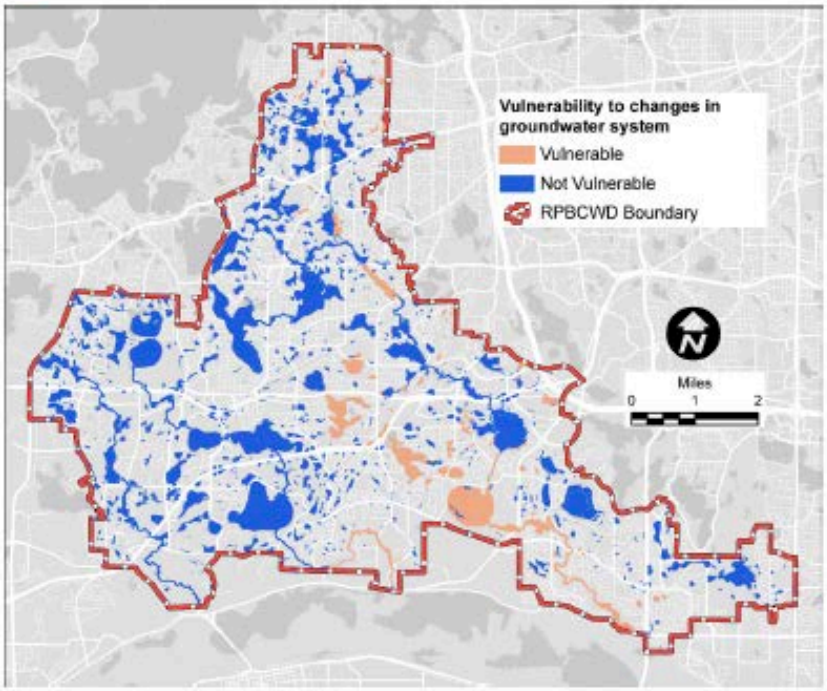


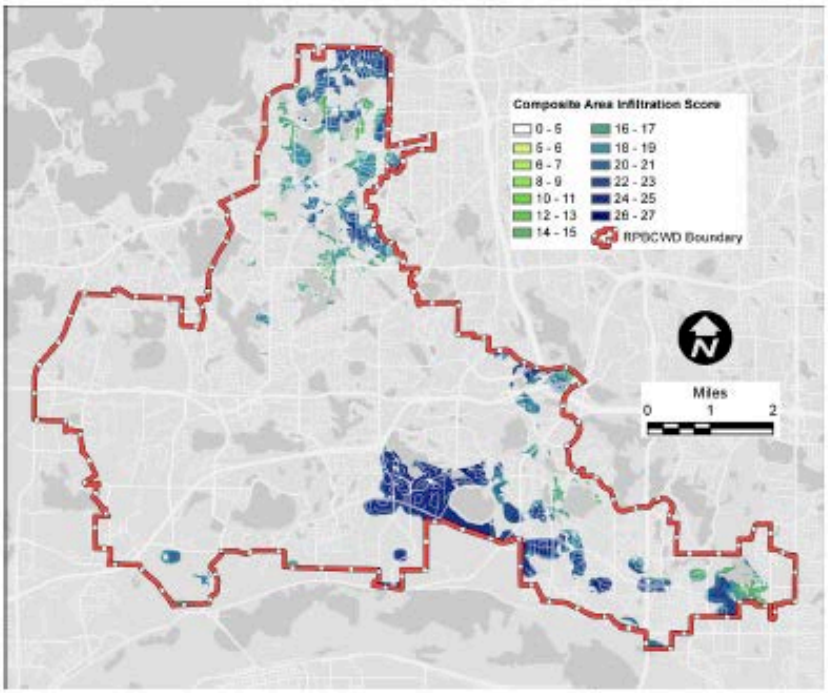
REGIONAL GROUNDWATER/ SURFACE WATER INTERACTION

Surface water features in the western part of the District interact with groundwater differently than surface waters in the eastern and northern part of the District. In the west, lakes and wetlands are mostly perched or recharge the groundwater system. In the east and north, lakes and wetlands mostly gain water from the groundwater system or are flow-through features

VULNERABILITY OF SURFACE WATERS TO CHANGES IN THE REGIONAL GROUNDWATER SYSTEM

Surface waters in the southcentral part of the District are most vulnerable to changes in the groundwater system. Surface water features in the western part of District are less vulnerable.





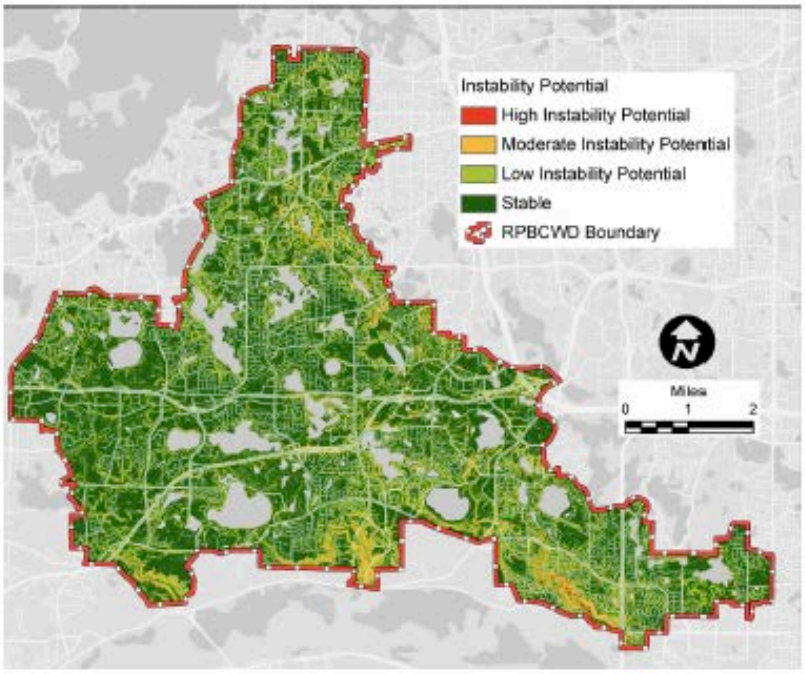
AREAS BEST SUITED FOR LARGE-SCALE INFILTRATION

For large-scale infiltration, areas in the northern and southeastern part of the District were identified as being the best potential locations.

Areas west and southwest of Staring Lake, north of County Road 62, and southwest of Hyland Lake were identified as some of the best areas suited for large scale infiltration.

SLOPE STABILITY

The banks of Riley and Purgatory Creek are most vulnerable to slope instability due to increased infiltration near steep slopes.



RECOMMENDATIONS

- Establish baseflow thresholds for the creeks within the District
- Establish either lake stage or outlet discharge, thresholds for lakes identified as vulnerable to changes in the groundwater system.
- Establish target hydrographs for wetlands identified as vulnerable to changes in the groundwater system.
- Re-establish a monitoring well network within the District and implement a monitoring program.
- Develop a fully coupled groundwater-surface water model for the District.
- Establish a formal process for tracking groundwater data submitted to the District with permit applications.

INCENTIVE PROGRAM

The District has three incentive programs. The cost-share program funds and supports community projects that protect, improve, and increase awareness to water resources. The earth day mini-grant provide funds to educators to engage their students in an activity relating to our water resources. The repair and maintenance program helps cover some of the normal and routine maintenance cost.

COST-SHARE PROGRAM

Funding and support for community projects that protect, improve, and increase awareness of water resources.

The cost-share program provides funding and technical assistance for projects that protect and conserve water resources, and increase public awareness of the vulnerability of these resources and solutions to improve them.

In 2017, the watershed district's cost-share program funded 5 lake buffer projects, 1 wetland buffer, and 1 pond buffer. 6 projects were taken on by homeowners, and one by a home-owner's association. Together, these projects restored 14,250 square feet of shoreline. Buffers help to filter runoff, stabilize the shore, and provide habitat.

2017 marked 5 years of a cost-share program at the watershed and staff conducted inspections of past projects to see how they were fairing. The watershed also provided technical guidance to community members through a partnership with the Carver County Soil and Water Conservation District. Some of these community members did not apply for a cost-share grant, but still went on to engage with the district in other meaningful ways.

In 2017, the watershed district's cost-share program funded seven community projects to protect and improve water resources:

7 projects

14,250 ft² of shoreline restored

EARTH DAY MINI-GRANTS

Six applications were received for the mini-grants. 5 of the applications were approved. The approved grants included: a small raingarden planting, funding for a field trip to a nature center, creating terrariums to learn about the water cycle, purchasing a rainbarrel, and purchasing binoculars to better observe wildlife that live in an along Purgatory Creek.

Cedar Ridge Elementary students uses their new grant purchased binoculars to explore the small creek that runs past their school.

REPAIR & MAINTENANCE FUND

In 2017, he City of Minnetonka applied for repair and maintenance funds to repair and stabilize the section of Purgatory Creek underneath Covington Road. The Silver Lake branch of Purgatory Creek passed underneath Covington Road in a 36-inch corruagated metal pipe, which had deteriorated significantly over the last few years. In coordination with the Riley Purgatory Bluff Creek Watershed District, the 36-inch corrugated metal pipe was removed and replaced with a 30-inch to 36-inch concrete increaser pipe, which was realigned with the natural shape of the stream channel. The site has been stabilized and will be monitored in the spring to ensure full establishment of buffer vegetation. The District cost-shared with the City of Minnetonka for $25,000.

DATA COLLECTION

The District understands that data collection and decisions based on sound science are critical to the success of this Plan. Because of the dynamic and ever changing nature of the water resources, the District operates an extensive lake and stream management program. This program is intended to improve the District's understanding and inform sound decision making to protect and enhance the surface and groundwater resources in the District. Generally, the program includes:

- Data Collection (monitoring)
- Analysis (e.g., research, studies, etc.)

EXECUTIVE SUMMARY

The Riley Purgatory Bluff Creek Watershed District (RPBCWD) had a successful water quality sampling season in 2017, completing a full year of sample collection and data analysis. This effort was made possible through multiple partnerships with municipalities and organizations based within the watershed. Overall, water quality across both creeks and lakes generally improved in 2017. The results from the 2017 sampling effort are presented in this report.

Lake Monitoring

During the 2017 monitoring season, 13 lakes were monitored across the District. In addition to the lakes sampled, Lake Idlewild was monitored by the city of Eden Prairie and was included in this analysis, even though it was classified as a high value wetland in 2015. Regular water quality lake sampling was conducted on each lake approximately every two weeks throughout the growing season (June-September). In addition to regular lake sampling, the District monitored water levels of these 14 waterbodies, assessed carp populations within the Riley and Purgatory Chain of Lakes, and assessed zooplankton and phytoplankton populations in five lakes. The District also monitored public access points and analyzed water samples for the presence of zebra mussels in these 14 waterbodies. No zebra mussel (adults or juveniles) or invasive zooplankton were found in any District lake. Herbicide treatments were conducted on Lake Ann, Lotus Lake, Lake Susan, Mitchell Lake, Red Rock Lake, Staring Lake, and Lake Riley. Brittle Naiad was discovered in Lake Ann and Lotus Lake in 2017.

Surface water samples were collected, analyzed, and compared to standards set by the Minnesota Pollution Control Agency (MPCA) to assess overall lake health. Figure 1 displays lakes sampled in 2017 that met or exceeded the MPCA lake water quality standards for Chlorophyll-a (Chl-a), Total Phosphorus (TP), and Secchi Disk depth during the growing season (June-September). The MPCA has specific standards for both 'deep' lakes (Lake Ann, Lotus Lake, Lake Riley, and Round Lake) and 'shallow' lakes (Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Staring Lake, Lake Susan, and Silver Lake) (MPCA 2016). Lake Ann, Lake Idlewild, Red Rock Lake, and Rice Marsh Lake met all three MPCA standards in 2017; Rice Marsh (TP) and Red Rock (Chl-a) did not previously meet all the standards in 2016. Lotus Lake, Mitchell Lake, and Lake Susan all exceeded both the Chl-a and TP standards in 2017. These lakes did not meet these two standards in 2016 as well. In 2016, four lakes did not meet any MPCA standards, Hyland Lake, Mitchell Lake, Silver Lake, and Staring Lake. In 2017, only Hyland did not meet all three standards. All lakes within the

Riley Chain of Lakes met the MPCA's chloride chronic standard for class 2B water bodies in 2017.

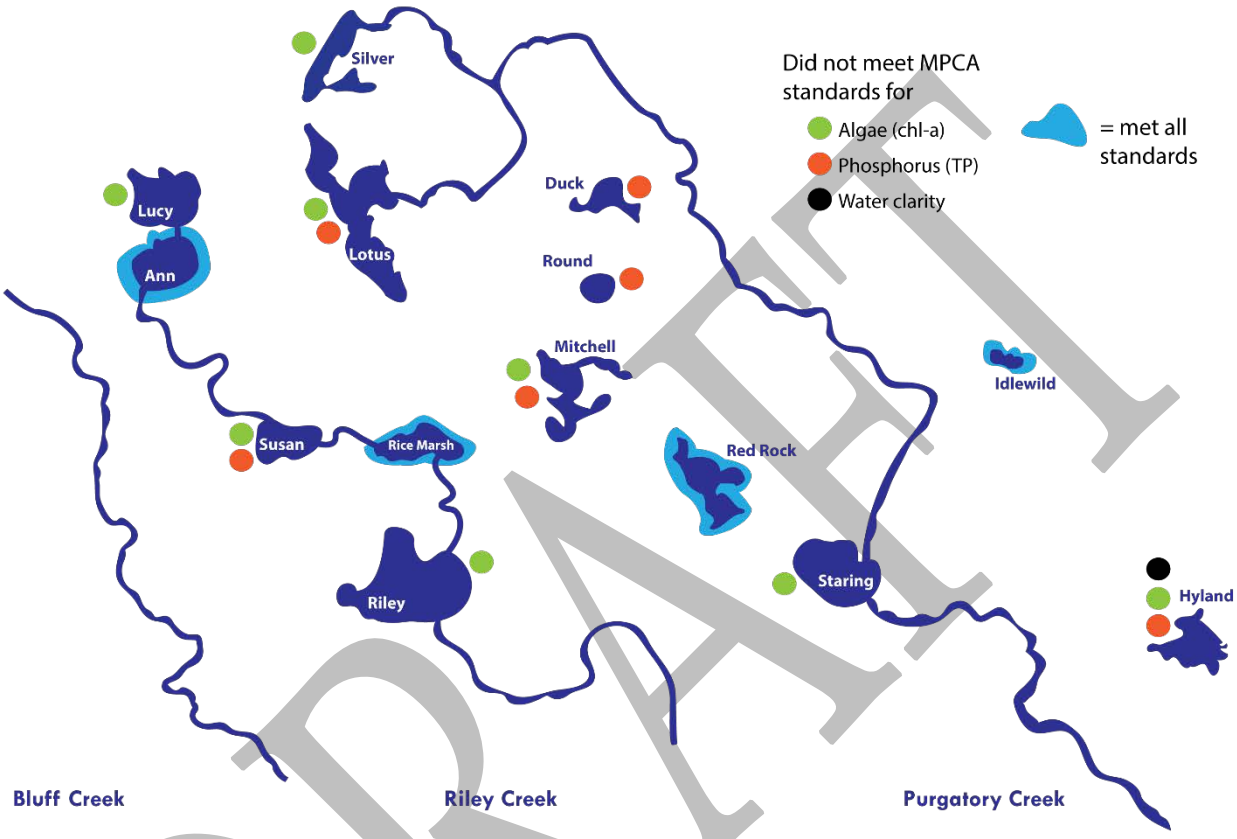


Figure 1 2017 Lake Water Quality

Summary of the lake water quality data collected in 2017 by the Riley Purgatory Bluff Creek Watershed District as compared to the Minnesota Pollution Control Agency Water Quality Standards. Chlorophyll-a (green), Total Phosphorus (orange), and Secchi Disk depth (black) were assessed during the growing season (June-September) for both 'deep' lakes or lakes >15 ft deep and < 80% littoral area (Lake Ann, Lotus Lake, Lake Riley, and Round Lake), and 'shallow' lakes or lakes <15 ft deep and >80% littoral area (Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Staring Lake, Lake Susan, and Silver Lake). The corresponding dots next to each lake indicate which water quality standard was not met and the lakes surrounded by blue met all water quality standards.

Creek Monitoring

In 2017, the District collected water quality samples and performed data analysis on 21 different sampling sites along Riley Creek (six sites), Bluff Creek (five sites), and Purgatory Creek (ten sites). During the 2017 creek monitoring season (April-September) water chemistry and turbidity were regularly measured at the 18-regular water quality monitoring sites every two weeks. Water samples were collected to assess nutrient (TP and Chl-a) and total suspended sediment (TSS) concentrations. Creek flow was calculated from velocity measurements taken at consistent creek cross sections at each water quality monitoring location. Sections of upper Riley Creek and the Lotus Lake ravines were also walked and assessed using the Creek Restoration Action Strategy (CRAS) evaluation, which identifies stream reaches in the most need of restoration. Overall scores improved on Riley Creek and declined slightly on the Lotus Lake Ravines.

The summary for all three creeks is based on water quality parameters developed by the MPCA in 2014 for Eutrophication and TSS. The standards include some parameters the District has not yet incorporated into monitoring procedures. Therefore, this is the evaluation of the stream reaches that did not meet MPCA water quality standards using the current parameters measured by the District. The parameters measured during the summer growing season (April-September) and the associated MPCA water quality limits for streams located in the Central River Region include: Dissolved Oxygen (DO) daily minimum > 4mg/L, summer season average TP < 0.1mg/L, TSS < 10% exceedance of 30mg/L limit during the summer season, summer season average Chl-a <18ug/L, and summer season average pH < 9su and >6su (MPCA, 2016).

Overall water quality improved in from 2016 to 2017. A total of six stream water quality sites (R5, R3, R2, P5, P3, and P1) met all MPCA water quality standards in 2017 (Figure 2). Each stream varied in the number of water quality standards they did not meet; Bluff had ten, Riley had two, and Purgatory had seven. Bluff Creek remained the stream with the worst water quality, as previously seen in 2015 and 2016. Site B5 did not meet the most MPCA standards, DO, TSS and TP. Exceeding the TP water quality standard was the most violated water quality parameter in 2017 with 8 out of the 18-regular water quality monitoring sites not meeting the standard (summer average <0.1 mg/L). This, however, is down from 15 TP violations in 2015 and 11 in 2016. TSS violations were reduced to two in 2017, down from seven in 2016 and three in 2015. The dissolved oxygen minimum of 4mg/l was violated across four stream sites, Upper Purgatory Creek containing three of these sites.

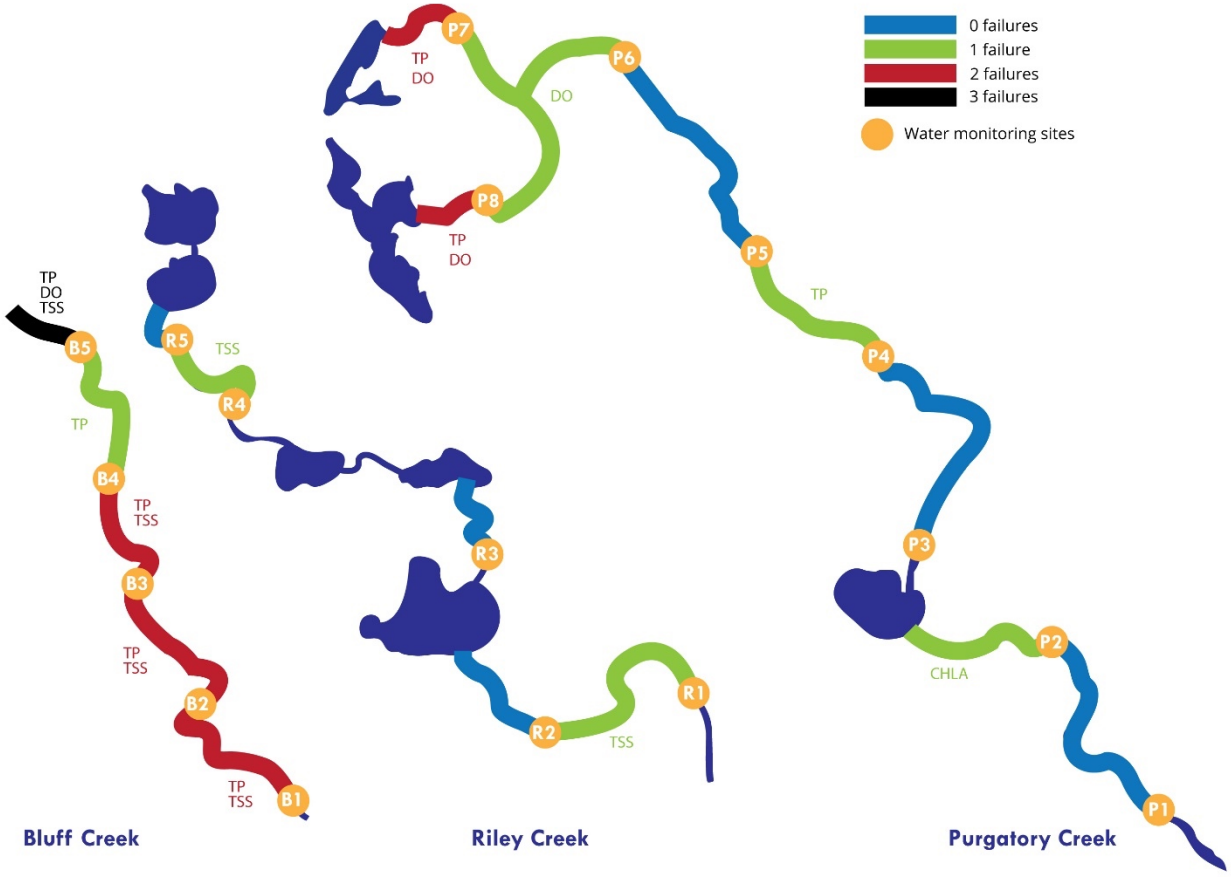


Figure 2 2017 Stream Water Quality

Summary of stream water quality data collected on Bluff Creek, Riley Creek, and Purgatory Creek in 2017 by the Riley Purgatory Bluff Creek Watershed District as compared to the Minnesota Pollution Control Agency (MPCA) Water Quality Standards. A total of 18 water monitoring locations (orange circles) were sampled and information gathered from the individual sites were applied upstream to the next monitoring location. The summer season (April-September) eutrophication and total suspended solids water quality standards used in this assessment included: Dissolved Oxygen (DO) daily minimum > 4mg/L, average Total Phosphorus (TP) < 0.1mg/L, Total Suspended Solids (TSS) < 10% exceedance of 30mg/L limit, average Chlorophyll-a (CHLA) <18ug/L, average pH < 9su and > 6su. The corresponding labels next to each stream section indicate which water quality standard was exceeded.

The full text of the report can be found at:
http://rpbcwd.org/library/annual-reports-and-communications/

EDUCATION & OUTREACH

Community-scale problems require community-scale actions, and water quality is an issue that affects and belongs to all. The District's education and outreach (E&O) programs aim to fulfill its clean water objectives by fostering a community of stewards.

Improving water quality by leveraging the power of an engaged community to effect meaningful change.

The goal of these programs is to improve water quality by leveraging the power of an engaged community to effect meaningful change. To accomplish this, the E&O programs strive to increase awareness, grow stewardship, and build capacity to achieve a shared goal of protecting clean water.

In 2017 the District developed a new education and outreach plan as a part of its Watershed Management Plan update. The E&O plan is in draft form as of this writing, and is anticipated to be finalized and implemented in 2018. The following pages describe the District's E&O programs and major activities implemented in 2017, beginning with a summary report card.

Program Report Card

	Activity	Description	Engagement type (s)	Audience	Reach
Volunteer Program	Adopt a Dock	citizen science engaging lakeshore residents in monitoring for aquatic invasive species	Stewardship, Building capacity	Residents	15 volunteers 55 observations
	Master Water Stewards	volunteer training in stormwater pollution prevention & education	Stewardship, Building capacity	Residents, K-12	10 certified trainees 167 volunteer hours 662 interactions 3 new projects
	Service Learners	volunteer positions in data collection and outreach	Stewardship, Building capacity	Residents, K-12	8 volunteers 178 hours
	Volunteer events	misc events for community volunteers	Stewardship, Building capacity	Residents	4 events 82 participants

	Activity	Description	Engagement type (s)	Audience	Reach
Local Leaders Program	Watershed tour	a tour of water projects and resources in the District	Public engagement, Awareness	Local leaders, Residents	59 attendees
	*Community resiliency workshops	a facilitated planning exercise to help cities and watersheds identify and plan for climate hazards	Awareness, Building capacity	Local leaders, Residents	3 workshops. 4 cities engaged 2 follow-up presentations
	*Funded by an MPCA grant and conducted in partnership with the Nine Mile Creek Watershed District. For full report, see Annual Report Appendices.				
	Council presentations	presentations to city councils on varied topics	Public engagement, Awareness	Local leaders	1 city engaged: Shorewood
Youth Outreach Program	Earth Day Mini Grants	small grants for teachers and informal educators	Awareness, Stewardship	K-12	3 projects 110 student
	Staring Lake Environmental Center Classes	a partnership to support and enrich their water resource programing	Awareness, Stewardship	K-12	3 schools visiting three times each (~120 students)
	Other presentations	lectures and hands-on programs in formal or informal education settings	Awareness	K-12	11 events/activities 940 participants
Continuing Education	Project WET	certification training for educators	Building Capacity	K-12	18 participants
	Maintenance professional trainings	trainings in turf-grass and winter maintenance best practices	Awareness, Stewardship	Businesses & Professionals	3 trainings 75 attendees
	Other opportunities	workshops & activities on misc topics	Awareness	Residents	3 events 85 participants
Communications	Annual Communication	yearly publication to the community	Public engagement, Awareness	Local leaders, Residents	2000 copies distributed
	Newsletters	electronic communication about watershed news	Public engagement, Awareness	Local leaders, Residents	6 bi-monthly newsletters
	Press releases	news pieces sent to local media	Public engagement, Awareness	Local leaders, Residents	Submitted quarterly or more
	Fact sheets	informational sheets for District lakes and creeks	Public Engagement, Awareness	Residents	~1000 distributed

VOLUNTEER PROGRAM

Fostering stewardship and growing capacity through fun, impactful volunteer opportunities.

The watershed district's volunteer program supports its mission to protect, manage, and restore waters resources by engaging community members in stewardship opportunities. The district strives to create meaningful experiences for volunteers, while growing its own capacity to protect clean water. The 2017 program included three ongoing programs – Adopt a Dock, Master Water Stewards, and Service Learners. The district also cosponsored two volunteer clean-up events, and hosted its first-ever volunteer orientation and year-end celebration.

Adopt a Dock

Adopt a Dock is a citizen science initiative. Lakeshore residents to monitor for aquatic invasive species. 15 community members made 55 observations on 9 lakes in 2017. No invasive mussels were found.

Master Water Stewards

A partnership with the Freshwater Society, MWS trains community volunteers to prevent A through projects and education. In 2017, stewards completed 167 volunteer hours and built three projects.

Service Learners

Service learners are college students or other community members who gain first-hand experience at the district through volunteering. In 2017, 8 community members volunteered 178 hours.

In 2017, the watershed district's volunteer program engaged community members through three different opportunities and four events:

40 volunteers

345 hours volunteered

7 programs & events

LOCAL LEADERS PROGRAM

Engaging and supporting appointed, elected, and informal leaders in the shared work of protecting clean water.

This effort offers educational programming, provides resources, and creates effective tools to assist and enable community leaders to make informed decisions regarding water resources. It may include activities such as participating in the University of Minnesota Extension's NEMO program (Non-point source Education For Municipal Officials), presentations to city councils and commissions, and watershed tours or workshops.

Watershed tour

The 2017 local leaders program featured a tour of the watershed district lakes, creeks, and wetlands. Participants ranged from city mayors and commissioners, to community members and the watershed district board of managers. The tour offered a backdrop for conversations about protecting clean water and how the district's new watershed management plan is being crafted using community input and ideas.

Community resiliency workshops

The District, along with the Nine Mile Creek Watershed District lead a public planning process to educates and engage communities on the importance of climate change, current and anticipated impacts, and the need to build community resilience through planning. Four communities participated: Bloomington, Chanhassen, Edina, and Hopkins. A watershed district planning effort was also conducted. The work was funded by a Minnesota Pollution Control Agency Grant, and received support from the Metropolitan Council. Reports were drafted and two additional meetings were held to communicate results to the public. View the District's report on the website.

In 2017, the watershed district's local leader program engaged community members through a watershed tour, workshops, and presentations:

59 tour attendees

Resiliency planning

7 activities

YOUTH OUTREACH PROGRAM

Creating meaningful childhood experiences connected to water resources to inspire the next generation of water stewards.

The youth outreach program seeks to create meaningful childhood experiences connected to water resources, and increase understanding and stewardship of water resources in children and their families. Examples activities include guest presentations and citizen science opportunities for local schools and scout groups, service learning opportunities for high-school and college students, and providing financial and other resources to increase education about, and access to local water bodies.

Earth Day Mini-Grants

The mini-grant program offers funding to educators for projects that or activities related to water resources. 3 projects were funded in 2017: a trip to a nature center, binoculars for nature observation, and studying the water cycle.

Staring Nature Center Partnership

The district partners with the Staring Lake Nature Center in Eden Prairie to support their water resources programing. In 2017, three schools (~120 4th graders) visited the center three times to learn about the health of Staring Lake.

Presentations & Events

The district seeks out and responds to requests to present at schools and other youth event. In 2017 it participated in 11 events in addition to the three held at the nature center.

In 2017, the watershed district's youth outreach program engaged children and their families by:

3 mini-grant projects

1170 individuals engaged

14 activities & events

CONTINUING EDUCATION

Educational opportunities for community members to grow their water resource and best practices knowledge.

The District offers continuing education which may take many forms. Examples of continuing education programs include seminars for professionals on best management practices, workshops for residents on raingardens, Project WET trainings for educators, and tours of resources or projects.

Project WET

Project WET – Water Education for Teachers is an international, interdisciplinary, water science and education program for formal and non-formal educators of K-12 students. With 9 Mile Creek Watershed, the district held a training on the curriculum in 2017 with 18 attendees.

Turf & Winter Maintenance Training

Through a Minnesota Pollution Control Agency Grant, the watershed district is able to offer certification trainings in best practices for turfgrass and winter maintenance professionals. In 2017 the district hosted two grant-supported workshops, and funded an additional workshop for seasonal staff.

Topics of interest

The district hosts and partners on different training opportunities each year. In 2017 for example, the district held a Shoreline Maintenance Workshop for residents to learn how to care long-term for shoreline plantings.

In 2017, the watershed district's continuing education program served the community through:

178 participants

7 Trainings & events

COMMUNICATIONS PROGRAM

Engaging the public through diverse communication methods from event tabling to social media and publications.

The communication program encompasses both passive and active communications. Passive communications include press releases and advertisements with both traditional and social media, as well as print materials and interpretive signage. Active communications include direct connections between district staff and representatives, and the community.

Annual Communication

Each year, the district prepares and distributes a communication about the work it does in the community. 2000 copies were distributed in 2017 as wall calendars.

Fact sheets

Water quality fact sheets tell the story of each lake and creek in the watershed. Over 1000 copies were distributed in 2017.

Newsletters & releases

Electronic newsletter and print press releases are written throughout the year. 6 newsletter went out in 2017, and several releases were published by local papers.

Engagement events

From tabling at local fairs, to hosting a rain barrel sale and a bike ride along Riley Creek, the district engaged with the public in a variety of ways in 2017.

In 2017, the watershed district's communications program engaged the community and raised awareness through:

1000 fact sheets

6 newsletters

12 events

2000 annual communications

VOLUNTEER HIGHLIGHT: CITIZEN ADVISORY COMMITTEE

Advising the watershed district as representatives of citizen interests and promoting clean water action in our community.

The Citizens Advisory Committee (CAC) of the Riley Purgatory Bluff Creek Watershed District, is a volunteer advisory board that supports the district's board of managers in their mission to protect, manage, and restore water resources.

As representatives of citizen interests, committee members advise the board on decision making, communicate concerns from the public, and help educate the community on clean water action. Some of the 2017 CAC highlights and accomplishments include:

Action Projects

Recently the CAC began forming subcommittees around topics of interest. These committees include stormdrains, groundwater, and community cleanups and have led to action projects. 2017 action projects included a fall cleanup, and the initiation of a speaker's bureau project.

10-Year Plan Update

The district continued the process of updating its 10-Year Management Plan in 2017. The CAC was an integral part of this process, reviewing drafts of both the plan itself, and appendices like the Education & Outreach Plan.

25 x 25 Meeting

25BY25

After hearing about Governor Dayton's 25 by 25 initiative, CAC members proposed hosting one of the community meetings to the board. Members both helped prepare for, and participated in, the facilitated discussion around goals for Minnesota's water resources.

In 2017, the watershed district's Citizen Advisory Committee contributed to the district's work through:

8 members

Review of projects & programs

Action projects

BLUFF CREEK WATERSHED

The District is actively engaged in two projects in the Bluff Creek Watershed:

- Bluff Creek Tributary Restoration Project
- Chanhassen High School Reuse Project

BLUFF CREEK TRIBUTARY RESTORATION PROJECT

In 2017, the District conducted a feasibility and began design of the Bluff Creek Tributary Restoration Project. The site is located between Audubon Rd and Highway 212. The reach approximately 1400ft. The vision for this Project is to provide an ecologically diverse stream reach that significantly reduces streambank erosion and provides diverse habitat layers. Presently, the upper part of the reach has significant erosion. It is not as severe in the lower half of the reach, but the channel is incised and disconnected from the floodplain throughout. The Project will provide greater stream depth variability, more channel bed substructure types, and varied channel velocities. The Project will reduce erosion and improve water quality while also improving natural stream habitat for aquatic organisms. Providing better floodplain connectivity for Bluff Creek also enhances surrounding riparian habitat. By establishing a stable stream corridor, the Project will also address the Minnesota Pollution Control Agency's (MPCA's) identified turbidity impairment within this reach of Bluff Creek.

CHANHASSEN HIGH SCHOOL

The District partnership with the city of Chanhassen and Eastern Carver County School District designed in 2017 a stormwater reuse for irrigation at Chanhassen High School with the goal of implementing a project to reduce groundwater consumption, reduce discharge rates, volumes and pollutants to Bluff Creek (an MPCA impaired water), and increase the public awareness of stormwater reuse and groundwater conservation.

According to irrigation meter records, the school campus purchases an average of 3.8 million gallons (MG) of groundwater annually from the city of Chanhassen's domestic water supply to irrigate about 11 acres of green space (athletic fields and areas around the school building). This is equivalent to six Olympic-size swimming pools being filled

annually or an average weekly irrigation rate at Chanhassen High School is 0.57 inches per week between May through September.

Through a partnership between the RPBCWD, city of Chanhassen and Independent School District 112, a stormwater reuse system could effectively irrigate nearly 75% of the green space on the high school campus by using 16% of the annual watershed run-off. The proposed reuse system would meet 51% of the total school campus annual irrigation demand by using 14 stormwater from a stormwater pond on the school campus to irrigate the north side of the high school campus (8.2 acres) through the irrigation system. The proposed stormwater irrigation system will decrease the demand for groundwater at the high school athletic fields and grounds, with the potential for improvements and expansion in the future to meet additional demands.

Design will be completed in 2018 and will be going out for bids an implemented during that year. The District received a $200,000 grant from the Metropolitan Council for this project.

PURGATORY CREEK WATERSHED

The District is actively engaged in two projects in the Purgatory Creek Watershed:

- Fire Station 2 Water Reuse
- Lotus Lake Alum
- Purgatory Creek Restoration
- Scenic Heights
- Silver Lake Water Quality Project

FIRE STATION 2 WATER REUSE

Through a grant from the Metropolitan Council, the District partnered with the city of Eden Prairie to implement water conservation practices at Fire Station Two. A cistern captures and treats rainwater from the station's roof. This can then be used for irrigating the grounds and washing fire trucks.

A cost-sharing grant from the District also supported the transition of the grounds to low-mow grasses and native plants. This type of landscaping requires less water and upkeep. Both practices also help to reduce stormwater runoff and pollution.

Signs along the trails invite visitors to explore, and to get involved by taking these practices back to their homes, workplaces, and gathering spaces.

LOTUS LAKE ALUM

In 2017, the District began a feasibility to determine the dosage needs in conducting an alum treatment. Cores were taken from Lotus Lake and are currently being processed.

PURGATORY CREEK RESTORATION

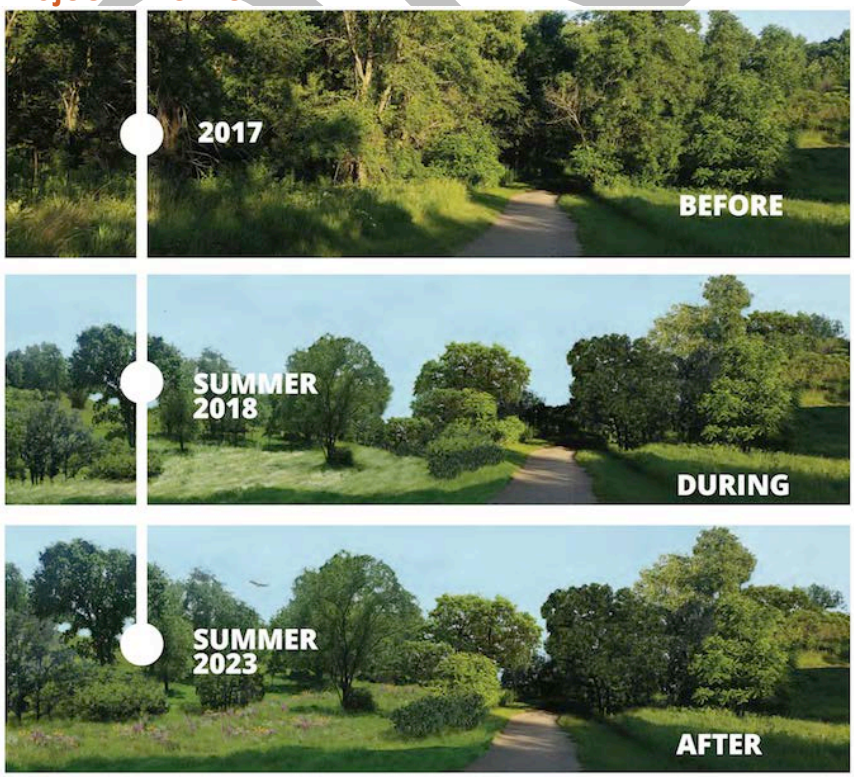
The Purgatory Creek Restoration on the northeast corner of 101 and 62 was implemented in 2016. The District continued to monitor the reach. Members of the public have walked this corridor creating an unofficial trail. The District placed a sign to indicate that this is a restoration site.

SCENIC HEIGHTS SCHOOL OF FOREST RESTORATION

This project will restore a healthy ecosystem in the school forest, one that promotes clean water in nearby Purgatory Creek, and provides habitat for wildlife. In the fall of 2017, the restoration began.

Project map

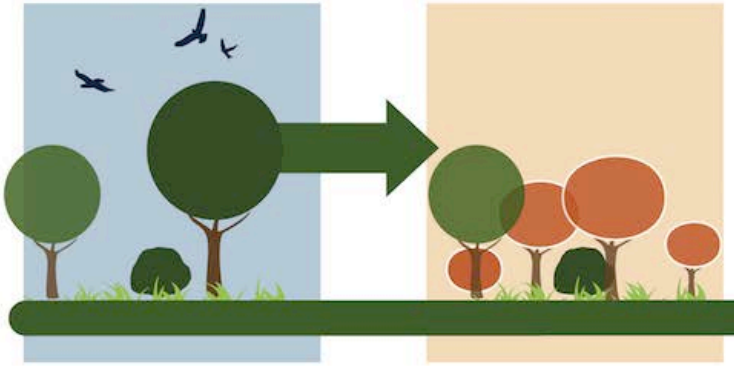
Project timeline



Project partners

Promoting Stewardship Through Restoration

Welcome to the Scenic Heights School Forest Restoration! This project will help restore a healthy ecosystem in the school forest that promotes clean water in nearby Purgatory Creek and critical habitat for local wildlife.



200 Years ago this landscape looked much different. It was a diverse ecosystem of tallgrass prairies and oak savannas. Deep-rooted grasses held the soil in place while wildflowers, shrubs and sparse trees porvided habitat for many animal and insect species.

Oak Savanna

Now **invasive species** like garlic mustard and buckthorn have outcompeted native plants, and erosion is common. When European settlers suppressed fire, cleared vegetation and introduced agriculture and livestock, the soil became degraded and many native plants disappeared.

Buckthorn

Honeysuckle

Undesirable Tree Species

Erosion

RESTORATION

By restoring the forest we can re-establish a healthy ecosystem in the Scenic Heights School Forest. The first step will be to remove invasive plants and unhealthy or undesirable trees. Secondly, native species will be planted and cared for so they can establish. Finally, long-term care of the site is critical in order to keep invasive species at bay and keep the native plant communities thriving.

What Does Restoration Look Like?

Invasive Removal | Tree Removal | Controlled Burning | Invasive Control | Planting

A diverse native plant based savanna will fully establish with thoughtful on-going site management.

NO ACTION

If we don't act many native plants will be lost, and there will be less habitat for wildlife such as birds, mammals, frogs and pollinators. Invasive species will dominate the landscape and the soil will continue to erode.

SILVER LAKE WATER QUALITY PROJECT

The 2017 UAA update identified the Silver Lake subwatershed SiL_2 as a targeted location within the Silver Lake watershed to reduce the phosphorus loading and improve the water quality of Silver Lake. The UAA indicates that runoff from approximately 13.5 acres drains through the location of the potential stormwater treatment system.

This site presents several design and maintenance challenges including, but not limited to, drainage patterns, tree canopy, and topography. The UAA suggests that an iron enhanced sand filtration system treating discharge from Pleasantview Road and Ridge Road would be approximately 0.4 acres at the surface with the potential to reduce the annual phosphorus loading to Silver Lake by 6.3 pounds. The District began a feasibility study in 2017to evaluate the viability of constructing a BMP to treat runoff from Pleasantview Road and Ridge Road, and to identify if an iron enhanced sand filtration system would be the preferred BMP for the site. This study evaluates the feasibility of other stormwater BMPs, as well. Estimated total phosphorus removals and engineer's opinion of project costs were determined for five feasible BMPs.

RILEY CREEK WATERSHED

The District is actively engaged in two projects in the Riley Creek Watershed:

- Lake Susan Park Pond
- Chanhassen Town Center
- Lower Riley Creek Restoration

LAKE SUSAN PARK POND

The Riley Purgatory Bluff Creek Watershed District (RPBCWD) in partnership with the City of Chanhassen, conducted a study of watershed treatment and stormwater reuse enhancement alternatives at the Lake Susan Park Pond in March 2017, building upon the Lake Susan and Rice Marsh Lake use attainability analysis (UAA) prescribed by the 1996 RPBCWD Water Management Plan (i.e. District Plan) and completed in 1999. The updated Lake Susan UAA recommended remedial measures to improve the lake's water quality and was completed in July 2013.

The 2013 UAA Update included several near-term projects in the Lake Susan implementation plan, including construction of an iron-enhanced sand filtration system at Lake Susan Park Pond and modifying the pond to increase dead pool storage by one foot. The 2017 Engineer's Report for the project evaluated several conceptual design combinations for water quality improvement and stormwater reuse. The recommended alternative includes water quality treatment through use of an iron enhanced sand filter (IESF) and stormwater reuse through irrigation of an adjacent ballfield.

CLEAN WATER LAND & LEGACY AMENDMENT

The project includes providing water quality treatment at Lake Susan Park Pond through use of an IESF and stormwater reuse through irrigation of an adjacent ballfield. It also includes erosion protection at the outlet of Lake Susan Park Pond to Riley Creek. The filtration system will be located along the south side of Lake Susan Park Pond, in an area formerly used as an archery range to minimize impacts to upland vegetation.

In 2017, the District completed the feasibility and began design for the system. The District anticipates installing it in 2018.

Financial partners include the State of Minnesota and the City of Chanhassen.

CITY OF CHANHASSEN

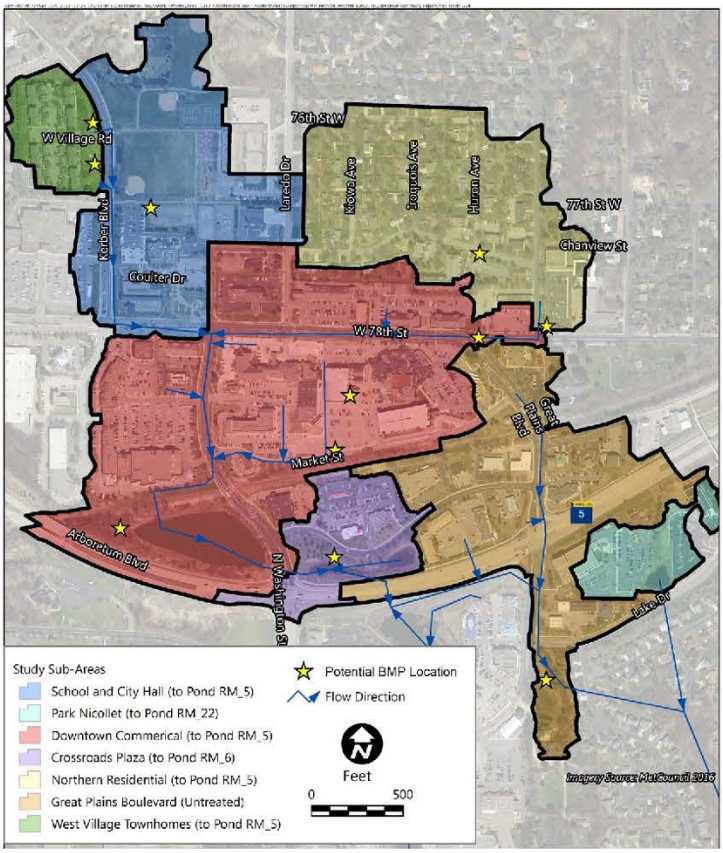
CHANHASSEN TOWN CENTER

STUDY PURPOSE AND GOALS

The purpose of this study is to provide a list of potential stormwater best management practices (BMPs) within the downtown area of Chanhassen that will provide stormwater treatment, volume reduction and phosphorus load reductions for the downstream water resources, including Rice Marsh Lake and Lake Riley. The study goals were to:

- Identify innovative BMP retrofit locations that would remove soluble phosphorus, promote infiltration and groundwater recharge, improve the quality of the downstream water resources, and educate the public about stormwater management.
- Develop a framework for evaluating future potential BMP locations as opportunities for redevelopment and capital improvement projects arise.

The study produced concept designs, preliminary opinions of cost, and phosphorus removal estimates for three potential stormwater BMPs.



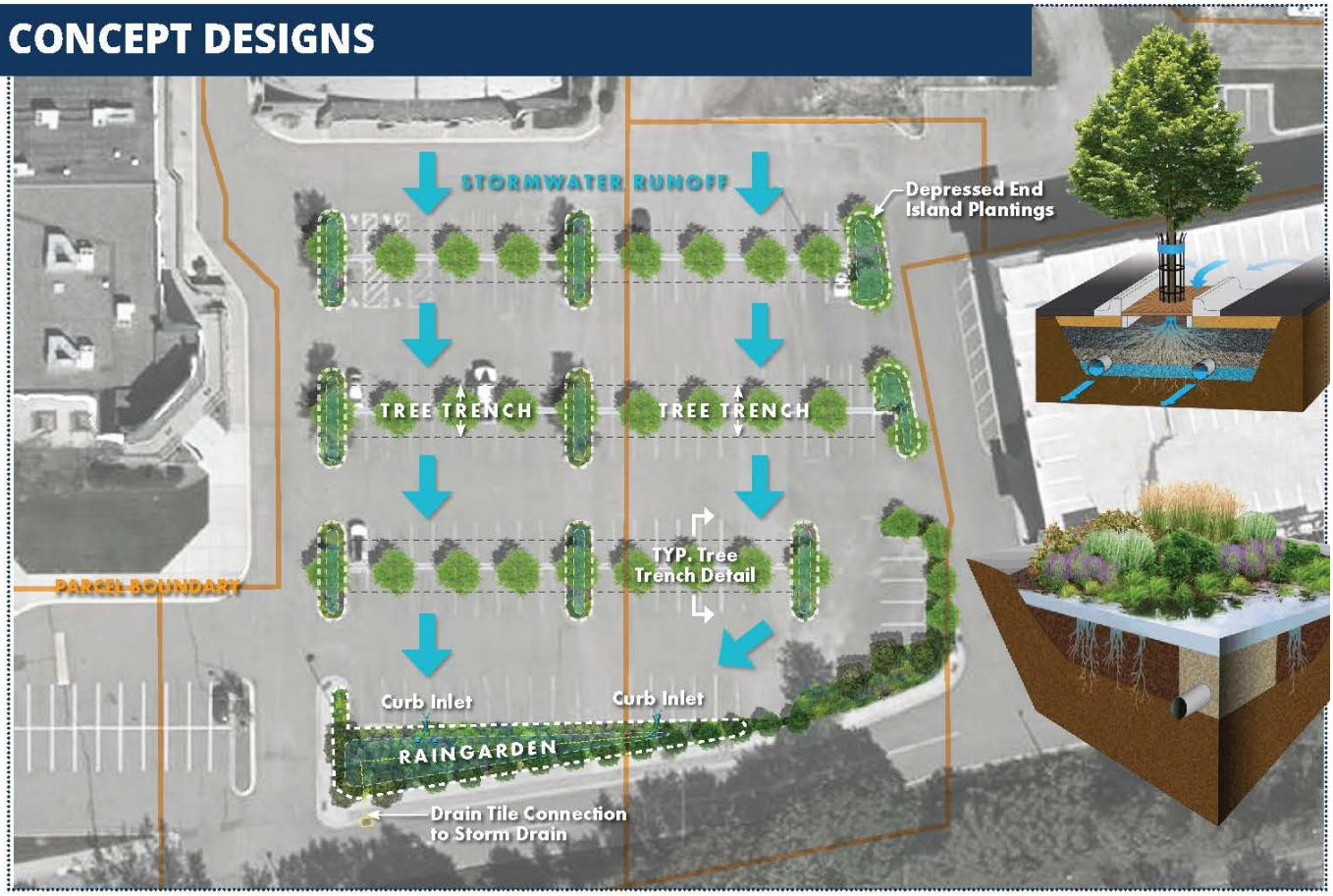
BMP	ESTIMATED ANNUAL WATER VOLUME ABSTRACTION	ESTIMATED PHOSPHORUS REMOVAL	PRELIMINARY OPINION OF COST (RANGE, 2016 DOLLARS)
West Village Rain Gardens	2.4 ac-ft (0.8 million gallons)	2.7 Pounds	$47,000-$83,000
Chanhassen Cinema Parking Lot Tree Trench and Rain Garden	2.5 ac-ft (0.8 million gallons)	2.6 pounds	$430,000-$730,000
Stormwater Re-Use System	14 ac-ft (4.5 million gallons)	11.4 Pounds	$275,000-$688,000

RECOMMENDATIONS

This study showed that stormwater treatment BMPs for removing soluble phosphorus and reuced runoff volume are feasible within the Downtown Chanhassen area and present the opportunity for close cooperation between city, watershed district, and property owners to maximum the stormwater management opportunities while enhancing the economic viability of the area. Specific opportunities include, but are not limited to:

- Implementing the West Village Townhome Rain Garden, Movie Theater parking lot improvement and potentially a large scale reuse system.
- Implementing targeted cost share projects.
- Promoting volume reduction stormwater BMPs such as rainwater gardens (infiltration basins), permeable pavement, rainwater harvesting (rain barrels, underground storage), and vegetation management (tree planting).
- Providing stormwater utility credits to businesses that implement green infrastructure BMPs
- Coordinating and communicating regularly with owners of redeveloping property to maximize stormwater treatment and volume reduction opportunities.
- Continued implementation of a coordinated regulatory programs by the City and RPBCWD
- Pursuing MPCA Point Source Implementation Grants (PSIGs), which are available for areas discharging to water bodies that have an approved TMDL.
- Pursuing Clean Water Legacy grants and low-cost MPCA Clean Water Revolving Fund loans for construction of green infrastructure projects
- Encouraging BMPs that incorporate additional benefits such as decorative and educational components
- Pursuing a complete green street approach to street reconstruction projects within the town center study area to balance grey and green infrastructure

CONCEPT DESIGNS

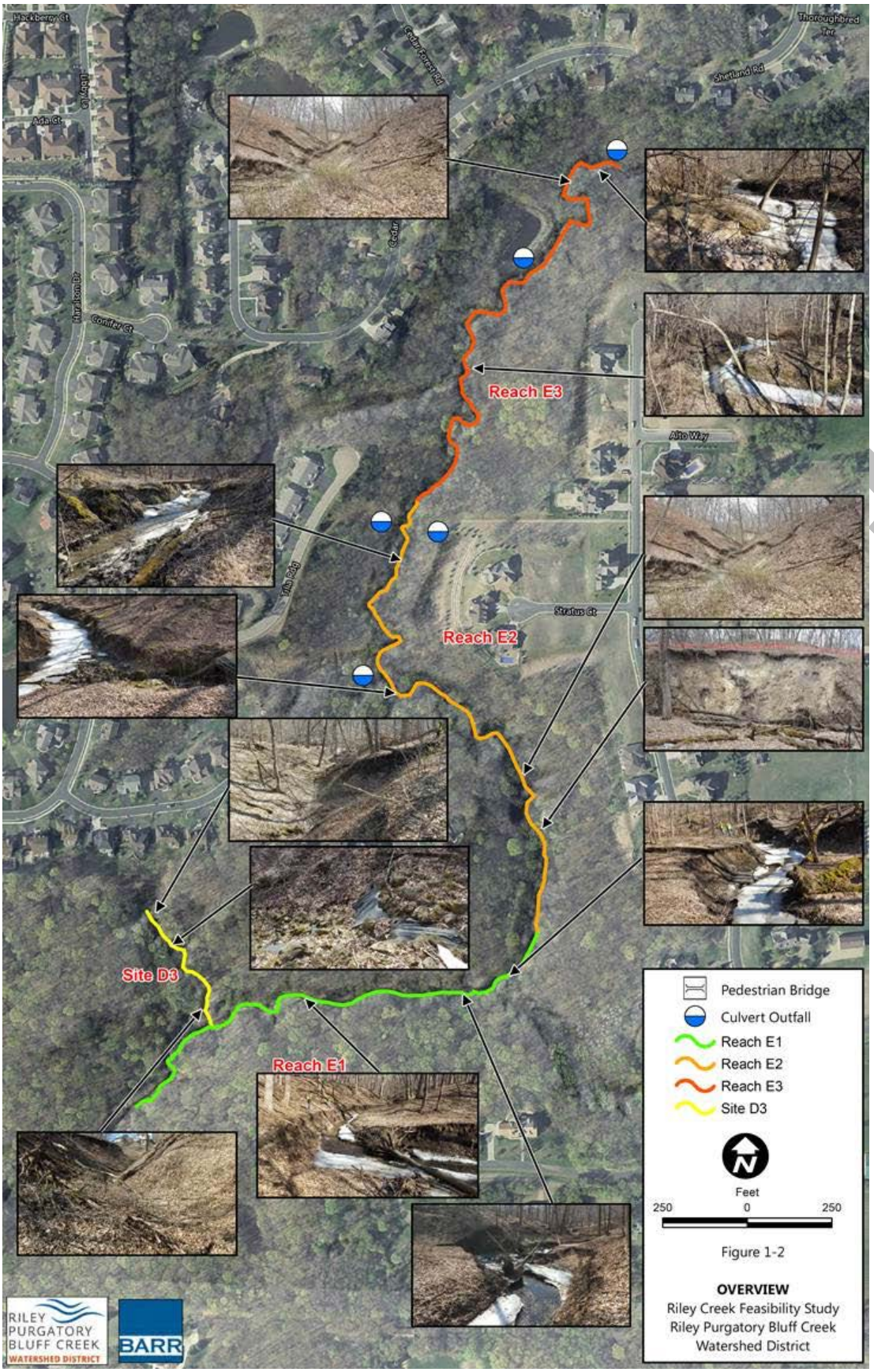


LOWER RILEY CREEK RESTORATION

The Lower Riley Creek Restoration is a multi-year project that began in 2017. This section of the creek is severely eroded, incised and has many bank failures. Reach E has a deeply incised channel. As such, floods flows are concentrated in and near the main channel. This confinement results in faster flows and increases erosion potential within that reach. Site D3 is a ravine feature that conveys intermittent runoff from several residential lots to Riley Creek via a storm sewer outfall near the start of the ravine. Past agricultural practices and current runoff from the residential lots has resulted in an increase of both volume and runoff rate to the ravine. The increased volume and rate is exasperated by the steep channel slope of the ravine. The existing storm sewer outlet includes riprap and geotextile, which has currently failed, resulting in further erosion near the storm sewer outlet. The invert of the ravine is actively eroding because the flows are highly confined by tall banks, resulting in the creation of several large scarps.

The vision for this project is to provide an ecologically diverse stream reach that significantly reduces streambank erosion, provides diverse habitat layers, and enhances the public's access and their understanding of why stable stream systems are important. This project will reduce erosion and improve water quality while also improving natural stream habitat for aquatic organisms. Providing better floodplain connectivity for Lower Riley Creek also enhances surrounding riparian habitat. By establishing a stable stream corridor, the Project will also address the Minnesota Pollution Control Agency's (MPCA's) identified turbidity impairment within this reach of Riley Creek. The Project's location in the Riley Creek Conservation Area provides opportunities for interpretive signage and future programming to educate the public on the importance of diverse stream corridors.

The District with the Lower Minnesota River Watershed District and the City of Eden Prairie are financially contributing to this project.


Reach E3
Reach E2
Reach E1
Site D3
Pedestrian Bridge
Culvert Outfall
Reach E1
Reach E2
Reach E3
Site D3
Feet
250
0
250
Figure 1-2
OVERVIEW
Riley Creek Feasibility Study
Riley Purgatory Bluff Creek
Watershed District
RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
BARR

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Riley-Purgatory-Bluff Creek Watershed District Board of Managers and District Administrator
From: Barr Engineering Co.
Subject: Engineer's Report Summarizing March 2018 Activities for April 4, 2018, Board Meeting
Date: March 29, 2018

The purpose of this memorandum is to provide the Riley-Purgatory-Bluff Creek Watershed District (RPBCWD) Board of Managers and the District Administrator with a summary of the activities performed by Barr Engineering Co., serving in the role of District Engineer, during March 2018.

General Services

a. Participated in a March 5th conference call with Permit Coordinator Jeffery and Counsel Smith to discuss rule revisions in response to February 28th TAC meeting.

b. Met with Administrator Bleser, city of Eden Prairie, and District Staff to discuss the possibility for a fish passage connection between the upper and lower Purgatory Creek Park pools. This meeting also involved discussion of the draft Lower Riley Creek corridor enhancement plan as a tool to improve collaboration and start defining long-term maintenance responsibilities.

c. Attended the combined pre-bid meeting on March 9th for the Chanhassen High School Reuse Project and the Lake Susan Park Pond Water Quality improvement project.

d. Met with Administrator Bleser and Permit Coordinator Jeffery on March 21st to discuss bidding opening results for the Chanhassen High School Reuse and Lake Susan Park Pond projects, public comments on 10-year plan, and potential for additional vegetation installation at the Purgatory Creek restoration near CSAH 101 to deter pedestrian traffic.

e. Participated in the March 15th meeting with Permit Coordinator Jeffery, city of Eden Prairie (Dave Modrow) and city of Minnetonka (Tom Dietrich) to continue discussing the potential stormwater management rule address the adverse impacts of development on channel erosion. While there was general support for the overall concept of improved channel erosion protection, the city expressed concern about impacts to linear project with limited space and potential complexities.

f. Prepared Engineer's Report for engineering services performed during March 2018.

g. Miscellaneous discussions and coordination with Administrator Bleser about District capital projects, 10-year plan update, packet materials, bid openings and upcoming workshop and Board meeting agenda.

h. Project management and overall coordination of active task orders.

Permitting Program

a. *Permit 2018-012: Children's Learning Adventure:* This project involved construction of a children's learning center in the northwest quadrant of Galpin Blvd. and Highway 5 in Chanhassen. The applicant submitted a new permit to reflect site modification needed to demonstrate compliance with the RPBCWD rules because the infiltration BMPs are not functioning as designed. Responded to applicant's submittal on March 9th indicating application is incomplete because it does not contain a signed application from the land owners and was missing a narrative describing the project. The incomplete notice also contain initial review comments for the applicant to address with an updated submittal.

b. *Permit 2018-008: Staring Lake Play Court Improvements:* This project involves reconstruction and addition of sport courts and trails at Staring Lake Park. The project includes two infiltration basins for the management of runoff from the reconstructed and new impervious surface. The applicant submitted a request to modify the conditionally approved permit from the March 15th meeting to allow for additional impervious surface. Drafted permit modification memo for Board consideration at the April 4th regular meeting.

c. *Permit 2016-016: Avienda*: This project involves a mixed-use regional development in the southwest quadrant of the intersection of Lyman Boulevard and Powers Boulevard in Chanhassen Minnesota. The project will trigger the RPBCWD Floodplain, Erosion Control, Wetland and Creek Buffer and Stormwater Management Rules. The applicant is proposing an initial construction phase to include mass grading and construction of all public infrastructure. The applicant will seek future permit approvals as development occurs to account for site-specific impervious coverage. Met with applicant and city of Chanhassen on March 12th to discuss general project configuration and RPBCWD permitting requirements Began completeness review of initial submittal.

d. Performed erosion control inspections of active sites during the week of March 14th (see attached inspection report).

e. Miscellaneous conversations with Permit Coordinator Jeffery about technical questions on permit requirements for potential development and redevelopment projects, including Lake Lucy Lane, Maloney shoreline project, and others.

f. Spoke with Xcel Energy about their utility modification associated with the Flying Cloud Drive (CSAH 61) reconstruction. The proposed work is on the south side of Flying Cloud Drive which is in the Lower Minnesota River Watershed District.

Data Management/Sampling/Equipment Assistance

a. Uploaded five RMB lab reports to EQuIS and verified reported results against original lab report pdf.

Task Order 6: WOMP Station Monitoring

Purgatory Creek Monitoring Station at Pioneer Trail

a. Data download and review.

b. Attend MCES Annual WOMP Cooperator Forum.

c. Prep for 2018 monitoring – check/calibrate portable probes and mobilize equipment.

<u>**Purgatory Creek Monitoring Station at Valley View Rd**</u>

a. 2017 data QA/QC and prep for entry into EQuIS database.

b. Download and review data

c. Site visit to check ice and station conditions.

d. Prep for 2018 monitoring – check/calibrate portable probes and mobilize equipment.

Task Order 7b: Purgatory Creek Stabilization near Hwy 101—Construction

a. Spoke with Joe Colleran (city of Minnetonka) about potentially adding addition vegetation to deter foot traffic per Administrator Bleser's request. Also spoke with contractor about installing additional vegetation. Inspections on plant materials are expected in the spring as part of the vegetation maintenance on the project.

Task Order 13b: Lake Susan Watershed Treatment and Stormwater Reuse Enhancements Design and Construction Administration

a. Addressed requests for information and contract document-related questions received during project bidding.

b. Prepared for and attended preconstruction meeting on March 9, 2018.

c. Prepared for and attended bid opening meeting on March 20, 2018.

d. Reviewed bids received, organized results, and draft bid results recommendation memo for Board consideration at the April 4th meeting.

Task Order 14b: Lower Riley Creek Final Design

a. Completed 60% design and forwarded the plans to the City of Eden Prairie for review and comment.

b. Completed edits on the Draft EAW after review by District staff and forwarded to Chair Yetka for completeness review.

c. Completed draft permit applications for review by District staff, drafted design memorandum.

d. Completed easement exhibits for access to the site.

e. Met with District staff on coordination for permitting, easements and cooperative agreements and set a public meeting date for April 11.

f. Completed draft renderings to help public visualize the project after construction

g. Met with the City of Eden Prairie regarding a draft corridor enhancement and maintenance plan.

h. Continued working on corridor enhancement plan.

Task Order 16: Watershed Management Plan Refresh

a. Attended public hearing on March 15th to hear public feedback on draft plan and receive Board direction on needed modifications.

b. Incorporated the results of the Downtown Chanhassen best management practice investigation into the Riley Creek opportunity project section.

Task Order 19: Chanhassen High School Stormwater Reuse Design

a. Project bidding including pre-bid meeting on 3/9/2018 and bid opening on 3/20/2018.

b. Review of project bids and draft recommendation for Board consideration at April 4th meeting.

Task Order 21B: Bluff Creek Stabilization Project

a. Worked on final additions to the plans, including planting plans and erosion control plans.

b. Completed draft renderings to use at a public meeting in early April.

c. Completed design memorandum and permit applications.

d. Worked on a draft corridor enhancement and maintenance plan to discuss with the City of Chanhassen in condition with Administrator Bleser. This effort was not included in the original task order.

Task Order 23: Scenic Heights School Forest Restoration

a. Construction has begun. Clearing of buckthorn and other woody invasive species has been ongoing for approximately three weeks. Crews from Wetland Habitat Restorations have been using a two pronged approach for removal. For areas where desirable plants are to be protected, crew members use a handheld brush saw and follow up with herbicide treatment of the stump. In areas where little or no desirable species have been identified for protection, a skid steer mounted forestry mower is used to obliterate the buckthorn down to the stump.

b. Approximately 40 canopy trees, including box elder, Siberian elms, and Amur maple, have been removed, dramatically opening the canopy to extend the existing prairie and savanna ecosystems in the school forest and connect them to the previous restoration work in Purgatory Park.

c. Prior to native seeding, treatment of buckthorn re-sprouts and seedlings will begin. Foliar herbicide applications (targeted spraying of the young green leaves) will be used on larger area of small re-sprouts where no desirable native herbaceous plants such as spring ephemerals have been located.

d. Native seed installation is likely to occur in mid-May after the initial herbicide treatments.

Task Order: 23 Figure 1 – Forestry mower shreds buckthorn down to its stumps, creating wood mulch to be left in place.

Task Order: 23 Figure 2 – Newly cleared pond buffer ready for restoration.

Task Order 24: Preliminary Engineering Study for Silver Lake Water Quality Treatment Project

a. We provided the draft Feasibility Report to Administrator Bleser for review on February 28, 2018.

resourceful, naturally.
engineering and environmental consultants

BARR

To: RPBCWD Board of Managers

From: Dave Melmer

Subject: March 14, 2018—Erosion Inspection

Date: March 29, 2018

Project: 23/27-0053.14 PRMT 9016

Barr staff has inspected construction sites in the Riley Purgatory Bluff Creek Watershed District for conformance to erosion and sediment control policies. Listed below are construction projects and the improvement needed for effective erosion control. Site inspections occurred on March 14, 2018.

Site Inspections

2015-008	**3520 Meadow Lane - Existing Single-Family** **3520 Meadow Ln Minnetonka, Minnesota 55345 United States** Site BMP's are adequate. Silt fence is down in some areas on west side--will not affect site runoff. Site cleanup and house painting complete. Some landscaping observed on north side. Deck installation underway. Site activity observed. (March-2018)	**2018-03-14**
2015-010	**Children's Learning Adventure - Private - Commercial/Industrial** **Northwest Coerner of Highway 5 and Galpin Avenue Chanhassen, Minnesota 55317 United States** Building construction complete. Inlet protection has been removed. Landscaping is complete. Sod was installed and application of spray tac to exposed soils. Vegetation growing thru mats and in spray-tac'd areas. Pond slope to west has failed-- causing slope erosion to pond downstream. Site representative was notified of Corrective Action--has been repaired. These two areas were recently spray tac'd--sparse vegetation growing to date. Photo taken. All temporary BMP's have been removed. November inspection--inlet protection observed at catch basin on Galphin-- SE corner on site side. (March)	**2018-03-14**
2015-016	**Blossom Hill - Private - Residential** **10841 Blossom Rd Eden Prairie, Minnesota 55347 United States** Site is snow covered. Visible BMP's look good. Two new home sites under construction on Windsor Terrace need rock entrance installed/ tracking to street. Once snowmelt is complete --catch basin protection needs to be reinstalled. Site representative was notified. February CA is still open.	**2018-03-14**
2015-035	**LaMettry's Chanhassen - Private - Commercial/Industrial** **Audubon RD and Motorplex CT Chanhassen, Minnesota 55317 United States**	**2018-03-14**

	Building complete. Parking lot on north lot has been paved. North slope grading and landscaping complete. South area landscaping and sodding complete. Site is stable. Inlet protection still in place.(March-2018)	
2015-036	**Saville West Subdivision - Private - Residential 5325 County Road 101 Minnetonka, Minnesota 55345 United States** Construction complete at 5320 Spring Ln. House site. Silt fence perimeter control in place. BMP's look good. Landscaping not complete. Site snow covered. Silt fence installed on southwest and west side of development. Lots to south have been brushed/cleared. (March-2018)	**2018-03-14**
2015-050	**Arbor Glen Chanhassen - Private - Residential 9170 GREAT PLAINS BLVD Chanhassen, Minnesota 55317 United States** Perimeter control (silt fence) installed. Heavy equipment onsite and earthwork/grading complete. Roadway and detention pond installed. All slopes have been stabilized and covered. BMP's look good. No observed activity onsite since last inspection. March-2018	**2018-03-14**
2015-053	**RBSC Chanhassen LLC - Private - Commercial/Industrial 195 W. 79th Street Chanhassen, Minnesota 55317 United States** No construction has begun. Site was being used as lay down yard for Hwy. 5 construction. Demobilization is complete. Catch basin protection still in place. Exposed soils have been covered and now vegetation is established. March-2018	**2018-03-14**
2015-056	**Oster Property - Private - Residential 9008 & 9010 Riley Lake Road Eden Prairie, Minnesota 55347 United States** Construction complete. Silt fences /bio-logs have been removed. Vegetation mats and wood chips have been installed on all bare soils. All other BMP's look good. Vegetation (grass) still sparse in areas. (November-2017). Homeowner stated they is getting bids for final landscaping. Site is snow covered-will recheck after spring snowmelt. (March-2018)	**2018-03-14**
2015-058	**Prairie Center Clinic Addition - Private - Commercial/Industrial 8455 Flying Cloud Drive Eden Prairie, Minnesota 55344 United States** Construction complete on building. Some BMP's have been removed for landscaping. Vegetation is established. Parking lot top coat complete. Landscaping complete. Site is stable. BMP's are still in place--silt fence. (March/2018) site is snow covered.	**2018-03-14**
2016-004	**Round Lake Park Improvements - Government - Other 16700 Valley Road Eden Prairie, Minnesota 55344 United States** BMP's look good. Site construction complete. Vegetation is growing. All temporary BMP's have been removed with exception of BMP's at infiltration areas and silt fence on east	**2018-03-14**

	side. Infiltration basins have been graded spray-tac'd--vegetation is growing. March-2018 (site is snow covered)	
2016-015	**18321 Heathcote Lane - Existing Single-Family** **18321 Heathcote LN Deephaven , Minnesota 55391 United States** Silt fences installed/in good condition. Driveway installed. BMP's look good. House construction complete . (March-2018) site is snow covered.	2018-03-14
2016-021	**Cedar Hills Park - Government - Other** **9580 Eden Prairie Rd Eden Prairie, Minnesota 55347 United States** Construction complete. BMP's look good. Vegetation has sprouted and is growing. Some regrading and seeding has occurred in some areas. Site snow cover-Match, 2018.	2018-03-14
2016-026	**Foxwood Development - Private - Residential** **9150 and 9250 Great Plains Blvd Chanhassen, Minnesota 55317 United States** Multiple house construction continues-BMP's look good- silt fences and rock entrances installed/ good perimeter control. Silt fences have been installed on unsold lots. Catch basin protection has been removed in areas. Additional silt fences have been installed across site. Bare soils have been spray-tac'd vegetation sprouting. Some tracking to street/some new house sites need rock entrance. Site representative was notified. CA is still open. Site is snow covered (March-2018)	2018-03-14
2016-030	**IDI Distribution Building Expansion - Private - Commercial/Industrial** **8303 Audubon Road Chanhassen, Minnesota 55317 United States** Parking on north side installed/curb and gutter installed. BMP's look good. Building addition complete. All bare soils have been spray-tac'd. Site is snow covered. (March-2018)	2018-03-14
2016-032	**CSAH 61 Improvements - Government - Linear** **N/A Eden Prairie, Minnesota 55347 United States** Construction has begun. Spoil piles are being spray tac'd and wood chips being used were necessary. Some areas have silt fences installed and more are scheduled for later this week (frost is still in ground). Brushing and site clearing still underway. Area near creek crossing is under construction and piling are onsite. BMP's to date look good.	2018-03-14
2016-037	**Prestige Day Care - Private - Commercial/Industrial** **15219 Pioneer Trail Eden Prairie, Minnesota 55347 United States** Construction complete. Sod installed-all landscaping complete. All bare soils have been spray-tac'd. BMP's still in place. Site is snow covered. (March-2018)	2018-03-14

2016-039	**Powers Ridge Senior Apartments - Private - Residential** **1351 Lake Drive West Chanhassen, Minnesota 55317 United States** Construction complete. BMP's are good. Landscaping and sod installation complete. Bare soils covered with matting. Wetland signage installed. Site is snow covered. (March-2018)	2018-03-14
2016-040	**18995 Minnetonka Blvd - Existing Single-Family** **18995 Minnetonka Blvd Deephaven, Minnesota 55391 United States** Construction of house continues. Silt fence in place. Slopes with vegetation mats have growth. Southwest corner has more BMP's to control sediment erosion. BMP's installed are adequate. Earthwork near front has been completed--entire site has been covered with straw and snow covered. Driveway installed. March-2018.	2018-03-14
2016-041	**Chanhassen West Water Treatment Plant - Government - Other** **2070 Lake Harrison Road Chanhassen, Minnesota 55317 United States** Silt fences installed on site. Construction continues. Rock entrance good. BMP's look good. Tracking to street observed. Street cleanup conducted regularly. March-2018.	2018-03-14
2016-042	**18663 St. Mellion Place--Eden Prairie (Bear Path) - Government - Other** **2070 Lake Harrison Road Chanhassen, Minnesota 55317 United States** Construction halted for winter. BMP's are good. Silt fence in one small area is at 40% of height. Site grading and sod installation has occurred on a large portion of site. New silt fence installed where needed. Site is snow covered-March, 2018.	2018-03-14
2016-043	**Bongards Redevelopment - Private - Commercial/Industrial** **8330 Commerce Drive Chanhassen, Minnesota 55317 United States** BMP's are adequate. Parking lot base installed-- catch basins installed and protected--pavement installation still needs to be completed. (March-2018)	2018-03-14
2016-044	**Dell Rd & Riley Creek Repair Project - Government - Other** **9980 Dell Road Eden Prairie, Minnesota 55347 United States** Vegetation was growing appears to have died off. Rip-rap was recently installed at dirt road edge to control erosion from road. Additional erosion prevention from road needs to be addressed. More rock installed along flow path and silt deposit at beehive catch basin removed. Representative was contacted in September (2017) and is aware of site condition. Snow covered-March-2018.	2018-03-14
2016-045	**MCES Blue Lake Interceptor Rehab - Government - Linear** **See attached multiple , Minnesota 55354 United States** Construction complete. Silt fences installed/bio-logs in place. Bare soils covered with spray-tac. No vegetation growth	2018-03-14

	observed. Site is snow covered. (March-2018)	
2016-047	**9507 Sky Lane Eden Prairie - Existing Single-Family** **9507 Sky Lane Eden Prairie, Minnesota 55347 United States** Vegetation was growing appears to have died off. Rip-rap was recently installed at dirt road edge to control erosion from road. Additional erosion prevention from road needs to be addressed. More rock installed along flow path and silt deposit at beehive catch basin removed. Representative was contacted in September and is aware of site condition. Snow covered-March-2018.	2018-03-14
2017-002	**7012 Dakota Ave - Existing Single-Family** **7012 Dakota Ave Chanhassen, Minnesota 55317 United States** Construction complete. Majority of landscaping is complete. Corrective Action has been addressed. Sod has been installed. Area near street and city water shut off that needs bare soils covered. Site representative was notified-November. No activity on this area as of March-2018 inspection. Site is snow covered.	2018-03-14
2017-003	**18761 Heathcote Dr Building Addition - Existing Single-Family** **18761 Heathcote Dr Wayzata, Minnesota 55391 United States** House construction complete. Pool installation complete. Landscaping continues--sod and shrubs installed. Temporary BMP's have not been removed. March-2018. Site snow covered.	2018-03-14
2017-009	**Emerson Chanhassen East Renovation - Private - Commercial/Industrial** **8200 Market Boulevard Chanhassen, Minnesota 55317 United States** Construction continues. BMP's installed. Rock entrance in place. Landscaping earthwork underway. West infiltration basin installed and complete-BMP's are good. Bare soils onsite covered with matting and bio-logged. March-2018	2018-03-14
2017-010	**Riley Lake Park Renovations - Government - Other** **9100 Riley Lake Rd Eden Prairie, Minnesota 55347 United States** Construction complete. BMP's installed and look good. Grading and landscaping in is complete. Vegetation growing in some areas. Soils have been spray-tac'd. Vegetation is sparse. Site is snow covered. (March-2018)	2018-03-14
2017-011	**Galpin Blvd Watermain Improvements - Government - Linear** **Galpin Blvd & Lake Harrison Road Chanhassen, Minnesota 55317 United States** Construction complete. Soils covered with erosion control mats-some growth observed to date. Silt fences still installed in some areas. Some areas have had additional matting laid down. Site is snow covered. March-2018.	2018-03-14

2017-023	**Eden Prairie Assembly of God - Private - Commercial/Industrial** **16591 Duck Lake Trail Eden Prairie, Minnesota 55346 United States** Construction has begun. Perimeter control silt fence and rock entrance installed. BMP's look good. Site is snow covered. (March-2018)	2018-03-14
2017-025	**735 Pleasantview Road - Existing Single-Family** **735 Pleasant View Dr Chanhasssen, Minnesota 55317 United States** Construction complete. Landscaping complete with exception of small infiltration basin. All temporary BMP's have been removed. Site is snow covered. (March-2018)	2018-03-14
2017-026	**6135 Ridge Road - Existing Single-Family** **735 Pleasant View Dr Chanhasssen, Minnesota 55317 United States** Construction continues. Foundation in and rock entrance installed. BMP's look good. (March-2018)	2018-03-14
2017-027	**7500 Chanhassen Road - Existing Single-Family** **7500 CHANHASSEN RD Chanhassen, Minnesota 55317-8576 United States** Construction continues. Silt fences and bio-logs installed. Erosion on west side went offsite-- cleaned up and more logs installed. Additional silt fence and bio-logs installed -additional BMP's look good. Some site grading conducted in early November. Site is snow covered. (March-2018)	2018-03-14
2017-029	**Tweet Pediatric Dentistry - Private - Commercial/Industrial** **7845 Century Blvd. Chanhassen, Minnesota 55317 United States** Construction complete . BMP's are installed and good. Catch basin protection installed in this area. Infiltration areas installed. Parking lot grading and curb/gutter installation complete. Site grading and landscaping is continues - bare soils have not been covered-snow covered. (March-2018)	2018-03-14
2017-030	**Elevate - Private - Commercial/Industrial** **12900 Technology Drive Eden Prairie, Minnesota 55344 United States** Site is being prepared for demolition. No BMP's to date.	2018-03-14
2017-032	**11193 Bluestem Lane - Government - Other** **11193 Bluestem Lane Eden Prairie, Minnesota 55347 United States** Site is snow covered--will inspect after spring snowmelt. Construction complete. All exposed soils on slope were covered and stabilized. Bio-logs installed at toe of slope.	2018-03-14
2017-034	**Park Road Overlay Chanhassen - Government - Linear** **Park Road Chanhassen, Minnesota 554317 United States**	2018-03-14

	Work complete at creek crossing and Park Rd. Culvert. BMP's installed are good. -inlet protection installed. Road overlay still needs to be completed. Site is snow covered. (March-2018)	
2017-036	**Minnetonka HS Upper Field Access Road - Government - Other** **18301 State Hwy No 7 Minnetonka, Minnesota 55345 United States** Construction complete. Corrective Action items have been addressed. Vegetation has sprouted and is growing--sparse in many areas--will need to be addressed in spring-2018. Snow covered-March,2018.	**2018-03-14**
2017-037	**The Venue - Private - Commercial/Industrial** **525 W 78th St Chanhassen, Minnesota 55317 United States** Construction continues. BMP's installed. Rock entrance in place. Landscaping earthwork underway. West infiltration basin installed and complete-BMP's are good. Bare soils onsite covered with matting and bio-logged. March-2018	**2018-03-14**
2017-038	**West Park - Private - Residential** **760& 781 Lake Susan Drive 8601 Great Plains Blvd Chanhassen, Minnesota 55317 United States** Construction continues. Earthwork/grading underway/street installation complete. Rock entrance installed on south side and to individual house sites. Perimeter control installed. Catch basin protection installed but removed for winter. BMP's look good. Minor tracking observed on --onsite streets. Many areas of exposed soils have been blown with straw. Site is snow covered. March-2018	**2018-03-14**
2017-044	**17064 Weston Bay Road - Private - Residential** **17064 Weston Bay Road Eden Prairie, Minnesota 55427 United States** Construction complete. Landscaping is complete--majority of area has been hydro-seeded -no growth observed. BMP's in place. Site is snow covered. (March-2018)	**2018-03-14**
2017-047	**Fawn Hill - Private - Residential** **7240 Galpin Road Chanhassen, Minnesota 55331 United States** Earthwork completed/roadway installed. Perimeter silt fence install. Exposed soils blown with straw. Slight tracking to street. BMP's to date look good. Site is snow covered. March-2018	**2018-03-14**
2017-052	**Old Excelsior Senior Living - Private - Residential** **17705 Hutchins Drive Minnetonka , Minnesota 55345 United States** **Open CA(s): Rock entrances needs to be refreshed. Tracking to street needs to be regularly cleaned up. Spoil piles need to be covered. Deadline: 4/14/2018** Earthwork and construction continues. Perimeter control installed. Rock entrance installed--however: both entrances need to be re-rocked. Large spoils pile is not covered. Site	**2018-03-14**

	representative stated that they are regularly working it--piles have not been reduced or worked for a month--need to be covered. Site representative was be notified of CA's. (March-2018)	
2017-053	**Mastercraft - Private - Commercial/Industrial 17717 State Hwy 7 Minnetonka, Minnesota 55345 United States** Construction continues. Perimeter control installed. Inlet protection installed. Bio-logs in place. BMP's look good. (March-2018)	**2018-03-14**
2017-056	**Covington Rd Culvert Replacement - Government - Linear Covington Road Minnetonka, Minnesota 55345 United States** Construction complete. Vegetation matting installed. Wetland buffer signage installed on downstream side of Covington. Installed BMP's look good. Site is snow covered. (March-2018)	**2018-03-14**

Please contact me at 952.832-2687 or dmelmer@barr.com if you have questions on the projects listed above or any additional items that need to be addressed for the erosion control inspections.

RILEY PURGATORY BLUFF CREEK
WATERSHED DISTRICT

14500 Martin Drive | Suite 1500
Eden Prairie, MN 55344
952-607-6512
www.rpbcwd.org

Riley Purgatory Bluff Creek Watershed District Permit Application Review

Permit No: 2018-008

Original Application: Conditionally approved at March 15, 2018 meeting

Modification Request Received complete: March 20, 2018

Applicant: City of Eden Prairie

Consultant: Adam Pawelk, Hansen Thorp Pellinen Olson, Inc.

Project: Staring Lake Play Court Improvements – Reconstruction and addition of bituminous sport courts and trails at Staring Lake Park. Stormwater features include two infiltration basins for the management of the reconstructed and additional bituminous.

Location: 14800 Pioneer Trail, Eden Prairie

Reviewer: Adam Howard, P.E., Barr Engineering

Rules: Applicable rules checked

	Rule B: Floodplain Management		Rule H: Appropriation of Public Waters
X	Rule C: Erosion and Sediment Control		Rule I: Appropriation of Groundwater
X	Rule D: Wetland and Creek Buffers	X	Rule J: Stormwater Management
	Rule E: Dredging and Sediment Removal		Rule K: Variances and Exceptions
	Rule F: Shoreline/Streambank Stabilization		Rule L: Permit Fees
	Rule G: Waterbody Crossings		Rule M: Financial Assurances

Rule Conformance Summary

Rule	Issue		Conforms to RPBCWD Rules?	Comments
C	**Erosion Control Plan**		See Comment	See Rule Specific Permit Condition C1.
D	**Wetland and Creek Buffers**		Yes	
J	**Stormwater Management**	Rate	Yes	
		Volume	Yes	
		Water Quality	Yes	
		Low Floor Elev.	Yes	
		Maintenance	See Comment	See Rule Specific Permit Condition J1.
L	**Permit Fees**		Not Applicable	Governmental Entity
M	**Financial Assurances**		Not Applicable	Governmental Entity

Project Description

The City of Eden Prairie is proposing the replacement of the play court area at Staring Lake Park. The City is proposing construction of two infiltration basins to provide the rate control, volume abstraction and water quality management on the site. Stormwater runoff originating from the project area drains to forested/shrub wetland adjacent to Staring Lake. The City created buffer on the downgradient wetland under a prior permit (2016-005). Permit 2018-008 was conditionally approved on March 15, 2018 based on proposed Alternative 1, as defined in the project narrative. The applicant has requested a modification of the conditionally approved permit based on proposed Alternative 2, which still includes disturbance and replacement of 0.48 acres of existing impervious surface but now includes an increase in new impervious surface of 0.38 acres. (The previously conditionally approved plan included an increase of 0.28 acres.) Updated project site information based on proposed Alternative 2 (the permit modification request) is summarized below:

	2016-005	2018-008 (Original Project)	2018-008 (Modification Request)
Total Site Area (acres)	**37.75**	**37.75**	**37.75**
Existing Site Impervious (acres)	4.02	3.91	3.91
Existing Impervious Area to be Disturbed and replaced:	**0.62 (15% disturbance of site impervious area)**	**0.48 (12% disturbance of site impervious area)**	**0.48 (12% disturbance of site impervious area)**
New (Increase) in Site Impervious Area (acres)	-0.11 (3% decrease in site impervious area)	0.28 (7% increase in site impervious area)	0.38 (10% increase in site impervious area)
Reconstructed Exempt Impervious Surface	**0**	**0.14**	**0.13**
Total Disturbed Area (acres)	2	2	2

Exhibits for Modification Request:

1. Email with modification request dated March 20, 2018.
2. Hydrology Report dated March 20, 2018.
3. HydroCAD Modeling (proposed conditions) dated March 20, 2018.
4. MIDS Calculator dated March 20, 2018.
5. Drainage Area Figure (proposed conditions) dated March 20, 2018.
6. Design Plans Sheets 1 through 20 dated March 20, 2018.

Rule Specific Permit Conditions

Rule C: Erosion and Sediment Control

Because the project will alter more than 2 acres (87,120 square feet) of surface area the project must conform to the requirements in the RPBCWD Erosion and Sediment Control rule (Rule C, Subsection 2.1).

The erosion control plan prepared by HTPO, Inc. includes installation of sediment control log, street sweeping, rock construction entrance, placement of a minimum of 6 inches of topsoil, decompaction of pervious areas compacted during construction, and retention of native topsoil onsite. To conform to the RPBCWD Rule C requirements the following revisions are needed:

C1. The Applicant must provide the name and contact information of the general contractor responsible for the site. RPBCWD must be notified if the responsible party changes during the permit term.

Rule D: Wetland and Creek Buffers

Because the proposed work triggers a permit under RPBCWD Rule J (see analysis below) and the wetland is downgradient from the proposed construction activities, Rule D, Subsections 2.1a and 3.1 require buffer on edge of the wetland downgradient from the area to be disturbed.

On April 29, 2016 the applicant provided a wetland delineation report, mapped delineation boundary maps, and MnRAM assessment. According to the MnRAM assessment and RPBCWD, Rule D, Appendix D1, the wetland is rated as a High value wetland rather than the previously assumed exceptional value wetland. Rule D, Subsection 3.1.a.ii requires high value wetland buffer with an average of 60 feet from the delineated edge of the wetland, minimum 30 feet. The applicant provided a 74 foot average, 30 foot minimum buffer as shown on the revised Wetland Buffer Exhibit dated May 23, 2016. The wetland buffer provided under previously approved permit 2016-005 is also located downgradient from the proposed activities under this application, thus conforming to the average and minimum widths

identified in Rule D, Subsection 3.1 for high value wetlands. The applicant provided buffer monument locations consistent with criteria in Rule D, Subsection 3.4. The project will be constructed so as to minimize the potential transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) to the maximum extent possible conforming to Rule D, Subsection 3.5.

The written maintenance agreement was entered into as a part of permit 2016-005 and the buffer has been established and maintained as required. The proposed project conforms to the wetland and creek buffer requirements of Rule D.

Rule J: Stormwater Management

Because the project will alter more than 2 acres (87,120 square feet) of surface area, the project must meet the criteria of RPBCWD's Stormwater Management rule (Rule J, Subsection 2.1). Under paragraph 2.5 of Rule J, Common scheme of development, activities subject to Rule J on a parcel or adjacent parcels under common or related ownership will be considered in the aggregate, and the requirements applicable to the activity under this rule will be determined with respect to all development that has occurred on the site or on adjacent sites under common or related ownership since the date this rule took effect (January 1, 2015). Because a different project was permitted (RPBCWD Permit 2016-005) on the site the current activities proposed must be considered in aggregate with the activities proposed under Permit 2018-008. The criteria listed in Subsection 3.1 will apply to the disturbed areas on the project parcel because the project, when considered in aggregate with other permitted activities, only increases the impervious by 10 percent and only disturbs a combined 27 percent of the existing impervious surface on the parcel (Rule J, Subsection 2.3).

The City is proposing construction of two infiltration basins to provide the rate control, volume abstraction and water quality management on the site. Pre-treatment will be provided by vegetated filter strips prior to entering the infiltration basin.

Rate Control

In order to meet the rate control criteria listed in Subsection 3.1.a, the 2-, 10-, and 100-year post development peak runoff rates must be equal to or less than the existing discharge rates at all locations where stormwater leaves the site.

The applicant used a HydroCAD hydrologic model to simulate runoff rates for pre- and post-development conditions for the 2-, 10-, and 100-year frequency storm events using a nested rainfall distribution, and a 100-year frequency, 10-day snowmelt event. The existing and proposed 2-, 10-, and 100-year frequency discharges from the site are summarized in the table below. The proposed project conforms to RPBCWD Rule J, Subsection 3.1.a.

Modeled Discharge Location	2-Year Discharge (cfs)		10-Year Discharge (cfs)		100-Year Discharge (cfs)		10-Day Snowmelt (cfs)	
	Ex	Prop	Ex	Prop	Ex	Prop	Ex	Prop
Staring Lake	1.2	0.6	4.1	1.9	11.2	11.1	0.6	0.6

Volume Abstraction

Subsections 3.1.b and 2.3 of Rule J require the abstraction onsite of 1.1 inches of runoff from all disturbed and additional impervious surface of the parcel. The project will result in a total new impervious and reconstructed impervious surface of 0.85 acres. A total of 0.13 acres of the reconstructed impervious surface will be sidewalk that is exempt from the requirements of Rule J. because the sidewalk will not exceed 10 feet wide with a downgradient pervious buffer of at least half the trail width as defined in RPBCWD Rule J, Subsection 2.2.d. An abstraction volume of 2,878 cubic feet is required from the 0.72 acres (31,363 square feet) of disturbed and additional impervious area on the project for volume retention. Soil borings performed by Braun Intertec Corporation show that soils in the project area are poorly graded sand with silt; the MN Stormwater Manual indicates an infiltration rate of 0.45 inches per hour for such sandy silt material. The Applicant proposes two infiltration basins with pretreatment of runoff provided by vegetated buffer strip. As shown in the table below, the basins will provide 4,137 cubic feet of abstraction. Soil borings performed by Braun Intertec Corporation show no groundwater to a boring depth of 9.5 feet. This indicates that groundwater is at least 3 feet below the bottom of the proposed infiltration basin (Rule J, Subsection 3.1.b.ii). The proposed project conforms to RPBCWD Rule J, Subsection 3.1.a and 3.1.b.

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Volume (cubic feet)
1.1	2,476	4,137

Water Quality Management

Subsection 3.1.c of Rule J requires the Applicant provide for at least 60 percent annual removal efficiency for total phosphorus (TP), and at least 90 percent annual removal efficiency for total suspended solids (TSS) from site runoff. The Applicant is proposing two infiltration basins to achieve the required TP and TSS removals. The MIDS calculator was used to estimate the TP and TSS removal capacity of the proposed BMP and is summarized in the table below.

Pollutant of Interest	Regulated Site Loading (lbs/yr)	Required Load Removal (lbs/yr)[1]	Provided Load Reduction (lbs/yr)
Total Suspended Solids (TSS)	279	251 (90%)	268 (96%)
Total Phosphorus (TP)	1.54	0.92 (60%)	1.48 (96%)

[1]Required load reduction is calculated based on the removal criteria in Rule J, Subsection 3.1c and the new and reconstructed impervious area site load

The engineer concurs with the modeling, and finds that the proposed project is in conformance with Rule J, Subsection 3.1.c.

Low floor Elevation

No structure may be constructed or reconstructed such that its lowest floor elevation is less than 2 feet above the 100-year event flood elevation and no stormwater management system may be constructed or reconstructed in a manner that brings the low floor elevation of an adjacent structure into noncompliance according to Rule J, Subsection 3.6. No structure is located close enough to the proposed basins to present a reasonable possibility of noncompliance with the low-floor requirement. The RPBCWD Engineer concurs that the proposed project is in conformance with Rule J, Subsection 3.6.

Maintenance

Subsection 3.7 of Rule J requires the submission of maintenance plan. All stormwater management structures and facilities must be designed for maintenance access and properly maintained in perpetuity to assure that they continue to function as designed.

J1. Permit applicant must provide a draft maintenance and inspection plan for review and approval by RPBCWD.

Applicable General Requirements:

1. The RPBCWD Administrator shall be notified at least three days prior to commencement of work.
2. Construction shall be consistent with the plans and specifications approved by the District as a part of the permitting process. The date of the approved plans and specifications is listed on the permit.
3. The applicant must provide the name and contact information of general contractor responsible for the site. RPBCWD must be notified if the responsible party changes during the permit term.

4. Permit close out is dependent on the permit holder providing as-built drawings that show that the project was constructed as approved by the Managers and in conformance with the RPBCWD rules and regulations.

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. The proposed project conforms to Rule D.
3. The proposed project will conform to Rules C and J if the Rule Specific Permit Condition listed above are met.

Recommendation:

Approval, contingent upon:

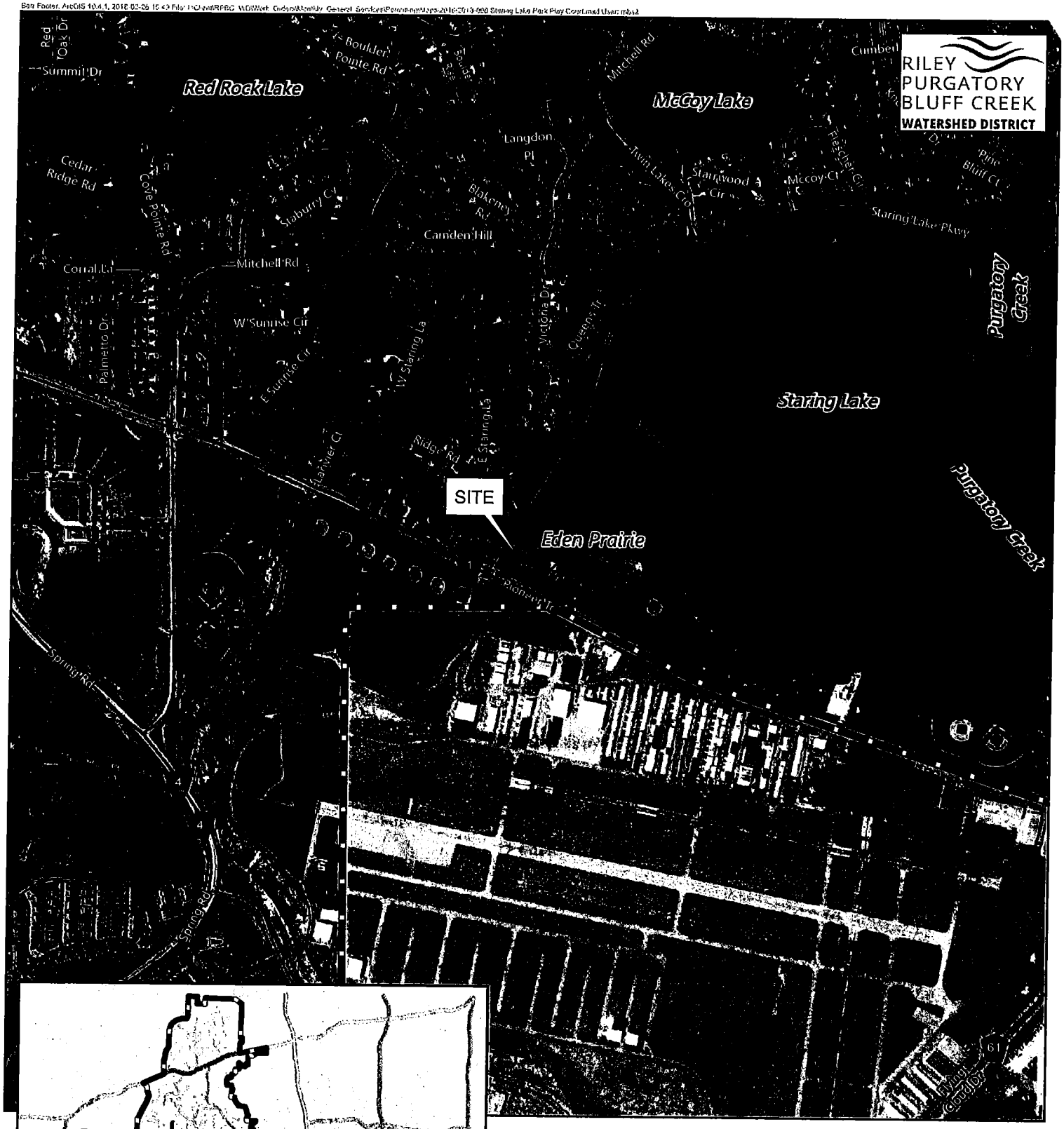
1. Continued compliance with General Requirements.
2. The Applicant must provide the name and contact information of the general contractor responsible for erosion and sediment control for the site. RPBCWD must be notified if the responsible party changes during the permit term.
3. Permit applicant must provide a maintenance declaration and inspection plan for the management of stormwater BMPs. Once approved by RPBCWD, the plan must be documented in a written agreement with the RPBCWD.

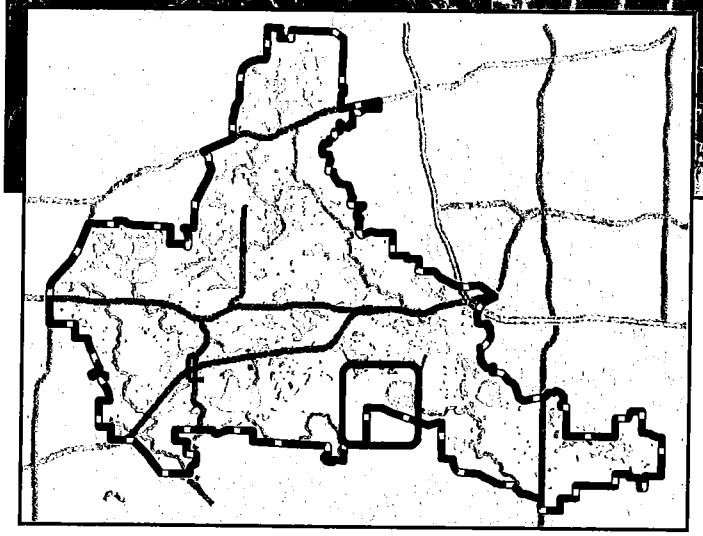
By accepting the permit, when issued, the applicant agrees to the following stipulations:

1. Per Rule J Subsection 4.5, upon completion of the site work, the permittee must submit as-built drawings demonstrating that at the time of final stabilization, stormwater facilities conform to design specifications as approved by the District.

Board Action

It was moved by Manager _____, seconded by Manager _____ to approve permit modification for application No. 2018-008 with the conditions recommended by staff.



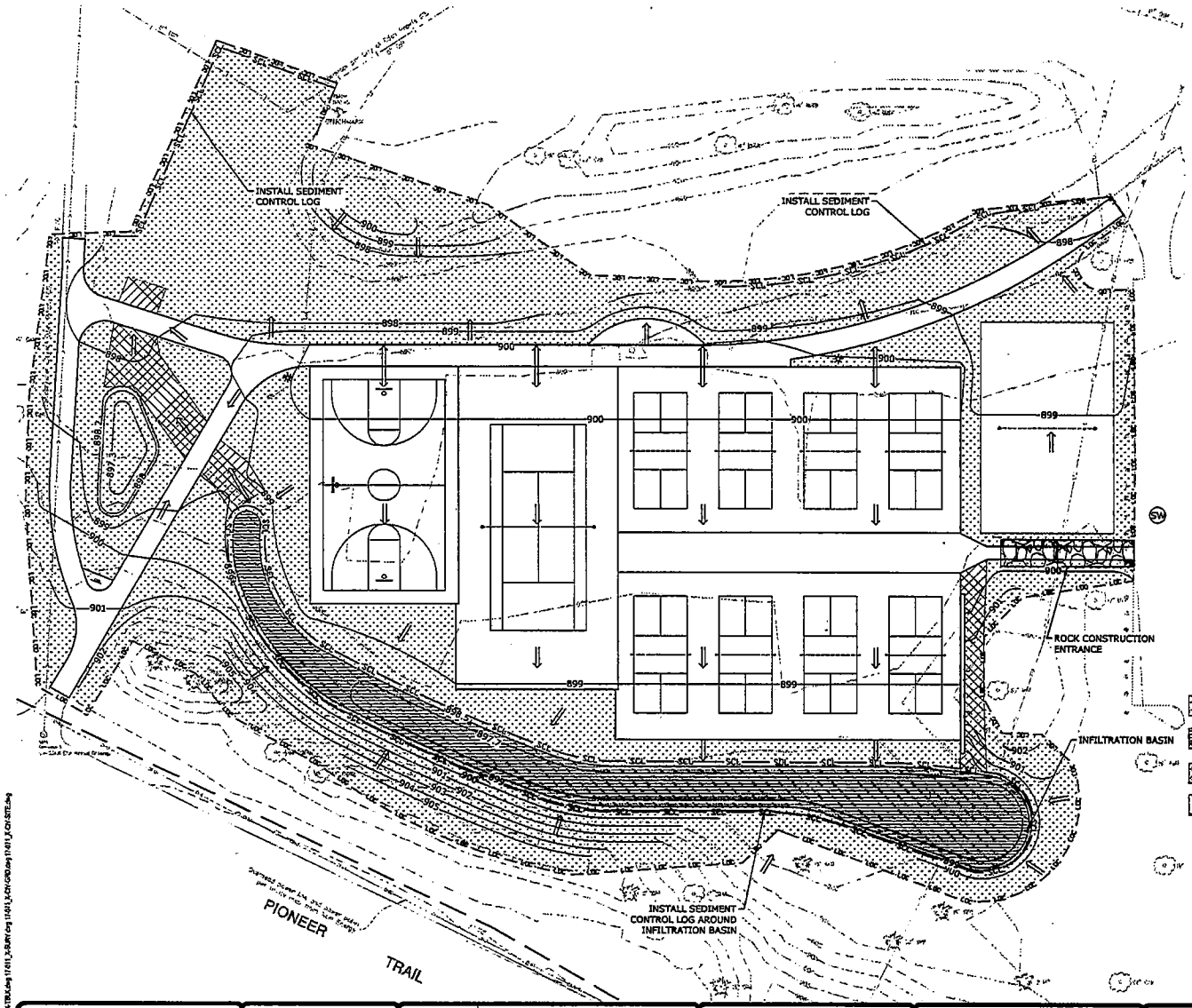


Feet

0 1,000

Permit Location Map

STARING LAKE PARK
PLAY COURT
Permit 2018-008
Riley Purgatory Bluff Creek
Watershed District



NOTES

1. CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES PRIOR TO COMMENCING CONSTRUCTION. ESC MEASURES SHALL BE INSPECTED DAILY DURING GRADING OPERATIONS AND WEEKLY UNTIL FINAL STABILIZATION IS COMPLETE. ESC MEASURES SHALL BE REPAIRED AS NEEDED OR AS DIRECTED BY THE ENGINEER. ESC MEASURES SHALL BE REMOVED FOLLOWING FINAL STABILIZATION.
2. EXCAVATION OF NEW INFILTRATION BASIN SHALL NOT OCCUR UNTIL MASS GRADING AND STABILIZATION HAS BEEN COMPLETED.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EXISTING SURFACE DRAINAGE AT ALL TIMES DURING CONSTRUCTION.
4. CONTRACTOR SHALL TAKE SPECIAL CARE TO MINIMIZE COMPACTION IN GREENSPACE AREA, INCLUDING AREA FOR INFILTRATION BASIN.
5. INSTALL SEDIMENT CONTROL LOGS AROUND INFILTRATION BASIN IMMEDIATELY FOLLOWING EXCAVATION OF BASIN.
6. SCARIFY TOP 18" OF SUBGRADE WHILE TAKING CARE TO AVOID UTILITIES, TREE ROOTS, AND OTHER EXISTING VEGETATION PRIOR TO PLACEMENT OF TOPSOIL AND ROOT ZONE MIX.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR HYDRO-SEEDING ALL DISTURBED GREENSPACE AREAS WITH SEED, FERTILIZER, AND HYDRAULIC SOIL STABILIZER UNLESS NOTED OTHERWISE ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
   - COMMERCIAL TURF SEED MIX SHALL BE MNDOT MIX 25-131 APPLIED AT A RATE OF 440 LBS/AC (MNDOT 3876). FERTILIZER SHALL BE TYPE 1 COMMERCIAL GRADE, NPK 0-10-20 (MNDOT 3881) AND APPLIED AT A RATE OF 60 LBS/AC.
   - NATIVE WETLAND SEED MIX SHALL BE MNDOT MIX 33-262 APPLIED AT A RATE OF 88 LBS/AC (MNDOT 3876) IN THE INFILTRATION BASIN AREA. FERTILIZER SHALL BE TYPE 3 SLOW-RELEASE, NPK 0-10-20 (MNDOT 3881) AND APPLIED AT A RATE OF 60 LBS/AC.
   - HYDRAULIC SOIL STABILIZER SHALL BE TYPE HYDRAULIC MULCH (MNDOT 3884.2 B.2) APPLIED AT A RATE OF 2100 LBS/AC.
8. PLACE MIN. 6" TOPSOIL ON ALL DISTURBED AND NEW GREENSPACE AREAS EXCEPT FOR INFILTRATION BASIN.
9. TURF ESTABLISHMENT FOR ALL DISTURBED AND NEW GREENSPACE AREAS SHALL CONFORM TO MNDOT 2574 AND 2575. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.

LEGEND

- 900 — CONTOUR LINE
- DRAINAGE ARROW
- LOC — LIMITS OF CONSTRUCTION
- SCL — SEDIMENT CONTROL LOG, TYPE STRAW BIOROLL
- SW — STREET SWEEPING
- COMMERCIAL TURF SEED MNDOT MIX 25-131
- NATIVE WETLAND SEED MNDOT MIX 33-262
- SOD
- ROCK CONSTRUCTION ENTRANCE

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N

Scale in feet
0 20 40 60

Engineering • Surveying
Landscape Architecture
HANSEN THORP PELLINEN OLSON, Inc.
7510 Market Place Drive • Eden Prairie, MN 55344
952-829-0700 • 952-829-7800 fax

PROJECT NO.	17-071
DRAWN BY	ADC
DESIGN BY	AMP
CHECKED BY	

DATE	ISSUES / REVISIONS
02-01-18	BID SET
03-20-18	CONSTRUCTION SET

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

LIC. NO. _____ DATE: _____

STATE AID PROJECT NO.	
STATE PROJECT NO.	
COUNTY PROJECT NO.	
CITY PROJECT NO.	1225
CLIENT PROJECT NO.	

EROSION AND SEDIMENT CONTROL PLAN
ALTERNATE #2

STARING LAKE PARK PLAY COURT IMPROVEMENTS
EDEN PRAIRIE, MN

SHEET 9 OF 20 SHEETS

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

18681 Lake Drive East
Chanhassen, MN 55317
952-607-6512
www.rpbcwd.org

Riley Purgatory Bluff Creek Watershed District Permit Application Review

Permit No: 2017-73

Received complete: December 6, 2017

Applicant: Jerry's Enterprises

Consultant: Brady Busselman, Sambatek, Inc.

Project: Preserve Village – The project involves the construction of a building, approximately 5,360 square feet in size, in an area already developed as parking lot for Jerry's Foods. In addition to the construction of that building, a portion of the adjoining parking lot will be disturbed to allow for the reconfiguration of parking stalls, the installation of a drive thru lane, and the installation of utilities including storm water conveyance.

Location: 9625 Anderson Lakes Parkway, Eden Prairie 55344

Reviewer: Terry Jeffery, Permit Coordinator

Rules: Applicable rules checked

	Rule B: Floodplain Management		Rule H: Appropriation of Public Waters
X	Rule C: Erosion and Sediment Control		Rule I: Appropriation of Groundwater
	Rule D: Wetland and Creek Buffers	X	Rule J: Stormwater Management
	Rule E: Dredging and Sediment Removal		Rule K: Variances and Exceptions
	Rule F: Shoreline/Streambank Stabilization	X	Rule L: Permit Fees
	Rule G: Waterbody Crossings	X	Rule M: Financial Assurances

Rule Conformance Summary

Rule	Issue		Conforms to RBPCWD Rules?	Comments
C	**Erosion Control Plan**		See Comment	See Rule Specific Permit Condition C1.
J	**Stormwater Management**	Rate	Yes	
		Volume	Yes	
		Water Quality	Yes	
		Low Floor Elev.	Yes	
		Maintenance	See Comment	See Rule Specific Permit Condition J1.
L	**Permit Fee**		Yes	$1,500 was received on Dec. 6, 2017.
M	**Financial Assurance**		See Comment	The financial assurance has been calculated at $68,720.

Project Description

The project site information is summarized below:

1. Total Site Area: 9.09 acres
2. Existing Site Impervious Area: 6.69 acres
3. Proposed Site Impervious Area(change): 6.65 acres (0.04 acre decrease in site impervious area)
4. New or Fully Reconstructed Impervious Area 0.87 acre (37,826 S.F.)
5. Total Disturbed Area: 1.35 acres

Exhibits:

1. Permit Application dated December 5, 2017.
2. Civil Design Plan Sheets count 16 (Sheets C1.01-C9.01 and L1.01) dated November 21, 2017 (received December 6, 2017, last revised February 9, 2018.)
3. Stormwater Management Narrative dated December 5, 2017 (last revised March 21, 2018).
4. Minnesota MIDS Calculator dated November 17, 2017 (last revised March 21, 2018).
5. Geotechnical Evaluation Report by Braun Intertec Corporation dated December 7, 2017.

Rule Specific Permit Conditions

Rule C: Erosion and Sediment Control

Because the project will disturb 1.35 acres (58,806 square feet) of land-surface area the project must conform to the requirements in the RPBCWD Erosion and Sediment Control rule (Rule C, Subsection 2.1).

The erosion control plan prepared by Sambatec, Inc. includes installation of silt fence, inlet protection for storm sewer catch basins, protection of infiltration practices, rock construction entrance, placement of a minimum of 6 inches of topsoil, decompaction of areas compacted during construction, and retention of native topsoil onsite. To conform to the RPBCWD Rule C requirements the following revisions are needed:

C1. The Applicant must provide the name and contact information of the individual responsible for erosion and sediment control at the site. RPBCWD must be notified if the responsible party changes during the permit term.

Rule J: Stormwater Management

Because the project will alter 1.35 acres (58,806 square feet) of land-surface area the project must meet the criteria of RPBCWD's Stormwater Management rule (Rule J, Subsection 2.1). The criteria listed in Subsection 3.1 apply to the disturbed and increased impervious area because the project impacts only

0.87 acre of the existing 6.69 acres of existing impervious surface which is less than 50% of the existing impervious surface on the parcel. Per Rule J, Subsection 2.3, the applicant will only need to treat that portion of the impervious surface that is reconstructed.

The developer is proposing the construction of a rain garden (bioretention basin) and two inline underground infiltration practices to meet the requirements of Rule J. Pretreatment of runoff is provided by sump manholes.

Rate Control

In order to meet the rate control criteria listed in Subsection 3.1.a, the 2-, 10-, and 100-year post development peak runoff rates must be equal to or less than the existing discharge rates at all locations where stormwater leaves the site.

The applicant used a HydroCAD hydrologic model to simulate runoff rates for pre- and post-development conditions for the 2-, 10-, and 100-year frequency storm events using a nested rainfall distribution, and a 100-year frequency, 10-day snowmelt event. The existing and proposed 2-, 10-, and 100-year frequency discharges from the site are summarized in the table below. The proposed project is in conformance with RPBCWD Rule J, Subsection 3.1.a.

Modeled Discharge Location	2-Year Discharge (cfs)		10-Year Discharge (cfs)		100-Year Discharge (cfs)		10-Day Snowmelt (cfs)	
	Ex	Prop	Ex	Prop	Ex	Prop	Ex	Prop
Hennepin Town Rd	9.08	7.46	14.45	11.84	24.45	23.19	0.77	0.63

Volume Abstraction

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from the fully reconstructed and new impervious surface of the parcel. An abstraction volume of 3,467 cubic feet is required from the 0.87 acre (37,826 square feet) of disturbed and reconstructed impervious area on the site. The Applicant has provided documentation supporting the position that the site meets the restricted criteria as described in Rule J, Subsection 3.3 and is proposing 0.67 inch of abstraction.

Soil borings performed by Braun Intertec show that soils in the project area are lean clays under 12 inches of bituminous asphalt and aggregate base layer. These soils are classified in the "D" hydrologic group and the MN Stormwater Manual indicates an infiltration rate of 0.06 inches per hour for lean clays in a natural condition. The area located westerly on the property was evaluated and it was found that the only portion of the side yard buffer that stormwater could be directed to had ground water at an elevation that would not allow for adequate separation between the infiltration surface and the

ground water. The use of pervious pavement systems to reduce the amount of runoff was also evaluated. Given the necessary design standard for a typical pavement section in a high traffic area such as the parking lot, this was not an option. There is no green space available such as would make irrigation a viable and practical stormwater-management technique. The applicant did add perforated HDPE to much of the proposed storm pipe run to provide an additional 291 cubic feet of abstraction. The design also calls for over-excavating the bioretention feature to allow for the infiltration area to encompass the entire island area on the applicant's property. See attachment. Given the constraints – D soils with poor infiltration capacity throughout the site, impracticability of storm water reuse for irrigation, limited opportunity to capture and or redirect drainage areas, and the fully developed condition, staff agrees the site is restricted per Rule J, section 3.

Soil borings performed by Braun Intertec showed that no groundwater was encountered within any proposed stormwater management practice areas. The only groundwater encountered was in the side yard buffer discussed earlier. Borings were advanced to at least 5.5 feet below the bottom of the proposed practices. (Rule J, Subsection 3.1.b.ii). The table below summarizes the volume abstraction on the site. Based on information reviewed, the proposed project conforms to Rule J, Subsection 3.3.a.

The proposed bio-infiltration feature and the additional two underground infiltration features will be used to abstract 0.67-inch of runoff from the proposed fully reconstructed impervious area. Pretreatment of runoff will be provided by three sump manholes immediately upstream of the practices (sub-criterion 3.1b.i). The table below summarizes the volume abstraction on the site.

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Depth (inches)	Provided Abstraction Volume (cubic feet)	Percent Compliance
1.1	3,467	0.67	2,098	61%

Water Quality Management

Subsection 3.1.c of Rule J requires the Applicant provide for at least 60 percent annual removal efficiency for total phosphorus (TP), and at least 90 percent annual removal efficiency for total suspended solids (TSS) from site runoff. The Applicant is proposing an two underground inline infiltration practices and one bioretention feature to achieve the required TP and TSS removals and submitted a MIDS model to estimate the TP and TSS removals.

Pollutant of Interest	Regulated Site Loading (lbs/yr)	Required Load Removal (lbs/yr)[1]	Provided Load Reduction (lbs/yr)
Total Suspended Solids (TSS)	315.2	283.7 (90%)	304.9 (96.7%)
Total Phosphorus (TP)	1.735	1.041 (60%)	1.543 (88.9%)

[1]Required load reduction is calculated based on the removal criteria in Rule J, Subsection 3.1c and the new and reconstructed impervious area site load.

Based on information reviewed, the proposed project conforms to Rule J, Subsection 3.1.c.

Low floor Elevation

No structure may be constructed or reconstructed such that its lowest floor elevation is less than 2 feet above the 100-year event flood elevation and no stormwater management system may be constructed or reconstructed in a manner that brings the low floor elevation of an adjacent structure into noncompliance according to Rule J, Subsection 3.6.

The low floor elevations of the structures and the adjacent stormwater management feature are summarized below.

Location Riparian to Stormwater Facility	Low Floor Elevation of Building (feet)	100-year Event Flood Elevation of Adjacent Stormwater Facility (feet)	Freeboard (feet)
Rain Garden	872.0	868.6	3.4
Underground Infiltration	872.0	863.82	8.18

The low floor elevation of the proposed of the proposed building is 3.4 feet higher than the 100-year flood elevation of the adjacent biofiltration feature and more than 8 feet higher than in-line infiltration features. Staff finds that the proposed project is in conformance with Rule J, Subsection 3.6.

Maintenance

Subsection 3.7 of Rule J requires the submission of a maintenance plan. All stormwater management structures and facilities must be designed for maintenance access and properly maintained in perpetuity to assure that they continue to function as designed.

J1. Permit applicant must provide a draft maintenance and inspection plan. Once approved by RPBCWD, the plan must be recorded on the deed in a form acceptable to the District.

Rule L: Permit Fee:

Fees for the project are:

Rule C & J $1,500

Rule M: Financial Assurance:

Rules C: Silt fence: 660 L.F. x $2.50/L.F. = ... $1,650

Restoration: 1.35 acres x $2,500/acre = ... $3,375

Rules J: Infiltration Basin: $6.00/SF x 6779 S.F. = ... $40,675

Infiltration Pipe: Engineer's Opinion of Cost = ... $7,380

Contingency (10%) $4,805

Administration (30%) $15,080

Total Financial Assurance $68,720

Applicable General Requirements:

1. The RPBCWD Administrator shall be notified at least three days prior to commencement of work.
2. Construction shall be consistent with the plans and specifications approved by the District as a part of the permitting process. The date of the approved plans and specifications is listed on the permit.
3. Return or allowed expiration of any remaining surety and permit close out is dependent on the permit holder providing proof that all required documents have been recorded and providing as-built drawings that show that the project was constructed as approved by the Managers and in conformance with the RPBCWD rules and regulations.

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. The proposed project will conform to Rules C and J if the Rule Specific Permit Conditions listed above are met.

Recommendation:

Approval, contingent upon:

1. Continued compliance with General Requirements.
2. Financial Assurance in the amount of $68,720.

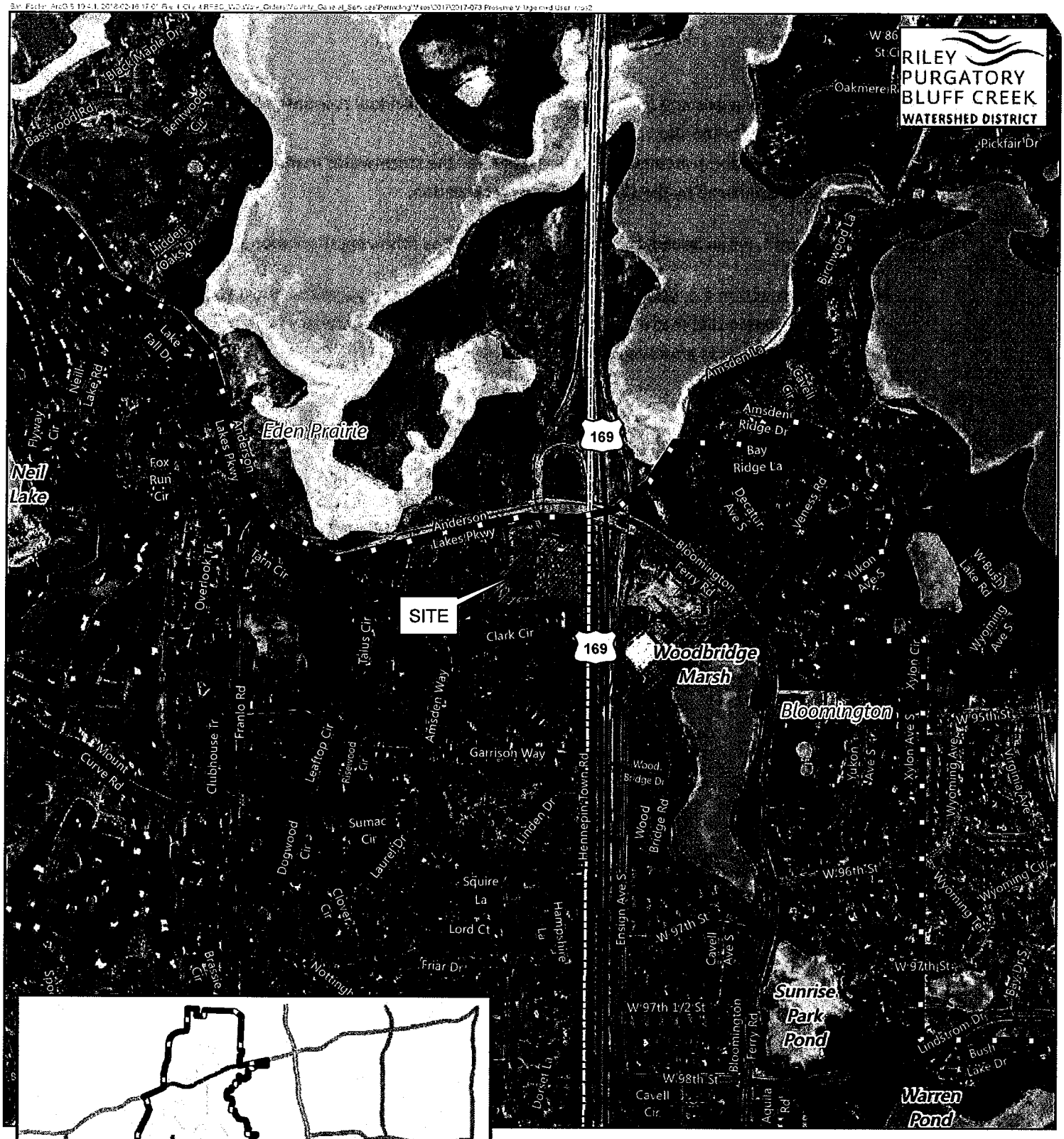
3. Submission of the name and contact information of the individual responsible for erosion and sediment control for the site.
4. Receipt in recordation a maintenance declaration for the stormwater management facilities. A draft must be approved by the District prior to recordation.

By accepting the permit, when issued, the applicant agrees to the following stipulations:

1. Per Rule J Subsection 4.5, upon completion of the site work, the permittee must submit as-built drawings demonstrating that at the time of final stabilization, stormwater facilities conform to design specifications as approved by the District.

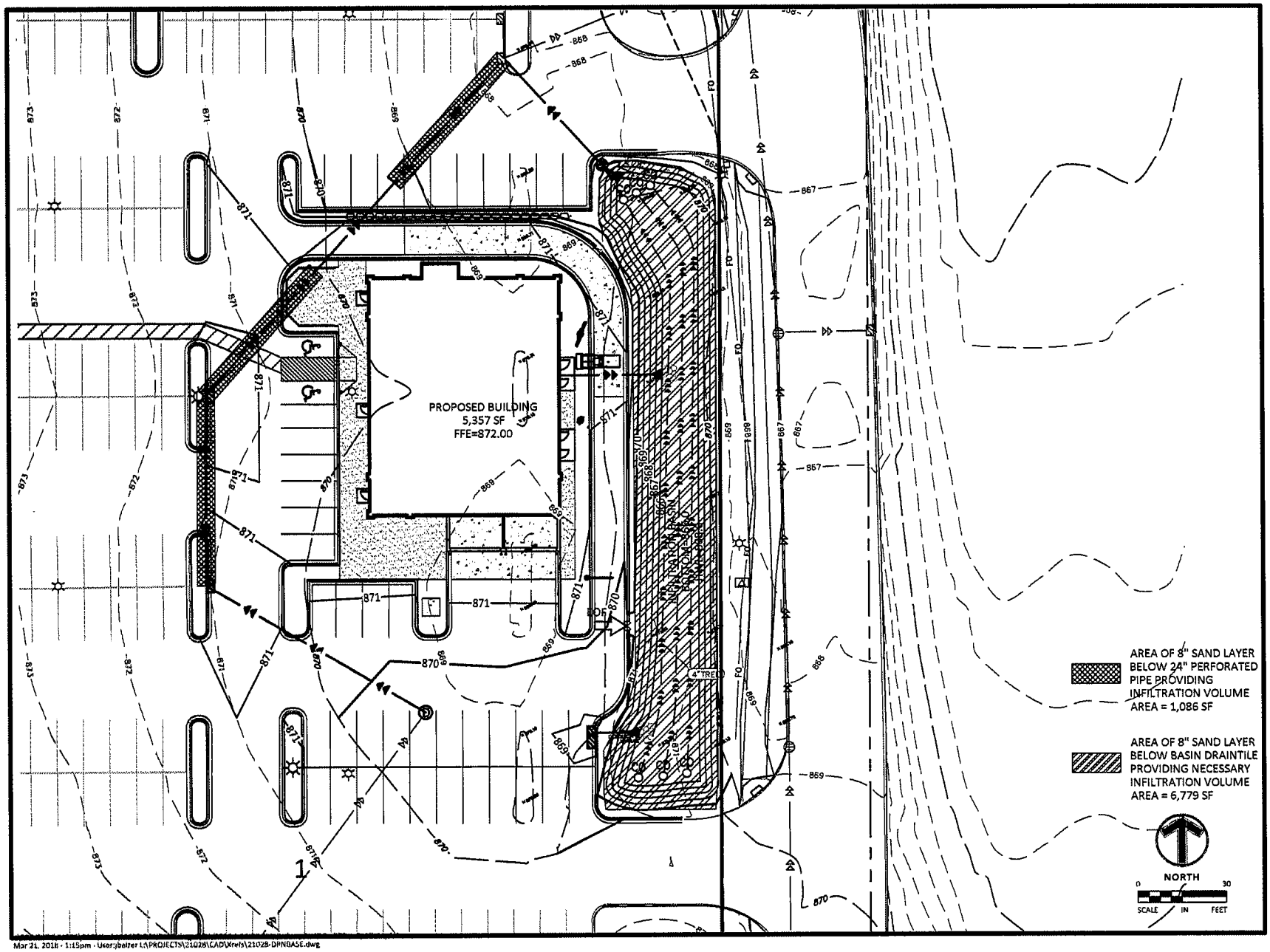
Board Action

It was moved by Manager _____, seconded by Manager _____ to approve permit application No. 2017-073 with the conditions recommended by staff.



Permit Location Map

PRESERVE VILLAGE,
EDEN PRAIRIE
Permit 2017-073
Riley Purgatory Bluff Creek
Watershed District



Mar 21, 2018 - 1:15pm - User:jbelzer L:\PROJECTS\21028\CAD\Xrefs\21028-DPNBASE.dwg

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
763.476.8532 facsimile
Engineering | Surveying | Planning | Environmental

Client

JERRY'S ENTERPRISES

Project

PRESERVE VILLAGE

Location

EDEN PRAIRIE, MN

Certification

Summary

Approved: BDB Drawn: JEB

Revision History

No.	Date	By	Submittal / Rev.

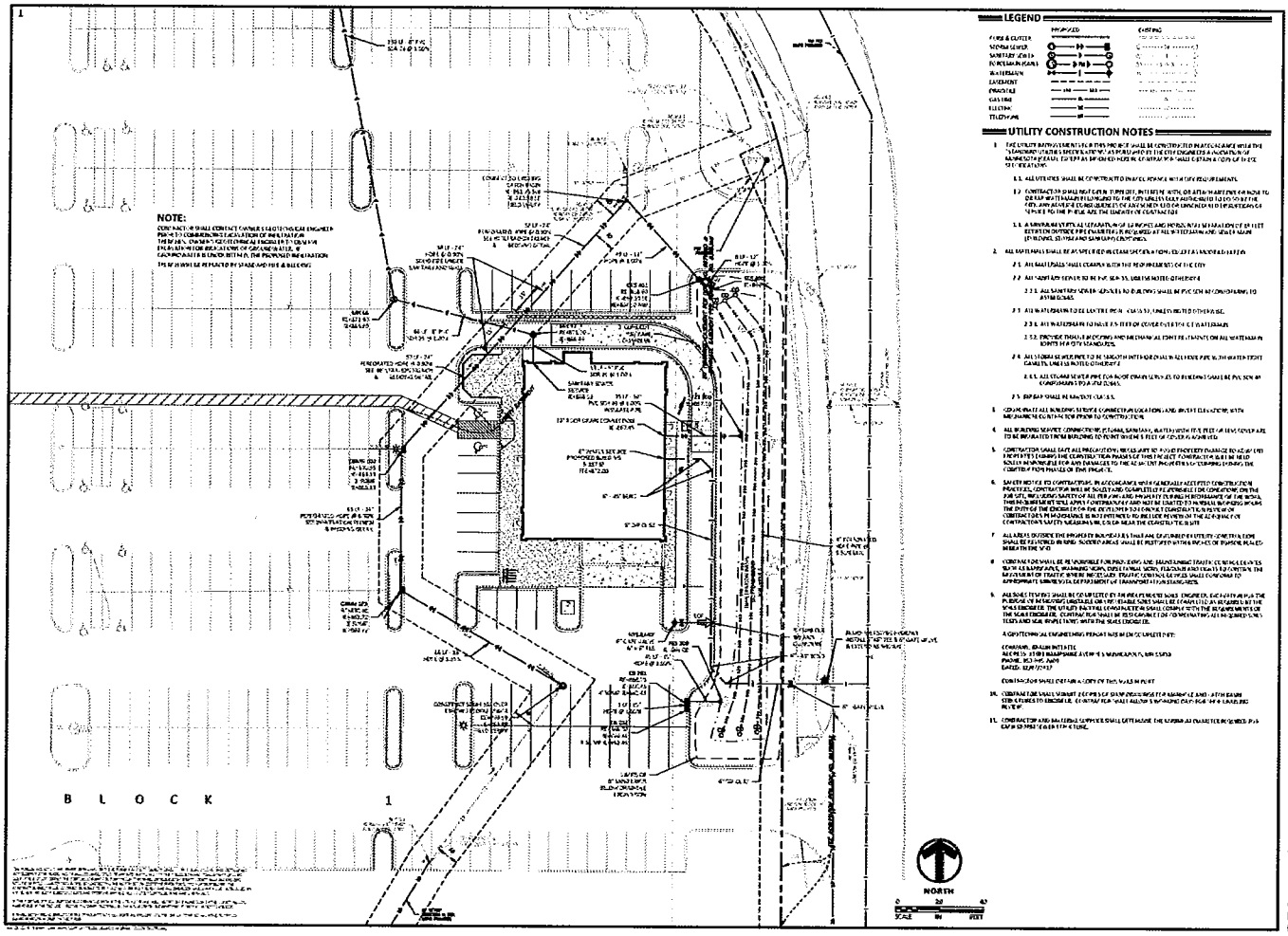
Sheet Title

INFILTRATING SAND LAYER AREA EXHIBIT

Sheet No. Revision

5/5

Project No. 21028



LEGEND

	PROPOSED	EXISTING
FIRE & CUTTER		
STORM SEWER		
SANITARY SEWER		
WATERMAIN (GATE)		
WATERMAIN		
EASEMENT		
CONCRETE		
GAS LINE		
ELECTRIC		
TELEPHONE		

UTILITY CONSTRUCTION NOTES

1. THE UTILITY IMPROVEMENTS FOR THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR WATER MAIN AND SEWER MAIN CONSTRUCTION IN MINNESOTA AS PREPARED BY THE CITY ENGINEER'S ASSOCIATION OF MINNESOTA (CEAM) EXCEPT AS SPECIFIED HEREIN. CONTRACTOR SHALL OBTAIN A COPY OF THESE SPECIFICATIONS.
   1.1. ALL UTILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL CITY REQUIREMENTS.
   1.2. CONTRACTOR SHALL NOTIFY ALL PUBLIC UTILITIES WITHIN AREA OF CONSTRUCTION PRIOR TO DIGGING AND SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES AS REQUIRED.
   1.3. A MINIMUM VERTICAL SEPARATION OF 18 INCHES AND HORIZONTAL SEPARATION OF 10 FEET BETWEEN SANITARY SEWER AND WATERMAIN SHALL BE MAINTAINED. WHERE THESE SEPARATIONS CANNOT BE OBTAINED, SPECIAL CONSTRUCTION METHODS SHALL BE REQUIRED AS DIRECTED BY THE CITY ENGINEER.
2. ALL MATERIALS SHALL BE AS SPECIFIED IN THE MANUFACTURER'S SPECIFICATIONS, EXCEPT AS NOTED BELOW.
   2.1. ALL WATERMAIN SHALL CONFORM WITH THE REQUIREMENTS OF THE CITY.
   2.2. ALL SANITARY SEWER SHALL BE PVC SDR-35, UNLESS NOTED OTHERWISE.
      2.2.1. ALL SANITARY SEWER SERVICES TO BUILDINGS SHALL BE PVC SDR-35 WITH CLEANOUTS TO WITHIN 5' OF BUILDING.
   2.3. ALL WATERMAIN TO BE DUCTILE IRON CLASS 52, UNLESS NOTED OTHERWISE.
      2.3.1. ALL WATERMAIN TO HAVE 7.5 FEET OF COVER OVER TOP OF WATERMAIN.
      2.3.2. PROVIDE TRACER WIRE WITH ALL NON-METALLIC WATERMAIN AND SERVICE LINES AS REQUIRED BY CITY STANDARDS.
   2.4. ALL STORM SEWER PIPE TO BE REINFORCED CONCRETE PIPE (RCP) WITH BITUMINOUS COATED JOINTS, UNLESS NOTED OTHERWISE.
      2.4.1. ALL STORM SEWER PIPE FOR ROOF DRAIN SERVICES TO BUILDINGS SHALL BE PVC SDR-35 CONFORMING TO ASTM D3034.
   2.5. RIP-RAP SHALL BE MACHINE CLASS 3.
3. COORDINATE ALL BUILDING SERVICE CONNECTION LOCATIONS AND INVERT ELEVATIONS WITH MECHANICAL CONTRACTOR PRIOR TO CONSTRUCTION.
4. ALL BUILDING SERVICE CONNECTIONS (STORM, SANITARY, WATER) WITHIN 10 FEET OF NEW CURB ARE TO BE BROUGHT TO POINT WITHIN 5 FEET OF CURB AS MARKED.
5. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID EXCESSIVE DRAINAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES DUE TO IMPROPER DRAINAGE DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
6. SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THESE REQUIREMENTS WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. NEITHER THE DUTY OF THE OWNER OR THE OWNER'S REPRESENTATIVE TO CONDUCT CONSTRUCTION REVIEWS OF CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
7. ALL AREAS OUTSIDE THE PROJECT BOUNDARIES THAT ARE DISTURBED BY UTILITY CONSTRUCTION SHALL BE RESTORED IN KIND. SODDED AREAS SHALL BE RESTORED WITH THE PIECES OF SOD REMOVED WHERE IN GOOD CONDITION.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS TO OPTIMIZE THE SAFE FLOW OF TRAFFIC WHERE NECESSARY. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE STANDARDS SET BY THE DEPARTMENT OF TRANSPORTATION STANDARDS.
9. ALL SOILS TESTING SHALL BE COMPLETED BY AN INDEPENDENT SOILS ENGINEER. EACH DAY A PLAN OF THE AREAS OF BUILDINGS INSTALLED ON THAT DAY'S WORK SHALL BE COMPLETED AS REQUIRED BY THE SOILS ENGINEER. THE UTILITY AS-BUILT CONSTRUCTION SHALL COMPLY WITH THE RECOMMENDATIONS OF THE SOILS ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED SOILS TESTS AND SEAL PROOF TESTING WITH THE SOILS ENGINEER.

   A GEOTECHNICAL ENGINEERING REPORT HAS BEEN COMPLETED BY:

   COMPANY: BRAUN INTERTEC
   ADDRESS: 11001 HAMPSHIRE AVENUE S, MINNEAPOLIS, MN 55438
   PHONE: 952.995.2000
   DATED: 02/07/2017

   CONTRACTOR SHALL OBTAIN A COPY OF THIS REPORT.
10. CONTRACTOR SHALL SUBMIT (2) COPIES OF SHOP DRAWINGS FOR MANHOLES AND CATCH BASIN STRUCTURES TO ENGINEER. CONTRACTOR SHALL ALLOW 5 WORKING DAYS FOR REVIEW AND HANDLING BY ENGINEER.
11. CONTRACTOR AND ALL SUBCONTRACTORS SHALL OBTAIN A LICENSE FOR ALL WORK AS REQUIRED BY THE CITY OF EDEN PRAIRIE.

Sambatek
www.sambatek.com
12900 Whitewater Drive, Suite 200
Minnetonka, MN 55343
763.478.8000 Telephone
763.478.8630 Facsimile
Engineering | Surveying | Planning | Environmental

Client
JERRY'S ENTERPRISES

Project
PRESERVE VILLAGE

Location
EDEN PRAIRIE, MN

Certification
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the state of Minnesota.

Brady D. Banker
Reg. No. 47779 Date: 11/21/2017

PRELIMINARY

Summary
Designed: CJ Drawn: JS
Approved: BDB Book / Page:
Project No.: 21028 Initial Issue: 11/21/17

Revision History

No.	Date	By	Submittal / Revision
1	12/20/17	CJ	PRELIMINARY SUBMITTAL
2	1/2/18	CJ	PRELIMINARY SUBMITTAL
3	1/22/18	CJ	PRELIMINARY SUBMITTAL

Sheet Title
UTILITY PLAN

Sheet No. Revision
C6.01

Project No. 21028

RILEY
PURGATORY
BLUFF CREEK
WATERSHED DISTRICT

Riley Purgatory Bluff Creek Watershed District Permit Application Review

Permit No: 2018-007

Received complete: March 15, 2018

Applicant: City of Chanhassen – Vanessa Strong

Consultant: Wenck Associates, Inc. – Eric Megow

Project: Lake Lucy Lane Drainage Improvement – This project is intended to alleviate flooding on Lake Lucy Lane resulting from a failing outlet for the wetland north of Lake Lucy Lane. The project calls for the installation of a new flared end section north of Lake Lucy Lane, two new storm sewer manhole structures and installing 445 feet of 10-inch HDPE pipe – of which 70 feet will be open cut and the remainder directionally drilled.

Location: Lake Lucy Lane Right-of-Way between 1720 Lake Lucy Lane and 1811 Lake Lucy Lane, Chanhassen, MN / PIN 250033300 & 254070120

Reviewer: Terry Jeffery, Permit Coordinator

Rules: Applicable rules checked

X	Rule B: Floodplain Management		Rule H: Appropriation of Public Waters
X	Rule C: Erosion and Sediment Control		Rule I: Appropriation of Groundwater
X	Rule D: Wetland and Creek Buffers	X	Rule J: Stormwater Management
	Rule E: Dredging and Sediment Removal		Rule K: Variances and Exceptions
	Rule F: Shoreline/Streambank Stabilization		Rule L: Permit Fees
	Rule G: Waterbody Crossings		Rule M: Financial Assurances

Rule Conformance Summary

Rule	Issue		Conforms to RBPCWD Rules?	Comments
B	**Floodplain Management**		See Comment	See Rule Specific Permit Condition B1
C	**Erosion Control Plan**		See Comment	See Rule Specific Permit Condition C1.
D	**Wetland & Creek Buffers**		See Comment	See Rule Specific Permit Condition D1.
J	**Stormwater Management**	Rate	N/A	No impervious surface added
		Volume	N/A	No impervious surface added
		Water Quality	N/A	No impervious surface added
		Low Floor Elev.	N/A	
		Maintenance	N/A	No impervious surface added

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

18681 Lake Drive East
Chanhassen, MN 55317
952-607-6512
www.rpbcwd.org

Project Description:

The project proposes the installation of a new flared end section north of Lake Lucy Lane, two new storm sewer manhole structures and installing 445 feet of 10-inch HDPE pipe – of which 70 feet will be open cut and the remainder directionally drilled, and a new flared end section outfall and rip-rap south of Lake Lucy Lane. The city is undertaking the project to improve drainage under Lake Lucy Lane and prevent localized flooding. The project site information is summarized below:

- Total Site Area: 7,225 square feet
- Existing Site Impervious Area: 2,240 square feet
- Proposed Site Impervious Area: 2,240 square feet
- Total Disturbed Impervious Surface: 0.0 square feet
- Total Reconstructed Impervious Surface: 0.0 square feet
- Total Disturbed Area: 1,225 square feet
- Total Volume Excavated: 265 cubic yards

Exhibits:

1. Permit Application dated January 16, 2018.
2. Plan Set Sheet C-101 dated November, 2017 updated March 15, 2018.
3. Plan Sheet C-201 dated March 15, 2018
4. Technical Memorandum dated January 10, 2018 updated March 8, 2018.
5. "Comment Responses" undated – received March 15, 2018
6. Wetland Delineation Report dated November 2017
7. HydroCAD Model dated March 15, 2018
8. Minnesota Wetland Conservation Act Notice of Decision Dated December 1, 2017

Rule Specific Permit Conditions:

1. Rule B: Floodplain Management and Drainage Alteration:

A Floodplain Management and Drainage Alteration Permit (Rule B) is required because disturbance in the floodplain is proposed below the 100-year flood elevation of Purgatory Creek (Rule B, Subsection 2.1). The 100-year flood elevation at this location is approximately 992.61(NGVD29).

The project does not implicate Rule B, subsection 3.1 or 3.4 because no structures will be constructed or reconstructed, and no surface will be paved as part of the project; further, there is no watercourse within the project area. The project will place 5 cubic yards of rip rap at the outfall, below the 100-year flood elevation of the adjacent wetland. Compensatory storage will be provided by excavating 5 cubic yards of soil material prior to placing the rip rap. The project complies with Rule B, subsection 3.2.

Staff and engineer have reviewed the hydrologic modeling and find that that the alteration will not have an adverse offsite impact and will not adversely affect flood risk, basin, groundwater hydrology, stream base flow, water quality or aquatic or riparian habitat. The proposed outlet will maintain current inundation depth and durations in the northern wetland – the 100-year elevation will increase by 0.09 foot or a little more than one (1) inch. This bounce is contained within the City owned property and poses no risk to any structures. The southern wetland is reduced by 0.02 – 0.05 foot (¼ inch to ½ inch) under the various events. This nominal change, like the 0.09-foot change in the northern wetland, is within margins of error for the modeling used and is effectively matching existing conditions. These findings lead staff to concur with applicant that the project will not adversely impact downstream properties, nor will it increase flood risk, adversely impact hydrology, water quality, or riparian habitat. The proposed plan is compliant with Rule B, Subsection 3.3.

To conform to the RPBCWD Rule B the following revision must be incorporated into the plans:

B1. Construction activities must be conducted as to minimize the potential transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) to the maximum extent possible. (Rule B, Subsection 3.5)

2. Rule C: Erosion and Sediment Control:

An Erosion and Sediment Control Permit (Rule C) is required because more than 50 cubic yards of earth will be placed, altered, or removed. (Rule C, subsection 2.1).

The Erosion Control Plan (sheet C-201) prepared by Wenck Associates includes redundant silt fence downstream of all disturbance areas, soil decompaction, non-poly netting erosion control blanket, and final stabilization via six inches of topsoil and app seed. The contractor to be responsible for erosion control at the site needs to be determined. To conform to the RPBCWD Rule C requirements the following revisions are needed:

C1. The Applicant must provide the name and contact information of the individual responsible for erosion and sediment control at the site. RPBCWD must be notified if the responsible party changes during the permit term.

3. Rule D: Wetland and Creek Buffers:

Because the proposed work triggers a permit under RPBCWD Rules B and J and there are two jurisdictional wetlands within the project site, Rule D, Subsections 2.1a and 3.1b require buffer adjacent to this wetland. A MNRAM was supplied by the City which indicates both wetlands are classified as a Medium Value wetland. The applicant provided a buffer zone and marker location map confirming that the proposed buffer area extends the required average width of 40 feet or to the property extent. The southern wetland boundary is a minimum of 75 feet within the boundaries of the private parcel and away from the City right-of-way. Therefore, under Rule D, subsection 3.1f, the applicant is not required to buffer this wetland as it is on property not subject to the permit.

D1. The Applicant must enter into a written maintenance agreement with the District documenting the maintenance requirements.

4. Rule J: Stormwater Management:

A Stormwater Management Permit (Rule J) is required for this project because more than 50 cubic yards of earth will be placed, altered, or removed and more than 5,000 square feet of land-surface area will be altered (Rule J, Subsection 2.1). The project will not disturb or create any impervious surface; therefore, there is no impervious area to which the requirements of Rule J, Subsection 3.1 apply.

Low-floor Elevation

Because the applicant is proposing no construction or reconstruction of structures and is not required to construct a stormwater-management facility or facilities by the RPBCWD rules, subsection 3.6 does not impose any requirements on the project.

Maintenance

No stormwater management structures or facilities are required for this project; therefore, no maintenance agreement is required.

Applicable General Requirements:

1. The RPBCWD Administrator and Engineer shall be notified at least three days prior to commencement of work.
2. Construction shall be consistent with the plans and specifications approved by the District as a part of the permitting process. The date of the approved plans and specifications is listed on the permit.
3. All revisions to the plans and specifications approved by the District as a part of the permitting process shall be submitted to the District for review and will not become the new approved plans and specifications until written notice from the District is received by the Applicant.

Findings

1. The proposed project includes the necessary information and plan sheets for review.
2. The proposed project conforms to Rule J; the general requirements listed above must be adhered to.
3. The proposed project will conform to Rules B, C, and D if the Rule Specific Permit Conditions listed above are met.

Recommendation:

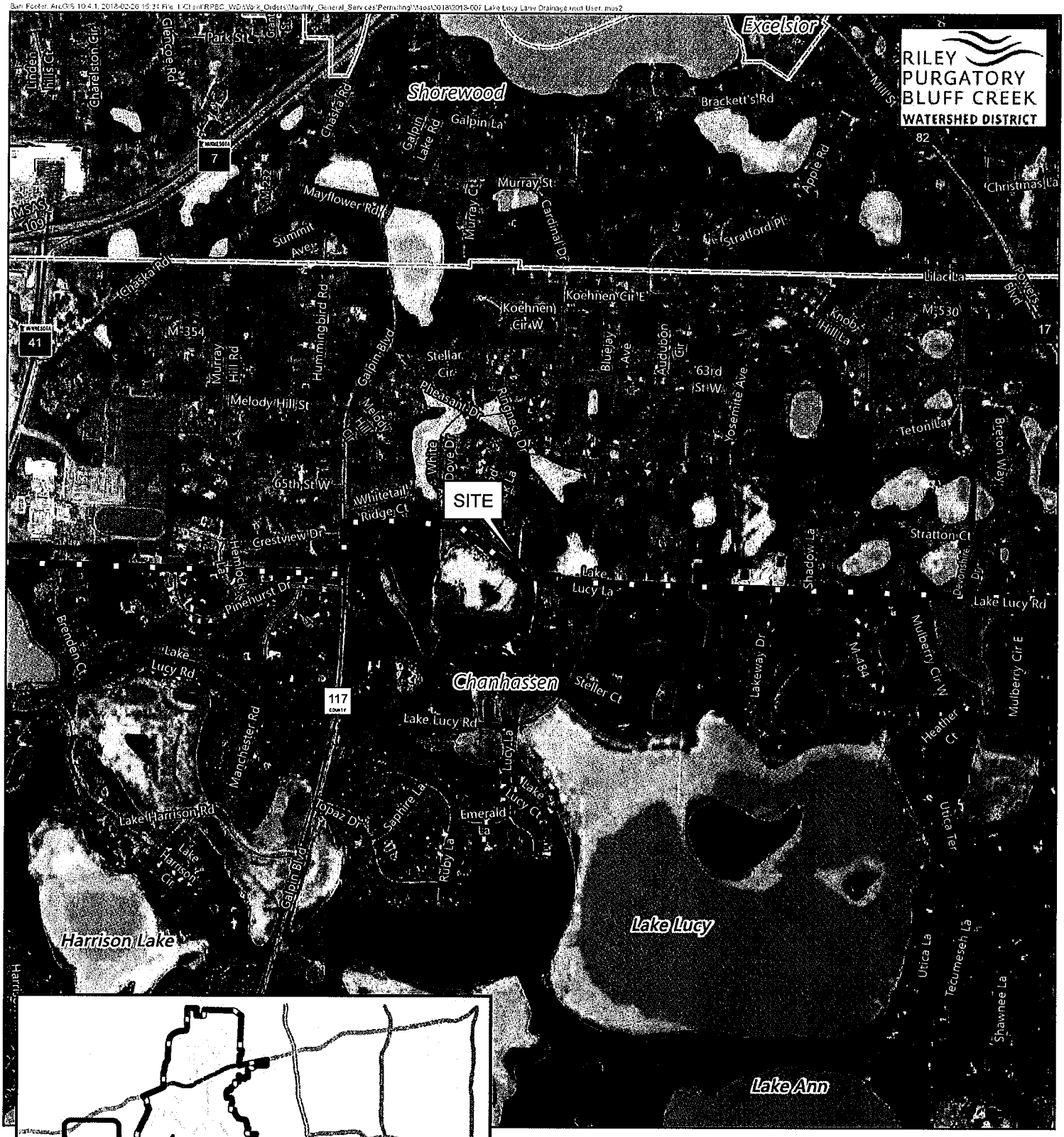
Approval of the application, contingent upon:

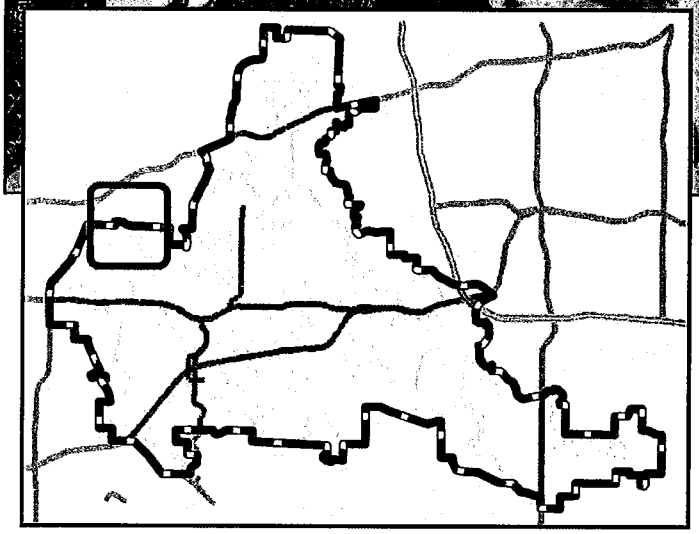
1. Continued compliance with General Requirements.

2. Compliance with the rule specific permit conditions above.

Board Action

It was moved by Manager _____, seconded by Manager _____ to approve permit application No. 2018-007 with the conditions recommended by staff.

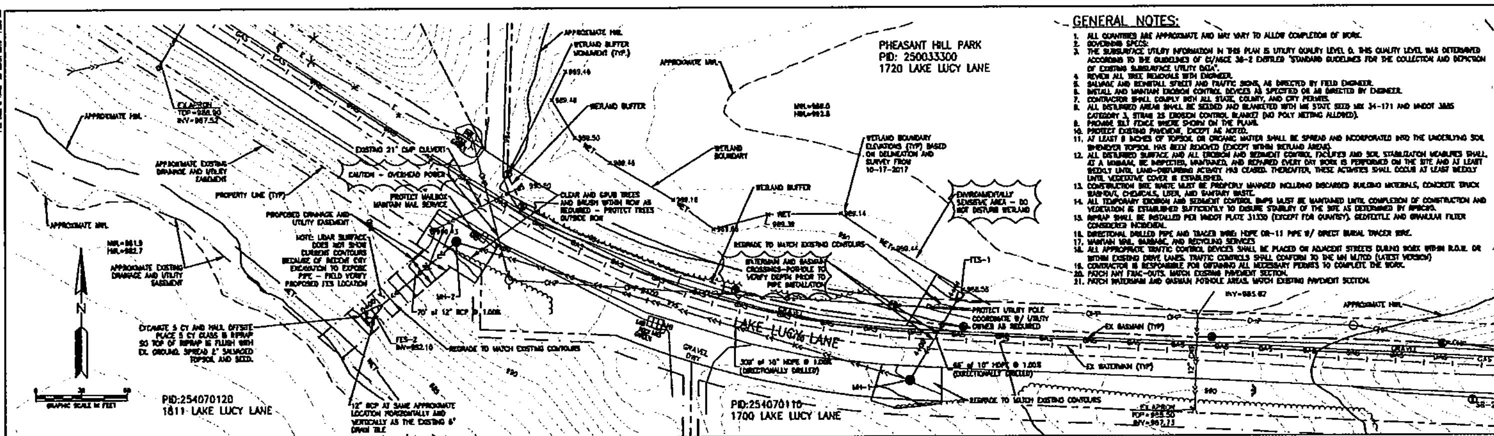




Feet
0 1,000

Permit Location Map

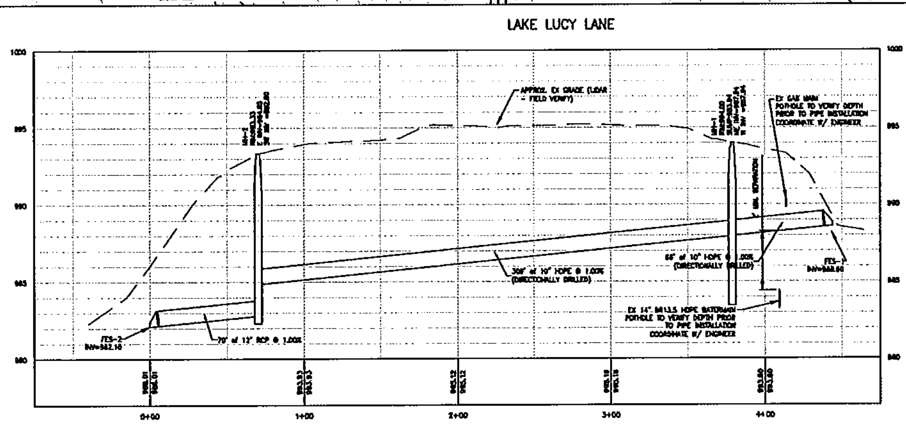
LAKE LUCY LAND DRAINAGE
Permit 2018-007
Riley Purgatory Bluff Creek
Watershed District



GENERAL NOTES:

1. ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
2. GOVERNING SPECS:
3. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
4. REVIEW ALL TREE REMOVALS WITH ENGINEER.
5. SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS AS DIRECTED BY FIELD ENGINEER.
6. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS SPECIFIED OR AS DIRECTED BY ENGINEER.
7. CONTRACTOR SHALL COMPLY WITH ALL STATE, COUNTY, AND CITY PERMITS.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND BLANKETED WITH MN STATE SEED MIX 34-171 AND MNDOT 3885 CATEGORY 3, STRAW 2S EROSION CONTROL BLANKET (NO POLY NETTING ALLOWED).
9. PROVIDE SILT FENCE WHERE SHOWN ON THE PLANS.
10. PROTECT EXISTING PAVEMENT, EXCEPT AS NOTED.
11. AT LEAST 6 INCHES OF TOPSOIL OR ORGANIC MATTER SHALL BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL WHENEVER TOPSOIL HAS BEEN REMOVED (EXCEPT WITHIN WETLAND AREAS).
12. ALL DISTURBED SURFACE AND ALL EROSION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES SHALL, AT A MINIMUM, BE INSPECTED, MAINTAINED, AND REPAIRED EVERY DAY WORK IS PERFORMED ON THE SITE AND AT LEAST WEEKLY UNTIL LAND-DISTURBING ACTIVITY HAS CEASED. THEREAFTER, THESE ACTIVITIES SHALL OCCUR AT LEAST WEEKLY UNTIL VEGETATIVE COVER IS ESTABLISHED.
13. CONSTRUCTION SITE WASTE MUST BE PROPERLY MANAGED INCLUDING DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITER, AND SANITARY WASTE.
14. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE AS DETERMINED BY MPRCWD.
15. RIPRAP SHALL BE INSTALLED PER MNDOT PLATE 3133D (EXCEPT FOR QUANTITY). GEOTEXTILE AND GRANULAR FILTER CONSIDERED INCIDENTAL.
16. DIRECTIONAL DRILLED PIPE AND TRACER WIRE: HDPE DR-11 PIPE W/ DIRECT BURIAL TRACER WIRE.
17. MAINTAIN MAIL, GARBAGE, AND RECYCLING SERVICES
18. ALL APPROPRIATE TRAFFIC CONTROL DEVICES SHALL BE PLACED ON ADJACENT STREETS DURING WORK WITHIN R.O.W. OR WITHIN EXISTING DRIVE LANES. TRAFFIC CONTROLS SHALL CONFORM TO THE MN MUTCD (LATEST VERSION)
19. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS TO COMPLETE THE WORK.
20. PATCH ANY FRAC-OUTS. MATCH EXISTING PAVEMENT SECTION.
21. PATCH WATERMAIN AND GASMAIN POTHOLE AREAS. MATCH EXISTING PAVEMENT SECTION.

LAKE LUCY LANE



STRUCTURE TABLE				
STRUCTURE	STANDARD PLATE	CASTING	SIZE	NOTES
FES-1	3108	—	—	1
MH-1	3100	R-1642	48"ø	3,4
MH-2	3100	R-1642	48"ø	3,4
FES-2	—	—	—	2

TABLE NOTES:
1. VERIFY FLARED END TYPE AND MATERIAL W/ OWNER
2. 12" FLARED END SECTION WITH TRASH GUARD
3. PROVIDE MIN. 12" THICK AGGREGATE BASE CLASS 5 BEDDING AT EACH STRUCTURE (INCIDENTAL).
4. SEE CITY STANDARD PLATE 2111 FOR ADDITIONAL CASTING REQUIREMENTS.

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE: 1-800-252-1166

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
5	PER WATERSHED COMMENTS	MJB	EAM	3/26/18
4	PER WATERSHED COMMENTS	RAG	EAM	3/15/18
3	GENERAL NOTES UPDATE	MJB	EAM	12/6/17
2	WETLAND BOUNDARY UPDATE	MJB	EAM	11/17/17
1	DESIGN UPDATE	MJB	EAM	11/9/17
0	DESIGN	MJB	EAM	10/26/17

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

DATE 3/26/18 REG. NO.

PRIME CONSULTANT: WENCK ASSOCIATES — Responsive partner. Exceptional outcomes.

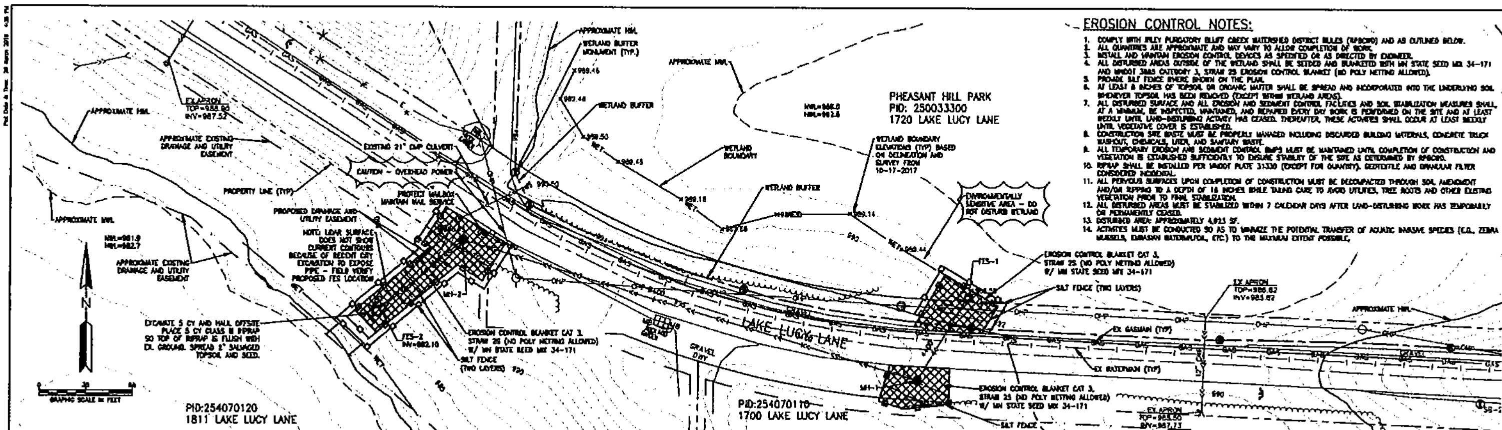
PROJECT TITLE: LAKE LUCY LANE DRAINAGE IMPROVEMENTS

CLIENT: CITY OF CHANHASSEN, 7700 MARKET BOULEVARD, CHANHASSEN, MN 55317

SHEET TITLE: DRAINAGE IMPROVEMENTS PLAN AND PROFILE

DWN BY: MJB | APP'D: EAM | DWG DATE: MARCH 2018 | SCALE: AS SHOWN

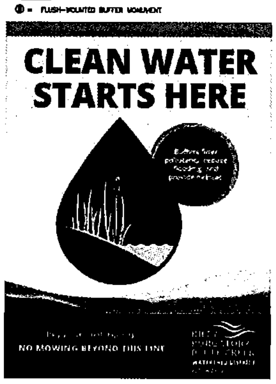
PROJECT NO. 1481-18 | SHEET NO. C-101 | REV NO. 5



EROSION CONTROL NOTES:

1. COMPLY WITH RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT RULES (RPBCWD) AND AS OUTLINED BELOW.
2. ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
3. INSTALL AND MAINTAIN EROSION CONTROL DEVICES AS SPECIFIED OR AS DIRECTED BY ENGINEER.
4. ALL DISTURBED AREAS OUTSIDE OF THE WETLAND SHALL BE SEEDED AND BLANKETED WITH MN STATE SEED MIX 34-171 AND MNDOT 3885 CATEGORY 3, STRAW 25 EROSION CONTROL BLANKET (NO POLY NETTING ALLOWED).
5. PROVIDE SILT FENCE WHERE SHOWN ON THE PLAN.
6. AT LEAST 8 INCHES OF TOPSOIL OR ORGANIC MATTER SHALL BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL WHENEVER TOPSOIL HAS BEEN REMOVED (EXCEPT WITHIN WETLAND AREAS).
7. ALL DISTURBED SURFACE AND ALL EROSION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES SHALL, AT A MINIMUM, BE INSPECTED, MAINTAINED, AND REPAIRED EVERY DAY WORK IS PERFORMED ON THE SITE AND AT LEAST WEEKLY UNTIL LAND-DISTURBING ACTIVITY HAS CEASED. THEREAFTER, THESE ACTIVITIES SHALL OCCUR AT LEAST WEEKLY UNTIL VEGETATIVE COVER IS ESTABLISHED.
8. CONSTRUCTION SITE WASTE MUST BE PROPERLY MANAGED INCLUDING DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITER, AND SANITARY WASTE.
9. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE AS DETERMINED BY RPBCWD.
10. RIPRAP SHALL BE INSTALLED PER MNDOT PLATE 3133B (EXCEPT FOR QUANTITY). GEOTEXTILE AND GRANULAR FILTER CONSIDERED INCIDENTAL.
11. ALL PERVIOUS SURFACES UPON COMPLETION OF CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR RIPPING TO A DEPTH OF 18 INCHES WHILE TAKING CARE TO AVOID UTILITIES, TREE ROOTS AND OTHER EXISTING VEGETATION PRIOR TO FINAL STABILIZATION.
12. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
13. DISTURBED AREA: APPROXIMATELY 4,923 SF.
14. ACTIVITIES MUST BE CONDUCTED SO AS TO MINIMIZE THE POTENTIAL TRANSFER OF AQUATIC INVASIVE SPECIES (E.G., ZEBRA MUSSELS, EURASIAN WATERMILFOIL, ETC.) TO THE MAXIMUM EXTENT POSSIBLE.

LEGEND
① = FLUSH-MOUNTED BUFFER MONUMENT



FLUSH-MOUNTED BUFFER MONUMENT SIGN (1 / C-201)
NOT TO SCALE

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166

REV	REVISION DESCRIPTION	DWN	APP	REV DATE
5	PER WATERSHED COMMENTS	MJS	EAM	3/26/18
4	PER WATERSHED COMMENTS	RAG	EAM	3/15/18
3	GENERAL NOTES UPDATE	MJS	EAM	12/6/17
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0	DESIGN	MJS	EAM	10/26/17

SEAL
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
ED MATTHIESEN
DATE 3/26/18 REG. NO. 18800

PRIME CONSULTANT
WENCK ASSOCIATES
Responsive partner. Exceptional outcomes.

PROJECT TITLE
LAKE LUCY LANE DRAINAGE IMPROVEMENTS

CLIENT
CITY OF CHANHASSEN
7700 MARKET BOULEVARD
CHANHASSEN, MN 55317

SHEET TITLE
EROSION CONTROL PLAN

DWN BY MJS | CHK'D | APP'D EAM | DWG DATE MARCH 2018 | SCALE AS SHOWN
PROJECT NO. 1481-18 | SHEET NO. C-201 | REV NO. 5

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Riley Purgatory Bluff Creek Watershed District Board of Managers
From: Scott Sobiech, P.E., Barr Engineering Company
Subject: Permit Application 2017-069: Scheels request for condition removal
Date: March 29, 2018
Project: 23270053.14

Project Description

Permit No: 2017-069

Application Received complete: September 19, 2017 (conditionally approved at November 1, 2017 meeting)

Applicant: CAPREF Eden Prairie South LLC

Consultant: Adam Basse, LHB, Inc

Project: Eden Prairie Center Scheels Redevelopment–Removal and replacement of the much of the existing Sears building, reconfiguring and repave the parking areas adjacent to the, improve walkways and add landscaping. The applicant proposes three underground filtration systems with elevated driantile to promote infiltration and a stormwater harvesting and reuse system for irrigation and toilet flushing to provide stormwater quantity, volume and quality control.

Location: 8251 Flying Cloud Drive, Eden Prairie, MN

Reviewer: Scott Sobiech, Barr Engineering

Rules: Applicable rules checked

	Rule B: Floodplain Management		Rule H: Appropriation of Public Waters
X	Rule C: Erosion and Sediment Control		Rule I: Appropriation of Groundwater
	Rule D: Wetland and Creek Buffers	X	Rule J: Stormwater Management
	Rule E: Dredging and Sediment Removal		Rule K: Variances and Exceptions
	Rule F: Shoreline/Streambank Stabilization	X	Rule L: Permit Fees
	Rule G: Waterbody Crossings	X	Rule M: Financial Assurances

At the November 1, 2017 Board meeting the Managers conditionally approved permit 2017-069 - Eden Prairie Center Scheels Redevelopment. The Eden Prairie Center Scheels Redevelopment project involves the removal and replacement of the much of the existing Sears building, restore a small portion of the building shell that will remain, reconfiguring the parking areas adjacent to the new store, improvements to pavements, walks and landscaping. The applicant proposes three underground filtration systems with elevated draintile to promote infiltration and a stormwater harvesting and reuse system for irrigation and toilet flushing to provide storm water quantity, volume and quality control.

Since the conditional approval, the applicant has been working with District staff, engineer, and counsel to fulfill the conditions of approval. In March 2018, the applicant submitted the attached letter and supporting correspondence, they have had with the MPCA to fulfill condition 5. Condition 5 states "The applicant must acknowledge in writing that it is aware of the potential contaminated site liability and affirm that it has elected to provide stormwater management through, in part, infiltration."

While the applicant's letter and accompanying materials can be read to acknowledge site conditions, it does not specifically note that the applicant has elected to proceed with stormwater management through infiltration, thus not fully meeting the condition. However, the RPBCWD engineer reviewed the MPCA communications provided by the applicant and, based principally on the representation in the MPCA's December 14 email, recommends removal of the condition 5.

Jansen, Stephen

From: Miller, Amy (MPCA) <amy.miller@state.mn.us>
Sent: Thursday, December 14, 2017 9:53 AM
To: Jansen, Stephen; Haas, Jennifer (MPCA); Higgins, Rebecca (MPCA)
Cc: Schilling, Derek
Subject: RE: Sears EP Center - BF0000448

Regarding item #1 in your email dated 11/13/2017:

The MPCA has reviewed your RAP addendum regarding the stormwater filtration and infiltration systems at the Sears Eden Prairie (BF 448) property. The stormwater capture and reuse system shows no anticipated affect on groundwater conditions. The infiltration areas show anticipated mounding areas from the infiltrated stormwater in spatial relationship to the most recent groundwater conditions and petroleum impacts. The onsite response actions proposed in the approved RAP/CCP dated August 1, 2017 appear unchanged from the new information. The capture and reuse system and infiltration systems do not appear to pose a risk to receptors from the known petroleum contaminants onsite at this time.

Thanks

Amy Miller
Petroleum Remediation & Redevelopment
MPCA St. Paul Office
651-757-2569

From: Jansen, Stephen [mailto:SJansen@braunintertec.com]
Sent: Monday, November 13, 2017 1:27 PM
To: Miller, Amy (MPCA) <amy.miller@state.mn.us>; Haas, Jennifer (MPCA) <jennifer.haas@state.mn.us>; Higgins, Rebecca (MPCA) <rebecca.higgins@state.mn.us>
Cc: Schilling, Derek <DSchilling@braunintertec.com>
Subject: Sears EP Center - BF0000448

Hi Amy, Jennifer and Rebecca – attached are the following two items regarding the Sears EP Center/new Scheels store project:

1. A letter dated 11/7/17 with stormwater system design considerations and a map showing the proposed infiltration basin areas, the known extent of contamination for the petroleum releases, and the calculated extent of mounding for each basin. This information was requested by Rebecca in her previous email.
2. A Work Plan dated 11/7/17 for conducting the second seasonal soil vapor sampling event which includes a figure showing the proposed sub-slab sampling locations. The second round of sampling was requested in the MPCA's RAP approval letter dated 10/13/17, and is tentatively scheduled to be completed the week of 11/27/17.

If you have any questions or comments regarding the either document, please let Derek and I know.

Thanks,

Steve

BRAUN INTERTEC
The Science You Build On.

Stephen T. Jansen, MS, PG
Principal Scientist
11001 Hampshire Avenue S | Minneapolis, MN 55438
952.995.2645 direct | 612.599.2219 mobile
sjansen@braunintertec.com
braunintertec.com | Twitter: Braun Intertec | LinkedIn: Braun Intertec

BRAUN INTERTEC
The Science You Build On.

Braun Intertec Corporation
11001 Hampshire Avenue S
Minneapolis, MN 55438

Phone: 952.995.2000
Fax: 952.995.2020
Web: braunintertec.com

November 7, 2017

Project B1700243.00

Ms. Jennifer Haas
MPCA Voluntary Investigation and Cleanup Program

and

Ms. Amy Miller
MPCA Petroleum Brownfields Program
520 Lafayette Road North
St. Paul, Minnesota 55155

RE: Stormwater System Design Considerations
Sears Eden Prairie Center/Proposed Scheels Store
8301 Flying Cloud Drive
Eden Prairie, Minnesota (the Site)
MPCA Site ID: BF0000448

Dear Ms. Haas and Ms. Miller:

On October 31, 2017, Braun Intertec Corporation submitted via email the current stormwater system design information and construction plans for the Scheels redevelopment of the former Sears Retail Building and Auto Center at the Eden Prairie Center. This information was provided to supplement preliminary redevelopment/construction included in the August 1, 2017 Response Action Plan/Construction Contingency Plan (RAP/CCP) prepared by Braun Intertec and approved by the MPCA in a letter dated October 13, 2017. Ms. Rebecca Higgins of the MPCA subsequently requested that an updated site map also be submitted which shows: 1) the know extents of contamination for soil and groundwater, 2) the planned stormwater infiltration basins, and 3) the anticipated mounding radius of influence for the basins. This letter and the attached map provide the additional requested information regarding the proposed stormwater system design.

Proposed Design

Per the current October 16, 2017 construction plans submitted to MPCA on October 31, 2017, the proposed stormwater system design for the project includes:

- Sheet C3-01 shows the stormwater system design feature locations which include three subgrade infiltration basins identified as BMP #1, BMP #2 and BMP #3 located south, southeast and northwest of the proposed Scheels building footprint, and a subgrade stormwater reuse tank area located east of the proposed building footprint.
- BMP #1, BMP #2 and BMP #3 have surface areas of 29,141 square feet, 12,240 square feet and 2,466 square feet, respectively. Each basin will be constructed to a depth of approximately 6 feet below grade and backfilled with sand. Based on soil boring data presented in the August 7, 2017 Geotechnical Evaluation report prepared by Braun Intertec and submitted to the MPCA on October 31, 2017, soil underlying the proposed basin areas generally consist of low permeability clay. The three proposed infiltration basin areas, the reuse tank area and footprint of the new Scheels building are shown on the map included in **Attachment 1.**

Areas of Contamination

The August 1, 2017 RAP/CCP summarizes previous investigation data regarding documented soil and groundwater impacts related to "closed" petroleum releases at the former Sears Auto Center. These releases include the following:

- Leak #7093 – the release was related to a 1,000 gallon used oil underground storage tank (UST) located on the west side of the Auto Center which was removed in 1993. Following completion of a limited site investigation (LSI), this release was closed by the MPCA in a letter dated December 22, 1994.
- Leak #16001 – this release was related to three 10,000 gallon fuel oil USTs located east of the Auto Center which were removed in 2004. Following completion of a LSI, this release was closed by the MPCA in a letter dated May 21, 2008.
- Leak #14293 – this release was related to several hydraulic lifts located with the Auto Center which were removed in 2001, Following completion of a LSI, this release was closed by the MPCA in a letter dated July 10, 2002.

Braun Intertec reviewed the removal and LSI reports associated with each of the three closed petroleum releases as well as the additional investigation data generated for the Site in 2016 and 2017 as part of the planned redevelopment activities (see the RAP/CCP). The map included in **Attachment 1** the estimated location and extent of contamination for each release area based on the information reviewed.

Extent of Mounding

During the initial design phase for the project, Braun Intertec recommended that any planned infiltration basins be located a minimum of 100 feet away from the closed petroleum release areas. Subsequently, we conducted mounding analysis following the methods/procedures outlined in Stormwater Infiltration and Groundwater Mounding section of the Minnesota Stormwater Manual. The estimated extent of mounding (assumed to be a height of 0.25 feet) was calculated for each of the three infiltration basins (i.e. BMP #1, BMP #2 and BMP #3) using the USGS calculator. Copies of the calculator output for each basin are included in **Attachment 2**. The following results are summarized as follows:

Infiltration Area	Estimated Extent of Mounding (from edge of infiltration area)*
BMP #1	38 Feet
BMP #2	38 Feet
BMP #3	34 Feet
**Calculated value includes recommended safety factor of 2x).*	

The estimated extents of mounding for each basin were plotted on the map in Attachment 1 to demonstrate the proposed infiltration basins areas should not affect the known areas of contamination. As indicated on the map, all three areas are more than 100 feet from the estimated outside edge of mounding for each basin.

Closing Remarks

Should you have any questions regarding this request, please contact Derek Schilling at 952.995.2674 or Steve Jansen at 952.995.2645.

Sincerely,

Braun Intertec Corporation

Derek M. Schilling, PG
Senior Scientist

Stephen T. Jansen, MS, PG
Principal – Principal Scientist

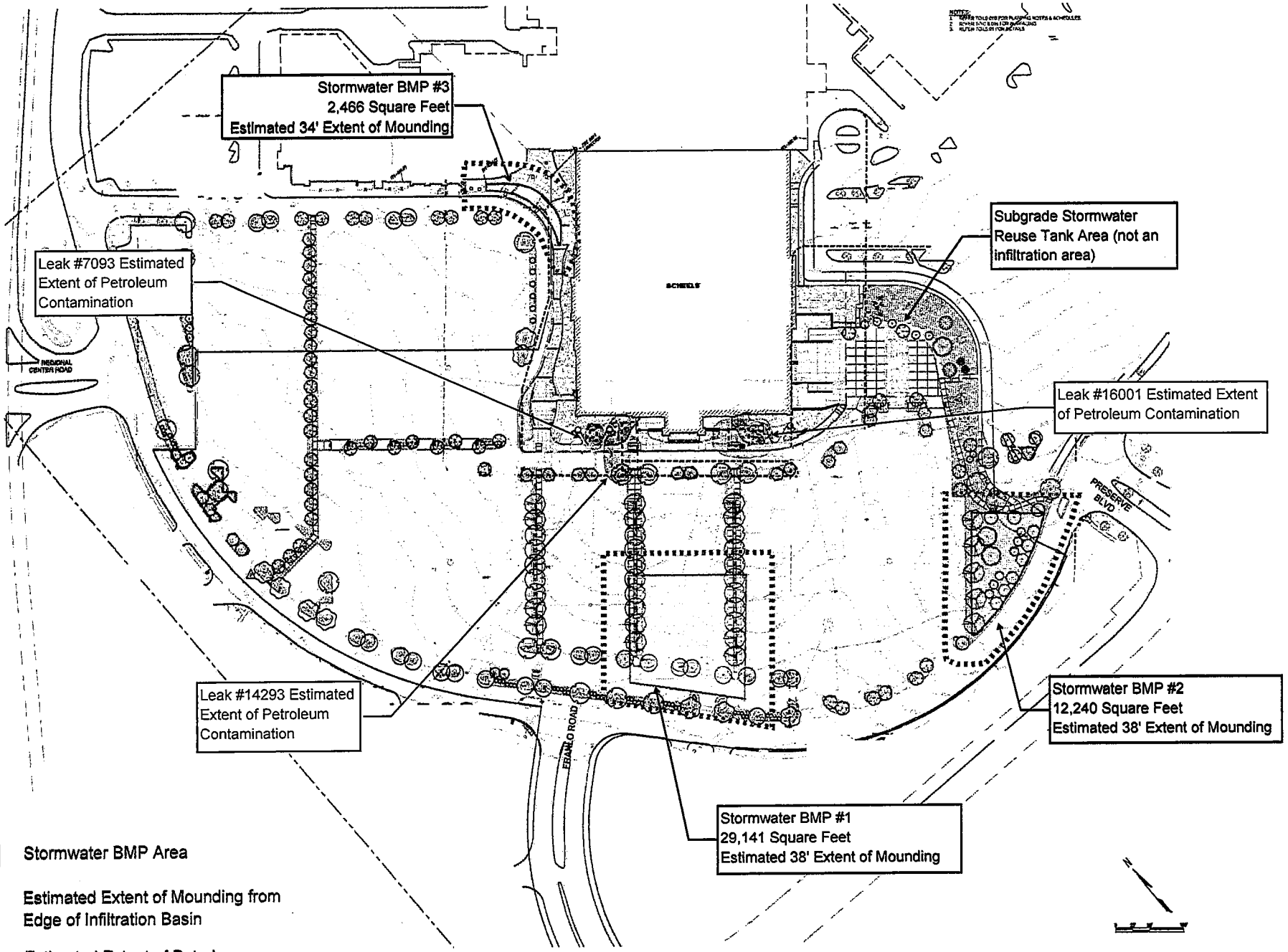
Attachments:

1. Stormwater Infiltration Areas Map
2. Mounding Calculations

c: Kourtney Karvas, Cypress Equities
(Construction Manager for CAPREF Eden Prairie South LLC)
Jim Tiggelaar, LHB

ATTACHMENT 1

STORMWATER INFILTRATION AREAS MAP


Stormwater BMP #3
2,466 Square Feet
Estimated 34' Extent of Mounding
Subgrade Stormwater Reuse Tank Area (not an infiltration area)
Leak #7093 Estimated Extent of Petroleum Contamination
Leak #16001 Estimated Extent of Petroleum Contamination
Leak #14293 Estimated Extent of Petroleum Contamination
Stormwater BMP #2
12,240 Square Feet
Estimated 38' Extent of Mounding
Stormwater BMP #1
29,141 Square Feet
Estimated 38' Extent of Mounding
REGIONAL CENTER ROAD
PRESERVE BLVD
FRANCO ROAD
SCHOOLS
Stormwater BMP Area
Estimated Extent of Mounding from Edge of Infiltration Basin
Estimated Extent of Petroleum Contamination

ATTACHMENT 2

MOUNDING CALCULATIONS

Sears Eden Prairie Center/Proposed Scheels
BMP #1 - Mounding Calculation
Conducted by Braun Intertec

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days or inches & hours)

Input Values		
0.1200	R	Recharge (infiltration) rate (feet/day)
0.100	Sy	Specific yield, Sy (dimensionless, between 0 and 1)
0.57	K	Horizontal hydraulic conductivity, Kh (feet/day)*
80.000	x	1/2 length of basin (x direction, in feet)
80.000	y	1/2 width of basin (y direction, in feet)
2.000	t	duration of infiltration period (days)
20.000	hi(0)	initial thickness of saturated zone (feet)

Conversion Table	
inch/hour	feet/day
0.67	1.33
2.00	4.00

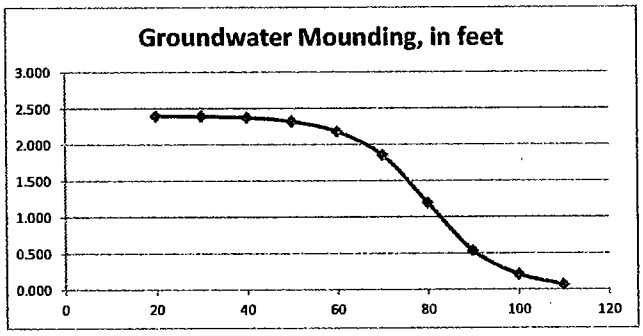
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

h(max)	maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
Δh(max)	maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
	20
	30
	40
	50
	60
	70
	80
	90
	100
	110

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Sears Eden Prairie Center/Proposed Scheels
BMP #2 - Mounding Calculation
Conducted by Braun Intertec

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
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use consistent units (e.g. feet & days or inches & hours)

Input Values		
0.1200	R	Recharge (infiltration) rate (feet/day)
0.100	Sy	Specific yield, Sy (dimensionless, between 0 and 1)
0.57	K	Horizontal hydraulic conductivity, Kh (feet/day)*
52.000	x	1/2 length of basin (x direction, in feet)
90.000	y	1/2 width of basin (y direction, in feet)
2.000	t	duration of infiltration period (days)
20.000	hi(0)	initial thickness of saturated zone (feet)

Conversion Table	
inch/hour	feet/day
0.67	1.33
2.00	4.00

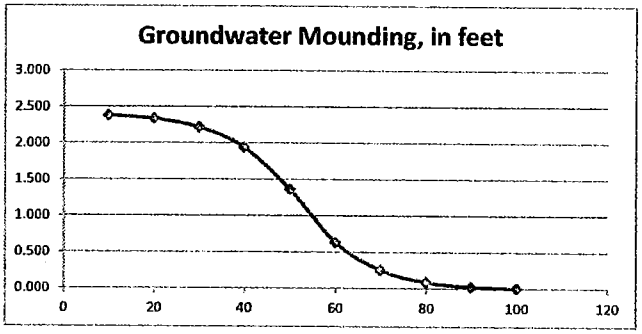
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

[redacted]	h(max)	maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
[redacted]	Δh(max)	maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
[redacted]	10
[redacted]	20
[redacted]	30
[redacted]	40
[redacted]	50
[redacted]	60
[redacted]	70
[redacted]	80
[redacted]	90
[redacted]	100

[redacted] Re-Calculate Now



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This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Sears Eden Prairie Center/Proposed Scheels
BMP #3 - Mounding Calculation
Conducted by Braun Intertec

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days or inches & hours)

Input Values		
0.1200	R	Recharge (infiltration) rate (feet/day)
0.100	Sy	Specific yield, Sy (dimensionless, between 0 and 1)
0.57	K	Horizontal hydraulic conductivity, Kh (feet/day)*
25.000	x	1/2 length of basin (x direction, in feet)
25.000	y	1/2 width of basin (y direction, in feet)
2.000	t	duration of infiltration period (days)
20.000	hi(0)	initial thickness of saturated zone (feet)

Conversion Table	
inch/hour	feet/day
0.67	1.33
2.00	4.00

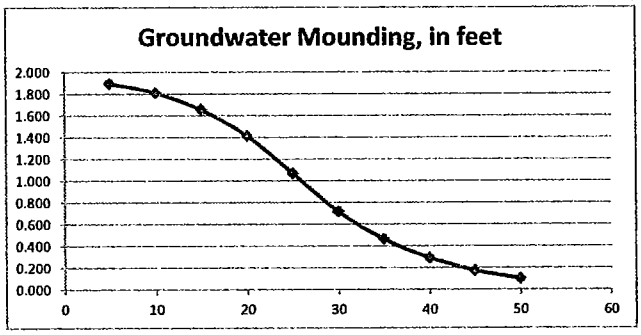
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

[redacted]	h(max)	maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
[redacted]	Δh(max)	maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
[redacted]	5
[redacted]	10
[redacted]	15
[redacted]	20
[redacted]	25
[redacted]	30
[redacted]	35
[redacted]	40
[redacted]	45
[redacted]	50

[redacted] Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

October 13, 2017

Jeff Plauche
CAPREF Eden Prairie South LLC
8333 Douglas Ave Ste 975
Dallas TX 75225-5895

RE: Approval of Response Action Plan and Construction Contingency Plan
Sears Eden Prairie Center, 8301 Flying Cloud Dr, Eden Prairie
MPCA Site ID: BF0000448
Billing ID: 40860
PIN: 1411622420003

Dear Jeff Plauche;

The Minnesota Pollution Control Agency (MPCA) Brownfields staff in the Petroleum Brownfields (PB) and Voluntary Investigation and Cleanup (VIC) programs have reviewed the Response Action Plan (RAP) and Contingency Construction Plan (CCP) submitted for the Sears Eden Prairie Center project, located at the address referenced above (the Site). The RAP/CCP dated August 1, 2017, was prepared and submitted on your behalf by Braun Intertec Corporation.

The Site consists of approximately 18 acres and was agricultural land with limited residential development until a retail Sears store with an associated auto center was constructed in 1974. Sears operated the store and auto center until they vacated the Site in November 2016.

Various 2016 and 2017 investigations included installation of borings and sampling soil and soil vapor from these borings found petroleum and non-petroleum contamination. Groundwater sampling from these borings found significant petroleum contamination but nonpetroleum-related compounds were not encountered. Three petroleum release sites LS0007093, LS0014293 and LS0016001 were previously investigated and closed at the Site.

The proposed development includes demolition of the former Sears Auto Center and a portion of the Sears Retail Building and construction of a two-story sporting goods retail building.

The RAP proposes excavation, segregation and proper disposition of contaminated soil. The CCP outlines procedures for addressing unanticipated issues encountered during site work.
The RAP/CCP is hereby approved, subject to the following conditions:

1. Due to incomplete data a determination regarding soil vapor cannot be made. The MPCA recommends one of the options below:
    a. Further investigation in accordance with the MPCA's Best Management Practices for Vapor Investigation and Building Mitigation Decisions (BMPs) to determine if there is a need for mitigation to prevent vapor intrusion into the proposed building. MPCA recommends a winter sampling event focusing on the former Sears Auto Center area. The MPCA staff strongly recommends submittal of a site map indicating proposed winter soil gas sampling locations prior to conducting sampling; or
    b. Installation of an active vapor mitigation system under the entire new building area, as well as an environmental covenant.

2. A follow-up report consisting of either additional soil vapor sampling data along with a mitigation recommendation, or a RAP Addendum proposing an active vapor mitigation system.

3. Two feet of clean fill as defined in the MPCA Best Management Practices for the Off-site Reuse of Unregulated Fill guidance document is required under paved surfaces, new buildings and under and around utilities.

4. Significant petroleum groundwater contamination is present in the area of utilities at the Site. The MPCA is requesting submittal of Table 18 Utility Receptor Information from MPCA petroleum guidance documents 4-06 of all old and newly constructed utilities with the implementation report.

5. This RAP/CCP approval is contingent on the applicant obtaining all other required state, federal and local government permits.

6. MPCA Brownfield Program staff does not provide review or approval of the discharge and/or treatment of groundwater, stormwater, or any other dewatering action.

An implementation report describing the completed response action activities, sampling results, soil management and disposal, and imported soils shall be prepared and submitted to the MPCA. If the implementation report will not be submitted within one year of the date of this letter, please notify the MPCA project staff of the status of the development. Approval of this plan does not suggest that any of the costs incurred will be eligible for reimbursement from the Petro Board.

This letter is subject to the disclaimers found in Attachment A. If you have any questions about this letter, please contact Amy Miller, Project Manager, at 651-757-2569 or by email at amy.miller@state.mn.us or Jennifer Haas, VIC Hydrologist, at 651-757-2401 or by email at Jennifer.haas@state.mn.us.

Sincerely,

Amy Miller

This document has been electronically signed

Amy Miller
Project Manager
Petroleum Remediation & Redevelopment Section
Remediation Division

Jennifer Haas

This document has been electronically signed

Jennifer Haas
Hydrologist 3
Site Remediation & Redevelopment Section
Remediation Division

AM/JH:ah

Enclosure

ec: John Evans, Contaminated Lands Program, Hennepin County (john.evans@hennepin.us)
Stephen Jansen, Braun Intertec Corporation (sjansen@braunintertec.com)

Attachment A

Disclaimers

Sears Eden Prairie Center

MPCA Site ID: BF0000448

PIN: 1411622420003

1. Reservation of authorities

   The Minnesota Pollution Control Agency (MPCA) Commissioner reserves the authority to take any appropriate actions with respect to any release, threatened release, or other conditions at the Site. The MPCA Commissioner also reserves the authority to take such actions if the voluntary party does not proceed in the manner described in this letter or if actions taken or omitted by the voluntary party with respect to the Site contribute to any release or threatened release, or create an imminent and substantial danger to public health and welfare.

2. No MPCA assumption of liability

   The MPCA, its Commissioner and staff do not assume any liability for any release, threatened release or other conditions at the Site or for any actions taken or omitted by the voluntary party with regard to the release, threatened release, or other conditions at the Site, whether the actions taken or omitted are in accordance with this letter or otherwise.

3. Letter based on current information

   All statements, conclusions and representations in this letter are based upon information known to the MPCA Commissioner and staff at the time this letter was issued. The MPCA Commissioner and staff reserve the authority to modify or rescind any such statement, conclusion or representation and to take any appropriate action under his authority if the MPCA Commissioner or staff acquires information after issuance of this letter that provides a basis for such modification or action.

4. Disclaimer regarding use or development of the property

   The MPCA, it's Commissioner and staff do not warrant that the Site is suitable or appropriate for any particular use.

5. Disclaimer regarding investigative or response action at the property

   Nothing in this letter is intended to authorize any response action under Minn. Stat. § 115B.17, subd. 12.

6. This approval does not supplant any applicable state or local stormwater permits, ordinances, or other regulatory documents.

RILEY
PURGATORY
BLUFF CREEK
WATERSHED DISTRICT

18681 Lake Drive East
Chanhassen, MN 55317
952-607-6512
www.rpbcwd.org

Friday, March 30, 2018

Re: Agenda items 8 (h,I,j)

Dear Managers,

Item H: Approve and authorize administrator to enter into agreement with Wenck Associates for Alum Plans and Specification for Lotus and Rice Marsh Lake proposal

In 2016 and 2017, the District identified through the UAA studies in-lake phosphorus control for both Lotus Lake and Rive Marsh Lake. Lotus Lake and Rice Marsh Lake feasibilities have both been completed and identified alum dosing requirements. The task order attached is for both plan and specification to implement internal control for both of these lakes. Budget for both Lotus and Rice Marsh Lake Alum were identified in the 2018 Budget.

Staff recommends that the board approve and authorizes administrator to enter into an agreement with Wenck Associates for the Lotus and Rice Marsh Lake proposal.

Item I: Approve and Authorize administrator to enter into agreement with Wenck Associates for Hyland Lake alum dose and cost estimate proposal.

In 2017, The District identified through the Hyland Lake UAA the need to do an in-lake phosphorus load control. The District identified in the Draft 2018 Plan doing the feasibility study for this project. The proposal that is included in this packet is the feasibility for Hyland Lake and falls within the District's 2018 Budget.

Staff recommends that the board approves and authorizes the administrator to enter into an agreement with Wenck Associates for the Hyland Lake alum dose and cost estimate proposal.

Item J: Award Chanhassen High School Reuse Project to Peterson Company pending the City of Chanhassen executing Cooperative agreement with Engineer's recommendation.

Pending approval from the City and partnership dollars for $100,000, this project is within budget and staff recommends the board award the project to Peterson Company with engineer's recommendation.

Sincerely,
Claire

WENCK

Responsive partner.
Exceptional outcomes.

March 24, 2018

Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek Watershed District
18681 Lake Dr E
Chanhassen, MN 55317

RE: Proposal for Alum Plans and Specification for Lotus and Rice Marsh Lake

Dear Claire:

Thank you for the opportunity to continue to provide our services to Riley Purgatory Bluff Creek Watershed District (District). As requested, Wenck Associates, Inc. (Wenck) has prepared this proposal to assist the District in developing plans and specifications for alum applications on Lotus Lake and Rice Marsh Lake.

Wenck's initial alum dosing study in Rice Marsh Lake found that most of the phosphorus responsible for internal loading is contained within labile organic matter (labile organic P). This is unusual since lakes with high internal loading typically have phosphorus associated with iron (iron-bound P). In our 2016 study, we used a regression model (James and Bischoff 2014) to develop the alum doses to keep costs low. However, this regression model was built using lake sediments that are dominated by iron-bound P, not labile organic P. Wenck recommends that we update the dose to include the labile P fraction using literature data.

Wenck recommends bidding the two alum application projects as one project. This approach provides significant cost savings since only one set of plans and specs need to be developed, the projects will be completed back to back, and completing follow up monitoring together. This proposal only addresses plans and specifications, observation and follow up monitoring for the prescribed initial dose. Future alum doses will require an additional proposal.

Following is a scope of work for implementing alum treatments on Lotus Lake and Rice Marsh Lake.

SCOPE OF WORK

Task 1. Update the Alum Dose for Rice Marsh Lake.

The first step in the process is to develop a final dose for Rice Marsh Lake that includes the labile P fraction that dominates sediment phosphorus in Rice Marsh Lake. Wenck will review the literature to develop a reasonable dose for Rice Marsh Lake aimed at controlling long-term sediment phosphorus release from the labile organic fraction of sediments.

Task 2. Development of alum application specifications and bid documents.

The next step in completing an alum application on Rice Marsh Lake and Lotus Lake is to develop the application specifications and bid documents. Wenck will develop the final alum dosing specifications and bid documents for Rice Marsh Lake and Lotus Lake based on the results of the updated alum dose completed in Task 1. Wenck will use these results with input from the District to develop specifications for the alum application that include application rates, locations, timing, equipment requirements, staging and any other necessary information. Wenck recently completed specifications and bid documents for the Lake Riley alum treatment which can be used as a basis for these specifications.

Task 3. Permitting.

Currently, alum applications in Minnesota do not require a permit from either the Minnesota Pollution Control Agency (MPCA) or the Minnesota DNR. However, the MPCA does request a letter outlining the details of the project for their review. Wenck will develop the letter to the MPCA and answer any questions the MPCA may have for the project. Wenck will also document the letter and response from the MPCA.

Task 4. Project bidding, contractor selection and contractor management.

Wenck has years of experience implementing a design through plans, specifications, and other construction documents. We also realize that a project will not be successful without proper execution in the field that can be backed up with accurate documentation. The Project Engineer will coordinate all project specification, bidding and application activities. An outline of the tasks is provided below:

- Bidding assistance – pre-bid meetings, bid analysis, and contractor recommendation
- Contract administration – notice of award and review of contracts, insurance, and bonds
- Contract management – meetings and contractor coordination
- Project oversight and documentation – daily notes, photographs, and record plans
- Project QA/QC testing – water quality monitoring

Task 5. Application observation and monitoring.

The alum application on Lotus Lake and Rice Marsh Lake will likely be conducted back to back in the Fall of 2018 and take approximately 7 to 10 days. Wenck will be on-site during the initial set-up at both locations and early application period for both application events. For subsequent days, Wenck will check in with the contractor, review notes, answer questions, and review water quality data to ensure progress. Wenck will also provide a written monitoring protocol to District staff and the contractor if more detailed water quality monitoring is necessary.

Task 6. Follow Up Sediment Monitoring Following Initial Alum Applications

Wenck proposes to conduct follow-up monitoring of sediment conditions approximately one-year after the final dose alum treatment of Lotus Lake and Rice Marsh Lake that includes collecting sediment cores for the analysis of sediment redox-P profiles, total Al profiles, and sediment P release. These data will be used to confirm that the desired conditions were achieved with the alum treatment.

Lotus Lake

Wenck recommends collecting sediment cores from the four original locations and measuring sediment chemistry (redox and labile P, metals, and physical characteristics) and sediment phosphorus release. This approach not only evaluates effectiveness of the first alum treatment, but also provides valuable information for potentially adjusting the second application.

Rice Marsh Lake

Wenck recommends collecting sediment cores from the three original locations and measuring sediment chemistry (redox and labile P, metals, and physical characteristics) and sediment phosphorus release. This approach not only evaluates effectiveness of the first alum treatment, but also provides valuable information for potentially adjusting the second application.

BUDGET AND TIMELINE

Wenck will not exceed the authorized budget of $77,514 for the scope of services described above. If additional work outside this scope is requested by the District, Wenck will provide an additional quote at that time.

Table 1. Cost estimate for developing a laboratory derived alum dose in Rice Marsh Lake.

	Task	Wenck Associates	Laboratory and Direct Costs	Total Cost
1	Update alum dose for Rice Marsh Lake	$3,112	$0	$3,112
2	Development of alum application specifications and bid documents	$7,190	$0	$7,190
3	Permitting	$1,428	$0	$1,428
4	Bidding, contractor selection and management	$7,486	$1,000	$8,486
5	Application observation and monitoring	$7,800	$250	$8,050
6	Follow up monitoring for Rice Marsh Lake	$1,930	$13,122	$15,052
7	Follow up monitoring for Lotus Lake	$1,930	$17,342	$19,272
8	Summarize follow up monitoring and recommendations	$3,624	$0	$3,624
9	Meetings and Project Management	$3,152	$0	$3,152
	TOTAL	$37,652	$31,714	$69,366

[a]This time includes equipment costs, which include mileage and coring equipment.

Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek
Watershed District
3/24/2018

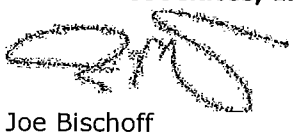
Table 2. Proposed timeline.

Task	Completion Date
Update alum dose for Rice Marsh Lake	May 2018
Development of alum application specifications and bid documents	June 2018
Permitting	June 2018
Bidding, contractor selection and management	July 2018
Application observation and monitoring	September/October 2018
Follow up monitoring for Rice Marsh Lake	Summer 2019
Follow up monitoring for Lotus Lake	Summer 2019

On behalf of the 300+ employee-owners of Wenck, thank you for this opportunity to work with the Riley Purgatory Bluff Creek Watershed District. Should you have any questions, or need clarification of anything presented in the attached proposal, please do not hesitate to call me at 763-252-6829.

Sincerely,

Wenck Associates, Inc.



Joe Bischoff
Principal, Aquatic Ecologist
763-252-6829
jbischoff@wenck.com

REFERENCES

James W.F. and Bischoff J.M. 2015. Relationships between redox-sensitive phosphorus concentrations in sediment and the aluminum:phosphorus binding ratio. Lake and Reservoir Management. 31(4): 339-346.

Wenck Associates. 2017. Rice Marsh Alum Dosing. Technical Memorandum.

Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek
Watershed District
3/24/2018

Notice to Proceed

Signature of this memo represents a notice to proceed on the work described herein as a task order under the master services agreement signed between Wenck Associates, Inc. and the Riley Purgatory Bluff Creek Watershed District in April, 2018.

Riley Purgatory Bluff Creek Watershed District:	Wenck Associates, Inc.
By:_____	By:_____
Printed Name: _____	Printed Name: _____
Title:_____	Title:_____
Date:_____	Date:_____

WENCK
ASSOCIATES

Responsive partner.
Exceptional outcomes.

March 24, 2018

Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek Watershed District
18681 Lake Drive East
Chanhassen, MN 55317

RE: Hyland Lake alum dose and cost estimates

Dear Claire:

Thank you for the opportunity to continue to provide our services to Riley Purgatory Bluff Creek Watershed District (District). As requested, Wenck Associates, Inc. (Wenck) has prepared this proposal to assist the District in developing a cost estimates for calculating an aluminum sulfate (alum) dose for Hyland Lake. We appreciate the opportunity to provide you with this proposed scope of services and look forward to assisting you with this project.

The scope of services described below will be completed by Wenck.

Task 1. Collect sediment cores from Hyland Lake

Wenck will collect intact sediment cores from Hyland Lake to estimate sediment chemistry vertical profiles for alum dosage cost estimates. Sediment cores will be collected from three locations on Hyland Lake (Figure 1). Cores will be transported to the University of Wisconsin-Stout for sediment chemistry analysis. Wenck is assuming that core collection will occur with at least one District staff person's assistance.

Task 2. Laboratory sediment analysis

The intact sediment cores will be analyzed at UW-Stout. For Hyland Lake, all sediment cores will be sectioned every one cm from 0 to 6 cm, every two cm from 6 to 10 cm, and every 2.5 cm from 10 to 20 cm to determine vertical profiles of phosphorous fractionation, organic matter content, bulk density, and total metal concentration. Additionally, sediment cores from two locations will be incubated to measure anoxic release rates (Anoxic RR) in deeper portions of the lake (Figure 1).

Task 3. Reporting and Cost estimate analysis

The final step includes developing the laboratory report and summary memo of the analytical results. This memo will include sediment chemistry results and detailed cost estimates for alum applications on Hyland Lake.

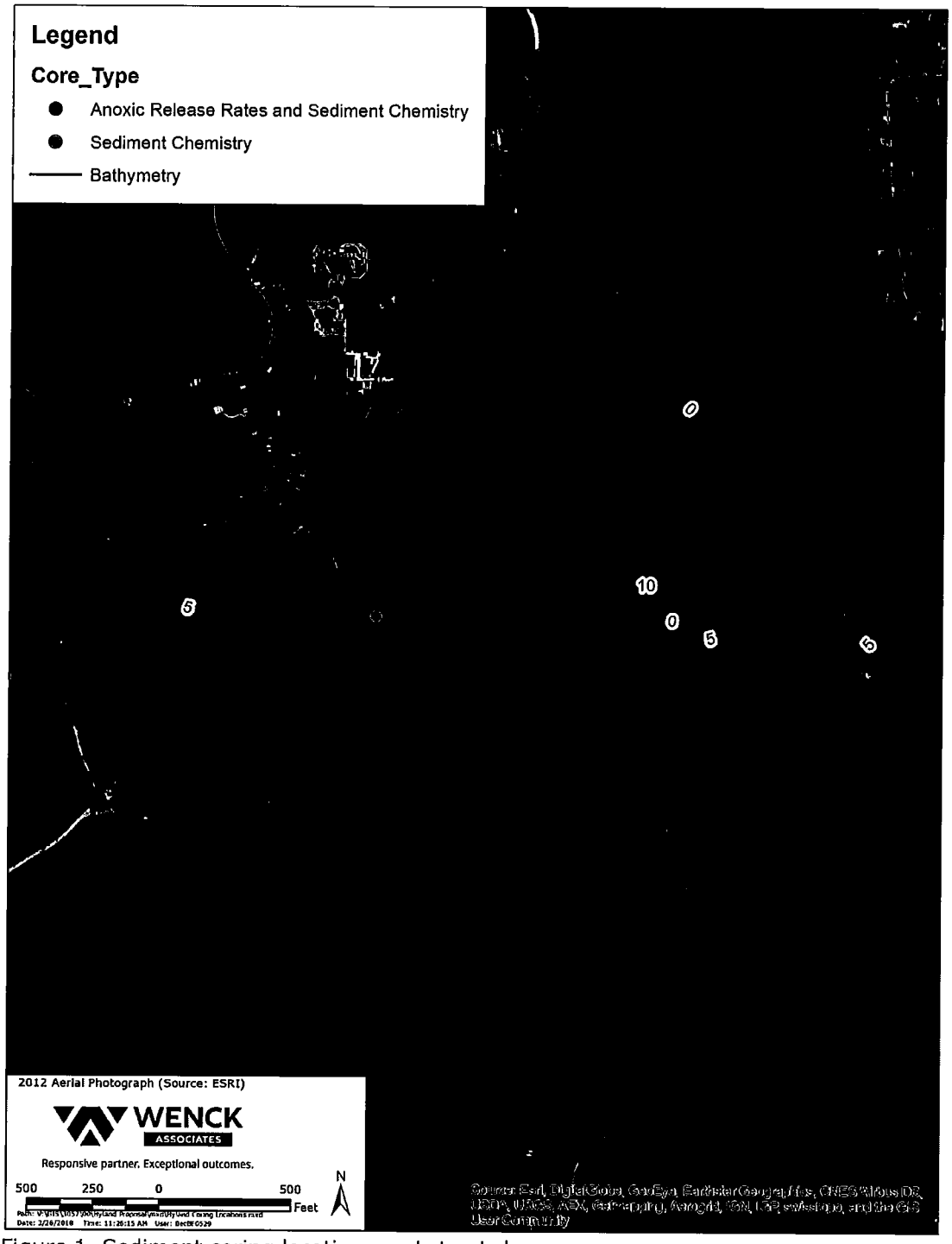


Figure 1. Sediment coring locations on Lotus Lake

Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek
Watershed District
06/23/2017

Schedule and Costs

All of the tasks will be completed by the end of September 2018 contingent upon the ability to schedule core collection. Cores will be collected in May or June with lab results expected in July or August. Wenck will not exceed the authorized budget of $19,212 for the scope of services described above. If additional work outside this scope is requested by the District, Wenck will provide an additional quote at that time.

Table 1. Proposed costs for Hyland Lake alum dosing.

	Task	Wenck Associates	Laboratory Costs	Total Cost
1	Sediment Coring	$1,930	$400	$2,330
2	Laboratory Sediment Analysis	$128	$12,736	$12,864
3	Reporting	$4,018	$0	$4,018
	Cost Total	$6,076	$13,136	**$19,212**

On behalf of the 300+ employee-owners of Wenck, thank you for this opportunity to work with the Riley Purgatory Bluff Creek Watershed District. Should you have any questions, or need clarification of anything presented in the attached proposal, please do not hesitate to call me at 763-252-6829.

Sincerely,

Wenck Associates, Inc.

Joe Bischoff
Principal, Aquatic Ecologist
763-252-6829
jbischoff@wenck.com

Wenck Associates, Inc.

Brian Beck
Water Resource Scientist
763-252-6943
bbeck@wenck.com

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Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek
Watershed District
06/23/2017

Riley Purgatory Bluff Creek Watershed District:	Wenck Associates, Inc.
By:_____	By:_____
Printed Name: _____	Printed Name: _____
Title:_____	Title:_____
Date:_____	Date:_____

WENCK
ASSOCIATES

Responsive partner.
Exceptional outcomes.

March 24, 2018

Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek Watershed District
18681 Lake Drive East
Chanhassen, MN 55317

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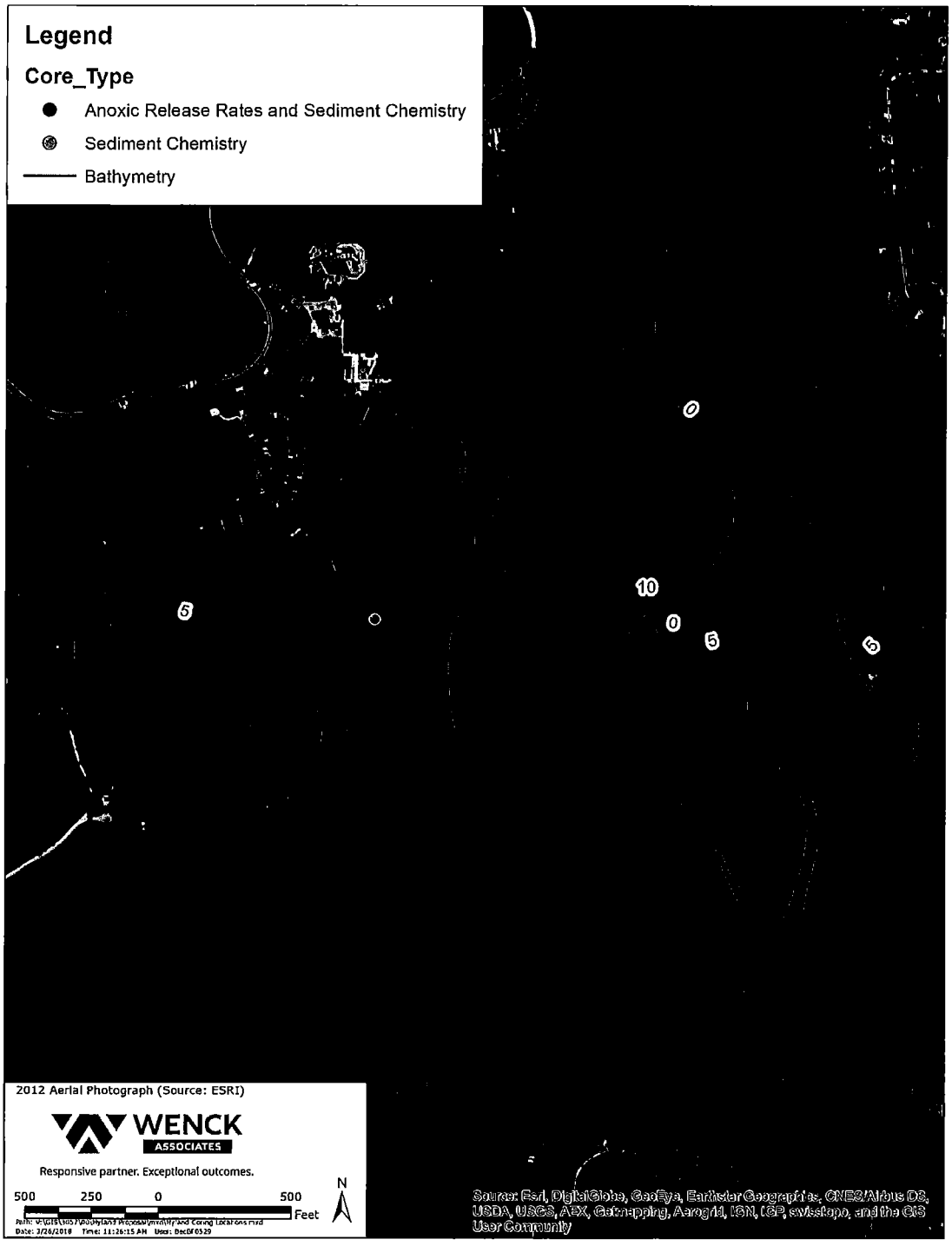
Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek
Watershed District
06/23/2017



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Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek
Watershed District
06/23/2017

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Sincerely,

Wenck Associates, Inc.

Joe Bischoff
Principal, Aquatic Ecologist
763-252-6829
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Notice to Proceed

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Dr. Claire Bleser
District Administrator
Riley Purgatory Bluff Creek
Watershed District
06/23/2017

Riley Purgatory Bluff Creek Watershed District:	Wenck Associates, Inc.
By:_____	By:_____
Printed Name: _____	Printed Name: _____
Title:_____	Title:_____
Date:_____	Date:_____

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Riley-Purgatory-Bluff Creek Watershed District Board of Managers
From: Jen Koehler and Scott Sobiech, Barr Engineering
Subject: Chanhassen High School Stormwater Reuse Project – Recommendation to Award Project
Project: 23/27-0053.14 019
c: Claire Bleser – RPBCWD Administrator

In 2016, the RPBCWD completed a feasibility study for the reuse for stormwater from an existing stormwater pond at the Chanhassen High School site. The project proposes to draw stormwater from an existing stormwater pond on site and use in an existing irrigation system that irrigates the site's athletic fields and select landscaped areas around the school. The goal of this project is to reduce runoff volumes and pollutant loads to Bluff Creek, an impaired water, located immediately downstream from the site. In October 2016, RPBCWD staff secured a $200,000 stormwater management grant from the Metropolitan Council. In October 2016, the RPBCWD Board of Managers authorized final design and preparation of construction documents for the reuse system recommended in the feasibility study.

The project was originally bid in May 2017; however, all bids came in extremely high and the project was not awarded. At the February 2018 board meeting, the RPBCWD Board of Managers authorized Barr Engineering to solicit bids for a second time. Following the Board's authorization, an advertisement for bid was circulated in local publications and on Quest Construction Data Network (CDN). Barr Engineering facilitated an optional pre-bid meeting on March 9, 2018 which was attended by one contractor (two representatives). Bids were opened on March 20, 2018 at Barr Engineering's office. Two bids were received and are listed below in Table 1.

Table 1. Summary of Bids Received for the Chanhassen High School Stormwater Reuse Project

Bidder	Total Base Bid Entered on the Bid Form[1]
Peterson Companies	$275,736.24
Urban Companies	$342,646.11

[1]Engineer's opinion of probable cost was $220,000.

After bid verification, Peterson Companies was the lowest responsive bidder.

In response to the proposed value engineering discussion following the 2017 bidding and at the request by ISD112 staff in early 2018 to include several alternatives to the treatment shelter, there were three bid alternates included in the current bid package.

Bid Alternate A included radio communications instead of the Irrigation Control Wires - Direct Bury (low voltage) through the Magellan easement to the existing irrigation controls/box. The following is a summary of the impact of selection of this bid alternate.

Base bid: $275,736.24

Total with Bid Alternate A: $278,352.49 (no cost savings, not recommended)

Bid Alternate B included a pre-engineered metal building system for the water treatment shelter (instead of a wood framed building). The following is a summary of the impact of selection of this bid alternate.

Base bid: $275,736.24

Total with Bid Alternate B: $291,396.24 (increase in cost by $15,660)

Bid Alternate C included a concrete masonry unit for the water treatment shelter (instead of a wood framed building). The following is a summary of the impact of selection of this bid alternate.

Base bid: $275,736.24

Total with Bid Alternate C: $291,690.24 (increase in cost by $15,954)

It is recommended that the RPBCWD Board of Managers:

- **Award the project to Peterson Companies at the bid price of $275,736.24, which does not include selection of any alternate bid items.**
- **We also recommend authorizing the President or administrator to sign the Notice of Award, execute the contracts, and sign the Notice to Proceed at the appropriate points in the contracting process, pending execution of the cooperative agreement with the City of Chanhassen and ISD112.**
- **We also recommend authorizing the administrator to execute change orders within 10% of the contract amount.**
- **If the ISD112 agrees to cover the difference in cost for selection of any of the bid alternates, we recommend the board authorize the President or administrator to incorporate the selected alternate into the contract documents.**

If the Board of Managers decides to award the project the following would be completed:

- An Authorized Representative signs the Notice of Award to be sent to the successful bidder
- Successful bidder provides the following information:
    - Fully-executed Notice of Award
    - Three fully-executed counterparts of the Form of Agreement
    - Performance and Payment Bond
    - Certificate of Insurance and all other insurance documentation identified in the Contract Documents
- Barr Engineering will coordinate with the successful bidder regarding the construction schedule
- April 2018 – Board issues Notice to Proceed
- Construction Commences – June 18, 2018 after school is out for the summer (or 10 days after the Notice to Proceed, whichever is later)
- Substantial Completion – within 6 weeks after Construction Commences
- Construction Complete – August 17, 2018

Minutes: Monday, March 19, 2018

RPBCWD Citizen's Advisory Committee Monthly Meeting

Location: RPBCWD offices: 18681 Lake Street, Chanhassen

CAC Members

Jim Boettcher	P	Curt Kobilarcsik	E	Marilynn Torkelson	P
Paul Bulger	P	Matt Lindon	P	Lori Tritz	P
Anne Deuring	P	Sharon McCotter	P	David Ziegler	P
Peter Iverson	E	Joan Palmquist	P		

Others

Michelle Jordan	District Liaison	P
Dorothy Pederson	RPBCWD Board Member	P

Summary of key actions/motions for the Board of Managers:
The CAC established two new subcommittees to better align with our 2018 focus areas: **Chloride Reduction** (Matt Lindon) and **Wetlands** (Lori Tritz and Marilynn Torkelson).

I. Opening

A. Call CAC Meeting to Order: President Ziegler called the meeting to order at 6:01 p.m.

B. Attendance: As noted above

C. Matters of general public interest: None

D. Approval of Agenda: Joan moved and Lori seconded to add a recap of the March 15 Public Hearing and Board of Managers meeting. Motion carried.

E. Approval of February 26, 2018 CAC Meeting Minutes: Jim Boettcher moved and Paul Bulger seconded to approve minutes. Motion carried.

II. Old Business

A. February Orientation Follow-up. For our general interest, Michelle handed out transcribed results of our activity from last month during which we responded to questions: Why are you here?, What do you hope to get out of your experience?, and What are your ideas for what the CAC could accomplish this year?

B. Report from 10-Year Plan Public Hearing and Board of Managers Meeting: Two people made comments at the Public Hearing on the 10-Year Plan. One supported the plan and encouraged the Board to make progress. The second encouraged the Board to include SMART goals and suggested reviewing the schedule of projects every 3 years so that as technology, staff, and trends change, the plan can flex and adapt. The Board asked that the CAC remind them in 3 years to review the plan. Beginning with the implementation of this 10-year plan, each district project at the outset gets a score card. The CAC wants to review the scorecards in April – June (after annual report and before budgeting).

C. Update on 10-Year Plan Process and Timeline: Michelle explained the comments from the Public Meeting are currently being reviewed and addressed. The revised version will go to the Board of Managers who will decide whether or not to send it to the April meeting of BWSR (Board of Water and Soil resources). BWSR and other agencies will have 90 days to review it. There is a movement afoot (One Watershed One Plan) to redesign how available monies are distributed, based on benefits to the entire Minnesota watershed, rather than grant requests, made by individual watersheds and giftedness of staff

(http://www.bwsr.state.mn.us/planning/1W1P/1W1P_Guiding_Principles.pdf). See Addendum. Claire has been meeting with the "Local Government Roundtable" on this issue.

D. Review of 2018 Priorities:

1. 10-Year Plan implementation: We will continue to be involved.
2. Ground Water conservation and reuse: We have a dedicated subcommittee.
3. Wetlands: We established a subcommittee to align with wetlands including Lori Tritz and Marilynn Torkelson. WHEP (Wetland Health Evaluation Program) is a great resource. The 10-Year Plan does stipulate the development of a wetland inventory.
4. Chloride Reduction: We established a subcommittee to align with chloride reduction including Matt Lindon. We can all continue to speak out when we see opportunities and promote, lower salt use, city water softening or more advanced in home softeners rather than using older, salt intensive, in-home softening systems.
5. Creek restoration: We want to stay on top of this issue, but don't feel a subcommittee is necessary because of the well defined CRAS (Creek Restoration Action Strategy). Additionally, the proposed rule change, Channel Diversion, will likely have the greatest affect on creek restoration. Cities that have reviewed this rule change have been concerned about the additional maintenance required of the smaller, 2-year aperture required. There will be a workshop dedicated to the Channel Diversion rule change before the next Board of Managers meeting at 5:30 pm.
6. 50th Anniversary planning: We will await Michelle's lead and support events as they arise.
7. E&O: Education and Outreach is a major part of all of our activities and should not be a separate priority. To be removed.
8. Scenic Heights: We will continue to support the Scenic Heights project, but it does not need us to make it a priority. To be removed.

Michelle will place the 6 remaining 2018 Priorities on the website under the CAC description.

III. New Business

A. Interface with other CACs: We have had contact with two CACs that may potentially desire mentoring, the Coon Creek WD and Prior Lake/Spring Lake WD. David will contact the administrators to understand better how we can assist or reciprocate. Michele suggested, if appropriate, the June 20-21 event would be a good opportunity to have a meet-up. Dorothy Pederson reminded us that she left a CD with CAC inventory data. 9-Mile WD would also be a good partner.

B. Website Update: Michelle handed around the most recent update of website. The goal is to have it live by the end of June. She hopes to have final mockup for CAC to review at May meeting.

C. Landscaping for Water Quality: As a member of WildOnes Chapter, Marilynn taught an Eden Prairie Adult Ed class on Landscaping for Water Quality. 10 people attended Marilynn's class. It went well, with good questions. She handed out info on cost share. Marilynn will send us her slides and present to us next month. Looking forward to it!

D. Updates from subcommittees as available

1. **Storm Drains**: Sharon met with the Silver Lake Association. They are well informed and onboard. They made a plan for stenciling and maintaining storm drains beginning nearest the lake and then moving upland. The next meeting is April 10. Discussion ensued about the effectiveness of stenciling. It is purely an education and awareness tool. And the very temporariness of it enhances the effectiveness, in that every time

the stenciling needs renewing another group is educated. Michelle explained the background of Adopt-a-Drain and CleanWaterMinnesota. Sharon will work with Deirdre Coleman from the Fresh Water Society to help build a temporary database of drain assignments until the city is mapped to the larger Adopt-a-drain.org program.

2. **Ground Water:** Paul said there is lot of confusion about what is the District's role in protecting groundwater. We could help define that.
3. **Silt Sock**: Anne reported that she is moving forward with a new product, EZ flow mats, for total storm drain hygiene that is ten times as expensive as the silt sock. She will meet with the City of Minnetonka to get approval. Dorothy suggested using the mats on her, privately owned, street. Paul suggested using our education budget to acquire 5 of the mats for education purposes. Anne will do the preliminary testing, then apply for a cost share grant to continue the work on a wider basis.
4. **Speaker's Bureau:** Joan is going to record Michelle's presentation to add to our stable of presentations. The resource from Rochester is coming through. We have gathered a lot of materials. We have enough to work with. Yay!
5. **Update on status of Sustainability Class:** Lori thanked us for all the input on her presentation. The link is live on Conservation Minnesota website: https://www.conservationminnesota.org/event/eden-prairie-beginners-guide-to-sustainability-water/ Let Lori know if you want to be involved. Michelle will make sure it gets on the website.

IV. Looking Ahead and Adjournment

A. 2018 April 15 CAC agenda items

1. State of the Water Update (David)
2. Interface with other CACs
3. Summary of Channel Diversion workshop
4. Lori's presentation: Beginners Guide to Sustainability
5. Marilynn's presentation: Landscaping for Water and Quality of Wildlife
6. (May agenda: Final Website mockup)

B. Upcoming events

1. Turf Maintenance Workshop, March 22, 9:00 am, 18681 Lake Drive East
2. Fresh Water Society 2018 State of Water Conference, April 11 - 14
3. RPBCWD Board of Managers Workshop (5:30 pm) and meeting (7:00 pm), April 4 at, 18681 Lake Drive East
4. RPBCWD CAC meeting April 16 at 6:00 pm, 18681 Lake Drive East
5. Beginners Guide to Sustainability: April 14, 21, 28, May 5 (1:00 to 3:00 pm, 565 Prairie Center Dr)
6. Table-ing Opportunity: April 7 Animal Open House. Noon to 4:00 Let Michelle know if you can help. (Let Michelle know if you hear of other good tabling events.)
7. Eden Prairie, Arbor Day Walk and Green Fair, April 28, 10:00 am to noon.
8. Wetland Walk - May 19 with Zach and Terry, Details to be determined.
9. Turf to Fescues Workshop with Carver WMO and 9-Mile Creek WD, June 25 (Chanhassen Library) and July 12 (further east) 6:30 to 8:00

C. Adjourn CAC meeting:

1. Joan moved and Paul seconded to adjourn. Motion carried. Meeting adjourned at 8:13 pm.

Addendum: One Watershed, One Plan Guiding Principles
December 18, 2013

Vision: BWSR's vision for One Watershed, One Plan is to align local water planning on major watershed boundaries with state strategies towards prioritized, targeted and measurable implementation plans – the next logical step in the evolution of water planning in Minnesota.

Purpose: The purpose of this document is to further outline the One Watershed, One Plan vision through providing the guiding principles that will direct and influence the program's future policies and procedures.

One Watershed, One Plan will result in plans with prioritized, targeted, and measurable implementation actions that meet or exceed current water plan content standards. One Watershed, One Plan will set standards for plan content that will be consistent with or exceed the plan approval standards currently in place for local water plans. Most existing water management plans contain adequate inventories of resources and assessment of issues. One Watershed, One Plan will build from this point, with an expanded focus on prioritized, targeted, and measureable implementation of restoration and protection activities. The intent is for these future water plans to use existing plans, local knowledge and other studies and planning documents—including Watershed Restoration and Protection Strategies developed through the Minnesota Pollution Control Agency—to establish plans with clear implementation timelines, milestones, and cost estimates that will address the largest threats and provide the greatest environmental benefit unique to each watershed.

One Watershed, One Plan is not an effort to change local governance. Local governments have been at the forefront of water management dating back to 1937 with the formation of the State's first soil and water conservation district. One Watershed, One Plan is intended to utilize the existing structures of counties, soil and water conservation districts, watershed districts and Metropolitan watershed management organizations by increasing collaboration and cooperation across political boundaries.

One Watershed, One Plan will strive for a systematic, watershed-wide, science-based approach to watershed management; driven by the participating local governments. It is important for all communities to take part in managing their watersheds through goal setting, monitoring, restoring and protecting water resources and local habitats and ensuring a good quality of life for all who live, work, and recreate in those spaces. A decided "bottom up" approach for water management—allowing the key discussions of major water resource issues, concerns, problems, goals and objectives and potential solutions to originate and be first fully vetted at the stakeholder level—is envisioned. Expanding involvement and collaboration at the ground-level creates greater buy-in and support at all levels of government.

One Watershed, One Plan will use the state's delineated major watersheds (8-digit hydrologic unit codes or HUC8) as the starting point for defining the preferred scale for local watershed management planning. The Local Government Water Roundtable (LGWR), a collaboration between the Association of Minnesota Counties, the Minnesota Association of Watershed Districts, and the Minnesota Association of Soil and Water Conservation Districts, determined it is in the public interest to manage ground and surface water resources from the perspective of watersheds and aquifers and to achieve protection, preservation, enhancement, and restoration of the state's valuable water

resources. This determination is consistent with the state's water management policy, furthered through legislation passed in 2012 that provided BWSR with: the authority to develop and implement a comprehensive watershed management plan approach and to establish a suggested watershed boundary framework for implementing this planning approach. One Watershed, One Plan will transform the current system of water plans, largely organized on political boundaries, to one where plans are coordinated and consolidated largely on a watershed basis.

One Watershed, One Plan must involve a broad range of stakeholders to ensure an integrated approach to watershed management. The underlying principle of watershed management is that people, land, and water are connected. People use land in a variety of ways, and affect ecosystems and ultimately their own communities for better or worse. Managing and protecting the environment while providing a high quality of life for people is a complex process that is most successful when governing bodies, community members, and experts in various fields are true partners in the planning process. One Watershed, One Plan envisions an approach that will pull parties together in every aspect of the water arena in a way that goes beyond the interests of any one government agency or stakeholder and in a way that has never been done before.

Plans developed within One Watershed, One Plan should embrace the concept of multiple benefits in the development and prioritization of implementation strategies and actions. Prioritized, multi-benefit projects provide benefits to more than one group or interest and address more than one environmental resource within a watershed. These types of projects are necessary to build the support of citizens and agencies, achieve water quality and quantity goals, and produce the environmental goods and benefits that a healthy watershed provides. Examples of multiple benefits might include a combination of any of the following: flood control, water quality benefits, ecological benefits, administrative efficiencies, economic benefits, or others. Identification of and action on multi-benefit projects should be a priority in One Watershed, One Plan strategies and actions.

One Watershed, One Plan implementation will be accomplished through formal agreements among participating local governments on how to manage and operate the watershed. Decision-making that spans political boundaries is essential to fully implement watershed management and achieve established goals for the watershed; therefore, formal agreements outlining the means and method for this decision-making are also essential.

One Watershed, One Plan planning and implementation efforts will recognize local commitment and contribution. History shows us that when local water management programs and projects rely almost entirely on outside funding, they are unable to sustain themselves over time. Locally supported and funded technical, administration, support, and outreach actives that leverage funding from the State will be key to ensuring sustainable local government capabilities and long-term success on both the local level and watershed scale.

One Watershed, One Plan is not intended to be a one size fits all model. One Watershed, One Plan must recognize that our local governments charged with water management are just as diverse as the water resources and landscapes that we have in the State. As such, the One Watershed, One Plan policies and procedures guided by this principle will be designed to provide options for local governments to choose from that can account for these differences while at the same time move forward in achieving the transition to comprehensive watershed management plans that blanket the State.

REDPATH
AND COMPANY

March 27, 2018

Claire Bleser
District Administrator
Riley Purgatory Bluff Creek Watershed District
18681 Lake Drive E.
Chanhassen, Minnesota 55317

Dear Claire:

Enclosed please find the checks and Treasurer's Report for Riley Purgatory Bluff Creek Watershed District for the one month and two months ending February 28, 2018.

Please examine these statements and if you have any questions or need additional copies, please call me.

Sincerely,

REDPATH AND COMPANY, LTD.

Mark C. Gibbs, CPA
Enclosure

REDPATH
AND COMPANY

To The Board of Managers
Riley Purgatory Bluff Creek Watershed District
18681 Lake Drive E.
Chanhassen, Minnesota 55317

Accountant's Opinion

The Riley Purgatory Bluff Creek Watershed District is responsible for the accompanying February 28, 2018 Treasurer's Report in the prescribed form. We have performed a compilation engagement in accordance with the Statements on Standards for Accounting and Review promulgated by the Accounting and Review Services Committee of AICPA. We did not audit or review the Treasurer's Report nor were we required to perform any procedures to verify the accuracy or completeness of the information provided by the Riley Purgatory Bluff Creek Watershed District. Accordingly, we do not express an opinion, a conclusion, nor provide any form of assurance on the Treasurer's Report.

Reporting Process

The Treasurer's Report is presented in a prescribed form mandated by the Board of Managers and is not intended to be a presentation in accordance with accounting principles generally accepted in the United States of America. The reason the Board of Managers mandates a prescribed form instead of GAAP (Generally Accepted Accounting Principles) is this format gives the Board of Managers the financial information they need to make informed decisions as to the finances of the watershed.

GAAP basis reports would require certain reporting formats, adjustments to accrual basis and supplementary schedules to give the Board of Managers information they need, making GAAP reporting on a monthly basis extremely cost prohibitive. An independent auditing firm is retained each year to perform a full audit and issue an audited GAAP basis report. This annual report is submitted to the Minnesota State Auditor, as required by Statute, and to the Board of Water and Soil Resources.

The Treasurer's Report is presented on a modified accrual basis of accounting. Expenditures are accounted for when incurred. For example, payments listed on the Cash Disbursements report are included as expenses in the Treasurer's Report even though the actual payment is made subsequently. Revenues are accounted for on a cash basis and only reflected in the month received.

Redpath and Company, Ltd.

REDPATH AND COMPANY, LTD.
St. Paul, Minnesota
March 27

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

Treasurers Report

February 28, 2018

REPORT INDEX

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
Cash Disbursements
February 28, 2018

Accounts Payable:

Check #	Payee	Amount
4367V	Richard Chadwick - VOID	($287.75)
4405	Barr Engineering	51,887.71
4406	Carver County	150.00
4407	CenterPoint Energy	561.36
4408	CenturyLink	458.81
4409	Richard Chadwick	267.75
4410	Coverall of the Twin Cities	213.68
4411	Jill S. Crafton	243.87
4412	Critical Connections Ecological Service	450.00
4413	Dell Five Business Park G-I	7,353.70
4414	Dunn & Semington, LLC	4,895.85
4415	ECM Publishers, Inc.	424.80
4416	Freshwater Society	135.00
4417	HealthPartners	3,269.52
4418	Iron Mountain	39.95
4419	JMSC Futurity, PLLC	975.00
4420	Limnotech	9,577.49
4421	Lincoln National Life Insurance	386.35
4422	Metro Sales, Inc.	406.23
4423	Metropolitan Council	389.00
4424	ProTech	220.00
4425	Purchase Power	575.59
4426	Regents of the University of Minnesota	9,657.01
4427	RMB Environmental Laboratories	3,316.00
4428	Smith Parners	16,527.74
4429	Southwest News Media	338.10
4430	SpeeDee Delivery Service	236.24
4431	Spring Garden Fair	25.00
4432	SRF	312.54
4433	Wenck, Inc.	2,407.10
4434	Xcel Energy	636.68
	Total Accounts Payable:	**$116,050.32**

Payroll Disbursements:

	Payroll Processing Fee	168.72
	Employee Salaries	27,550.05
	Employer Payroll Taxes	2,156.68
	Employee Benefit Deductions	(396.26)
	Staff Expense Reimbursements	291.13
	PERA Match	1,964.68
	Total Payroll Disbursements:	**$31,735.00**
EFT	Banks Fees - Klein Bank	10.00
EFT	Klien Bank - VISA	4,387.02
EFT	Deluxe Business Products	26.73
TOTAL DISBURSEMENTS:		**$152,209.07**

Memos

The 2018 mileage rate is 54.5 per mile. The 2017 rate was .53.5.
Klein Bank VISA will be paid on-line.

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
Fund Performance Analysis - Table 1
February 28, 2018

	2018 Budget	Current Month	Year-to-Date	Year-to Date Percent of Budget
REVENUES				
Plan Implementation Levy	$3,420,000.00	-	-	0.00%
Permit	20,000.00	-	1,500.00	7.50%
Grant Income	373,175.00	-	-	0.00%
Data Collection Income	-	-	-	---
Other Income	-	-	11,645.00	---
Investment Income	-	403.70	696.20	---
Past Levies	1,736,968.00	-	-	0.00%
Partner Funds	445,000.00	-	-	0.00%
TOTAL REVENUE	$5,995,143.00	$403.70	$13,841.20	0.23%
EXPENDITURES				
Administration				
Accounting and Audit	40,000.00	1,293.72	1,895.34	4.74%
Advisory Committees	4,000.00	135.00	286.20	7.16%
Insurance and bonds	12,000.00	-	-	0.00%
Engineering Services	103,000.00	7,866.00	15,336.00	14.89%
Legal Services	75,000.00	2,262.31	6,084.57	8.11%
Manager Per Diem/Expense	19,000.00	223.87	493.87	2.60%
Dues and Publications	8,000.00	-	7,590.00	94.88%
Office Cost	100,000.00	10,816.86	22,237.02	22.24%
Permit Review and Inspection	90,000.00	13,472.93	32,610.12	36.23%
Recording Services	15,000.00	-	1,476.00	9.84%
Staff Cost	434,000.00	35,222.15	67,683.14	15.60%
Subtotal	$900,000.00	$71,292.84	$155,692.26	17.30%
Programs and Projects				
District Wide				
10-year Management Plan	9,662.00	7,337.41	13,114.51	135.73%
AIS Inspection and early response	75,000.00	-	-	0.00%
Cost-share	200,000.00	238.00	238.00	0.12%
Creek Restoration Action Strategies Phase	20,000.00	-	-	0.00%
Data Collection and Monitoring	180,000.00	15,177.89	18,938.38	10.52%
District Wide Floodplain Evaluation - Atlas 14/SMM model	30,000.00	-	-	0.00%
Education and Outreach	115,000.00	10,400.65	17,222.60	14.98%
Plant Restoration - U of M	40,000.00	9,657.01	9,657.01	24.14%
Repair and Maintenance Fund *	177,005.00	-	-	0.00%
Survey and Analysis Fund *	13,092.00	-	-	0.00%
Wetland Management*	150,000.00	450.00	450.00	0.30%
District Groundwater Assessment	-	-	166.38	---
Groundwater Conservation*	130,000.00	-	-	0.00%
Lake Vegetation Implementation	75,000.00	-	-	0.00%
Opportunity Project*	100,000.00	-	-	0.00%
TMDL - MPCA	10,000.00	-	-	0.00%
Subtotal	$1,324,759.00	$43,260.96	$59,786.88	4.51%
Bluff Creek				
Bluff Creek Tributary*	236,741.00	2,984.00	10,160.00	4.29%
Chanhassen High School *	282,478.00	12,286.49	17,348.49	6.14%
Subtotal	$519,219.00	$15,270.49	$27,508.49	5.30%
Riley Creek				
Lake Riley - Alum Treatment*	22,424.00	1,844.10	17,423.96	77.70%
Lake Susan Improvement Phase 1 *	7,106.00	-	-	0.00%
Lake Susan Water Quality Improvement Phase 2 *	353,365.00	5,871.70	43,813.38	12.40%
Rice Marsh Lake in-lake phosphorus load	150,000.00	-	-	0.00%
Riley Creek Restoration (Reach E and D3) *	1,427,987.00	8,080.90	29,447.40	2.06%
Subtotal	$1,960,882.00	$15,796.70	$90,684.74	4.62%
Purgatory Creek				
Fire Station 2 (Eden Prairie)	100,262.00	312.54	312.54	0.31%
Purgatory Creek Rec Area- Berm/retention area - feasibility/design	50,000.00	-	-	0.00%
Lotus Lake in-lake phosphorus load control	345,000.00	563.00	22,376.26	6.49%
Lotus Lake - Feasability Phase 1	18,802.00	-	-	0.00%
Purgatory Creek at 101*	246,259.00	-	-	0.00%
Silver Lake Restoration - Feasibility Phase 1	11,003.00	3,645.50	7,597.50	69.05%
Scenic Heights	208,957.00	2,067.04	1,010.62	0.48%
Hyland Lake in-lake phosphorus load control	20,000.00	-	-	0.00%
Duck Lake watershed load	220,000.00	-	-	0.00%
Subtotal	$1,220,283.00	$6,588.08	$31,296.92	2.56%
Reserve	$100,000.00			0.00%
TOTAL EXPENDITURE	$6,025,143.00	$152,209.07	$364,969.29	6.06%
EXCESS REVENUES OVER (UNDER) EXPENDITURES	($30,000.00)	($151,805.37)	($351,128.09)	

*Denotes Multi-Year Project - See Table 2 for details

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
Muti-Year Project Performance Analysis - Table 2
Februry 28, 2018

Programs and Projects	Total Project	FUNDING SOURCE			Month Ended 02/28/18	Year To-Date	Lifetime Costs	Remaining
		District funds	Partner Fund	Grants				
District Wide								
10-year Management Plan	187,000.00	187,000.00	-	-	7,337.41	13,114.51	190,452.60	(3,452.60)
District Wide Floodplain Evaluation - Atlas 14/SMM model	30,000.00	30,000.00	-	-	-	-	-	30,000.00
Repair and Maintenance Fund	202,005.00	177,005.00	-	-	-	-	25,000.00	177,005.00
Survey and Analysis Fund	37,257.00	37,257.00	-	-	-	-	23,792.63	13,464.37
Wetland Management	150,000.00	150,000.00	-	-	450.00	450.00	450.00	149,550.00
Groundwater Conservation	130,000.00	130,000.00	-	-	-	-	-	130,000.00
Opportunity Project*	100,000.00	100,000.00	-	-	-	-	-	100,000.00
Subtotal	$836,262.00	$811,262.00	$0.00	$0.00	$7,787.41	$13,564.51	$239,695.23	596,566.77
Bluff Creek								
Bluff Creek Tributary*	292,362.00	242,362.00	50,000.00	-	2,984.00	10,160.00	64,781.46	227,580.54
Chanhassen High School *	368,000.00	118,000.00	50,000.00	200,000.00	12,286.49	17,348.49	127,870.36	240,129.64
Subtotal	$660,362.00	$360,362.00	$100,000.00	$200,000.00	$15,270.49	$27,508.49	$192,651.82	$467,710.18
Riley Creek								
Lake Riley - Alum Treatment 1st dose *	260,000.00	260,000.00	-	-	1,844.10	17,423.95	254,999.82	5,000.18
Lake Susan Improvement Phase 1 *	275,000.00	275,000.00	-	-	-	-	267,894.28	7,105.72
Lake Susan Water Quality Improvement Phase 2 *	513,400.00	230,000.00	50,000.00	233,400.00	5,871.70	43,813.38	153,847.80	359,552.20
Rice Marsh Lake in-lake phosphorus load	150,000.00	150,000.00	-	-		-	-	150,000.00
Riley Creek Restoration (Reach E and D3) *	1,565,000.00	1,265,000.00	300,000.00	-	8,080.90	29,447.40	90,673.00	1,474,327.00
Subtotal	$2,763,400.00	$2,180,000.00	$350,000.00	$233,400.00	$15,796.70	$90,684.73	$767,414.90	$1,995,985.10
Purgatory Creek								
Fire Station 2 (Eden Prairie)	139,287.00	20,000.00	20,000.00	99,287.00	312.54	312.54	19,337.90	119,949.10
Purgatory Creek Rec Area- Berm/retention area - feasibility/design	50,000.00	50,000.00	-	-	-	-	-	50,000.00
Lotus Lake in-lake phosphorus load control	345,000.00	345,000.00	-	-	563.00	22,376.26	22,376.26	322,623.74
Purgatory Creek at 101*	661,094.00	661,094.00	-	-	-	-	414,835.60	246,258.40
Scenic Heights	260,000.00	165,000.00	45,000.00	50,000.00	2,067.04	1,010.62	52,053.56	207,946.44
Duck Lake watershed load	220,000.00	220,000.00			-	-	-	220,000.00
Subtotal	$1,675,381.00	$1,461,094.00	$65,000.00	$149,287.00	$2,942.58	$23,699.42	$508,603.32	$1,166,777.68
Total Multi-Year Project Costs	$5,935,405.00	$4,812,718.00	$515,000.00	$582,687.00	$41,797.18	$155,457.15	$1,708,365.27	$4,227,039.73

See Accountants Compilation Report

Riley Purgatory Bluff Creek Watershed District
Balance Sheet
As of February 28, 2018

ASSETS

Current Assets

General Checking-Klein	$803,617.49	
Checking-Klein/BMW	1,383,101.52	
Investments-FMV	109.79	
Investments-Standing Cash	6,119.47	
Investments-Wells Fargo	2,470,019.11	
Accrued Investment Interest	8,670.64	
Accounts Receivable	3,250.00	
Taxes Receivable-Delinquent	17,622.16	
Pre-Paid Expense	38,906.63	
Security Deposits	9,744.00	
Total Current Assets:		**$4,741,160.81**

LIABILITIES AND CAPITAL

Current Liabilities

Accounts Payable	$299,088.20	
Retainage Payable	13,469.38	
Salaries Payable	15,129.68	
FICA/Medicare	(240.88)	
PERA Payable	0.08	
HSA Contributions-Employee	(1,050.00)	
Permits & Sureties Payable	704,352.00	
Deferred Revenue	17,622.16	
Unavailable Revenue	143,389.16	
Total Current Liabilities:		**$1,191,759.78**

Capital

Fund Balance-General	$3,086,853.86	
Fund Balance-Default	813,675.28	
Net Income	(351,128.10)	
Total Capital		**$3,549,401.04**
Total Liabilities & Capital		**$4,741,160.82**

RILEY PURGTORY BLUFF CREEK WATERSHED DISTRICT
Klein Bank VISA Activity
February 28, 2018

DATE	PURCHASED FROM	AMOUNT	DESCRIPTION	ACCOUNT #	RECEIPT
02/06/18	Kowalski's	63.45	Board Meeting Expense	10-00-4010	Y
02/07/18	Kowalski's	31.31	Board Meeting Expense	10-00-4010	Y
02/07/18	Kowalski's	29.85	Board Meeting Expense	10-00-4010	Y
02/12/18	USPS	135.00	Turf Maintenance Training	10-00-4280	Y
02/15/18	EMI Audio	188.16	Microphone for Board Room	10-00-4205	Y
02/16/18	Anderson Meat	75.13	Meeting with Finalist	10-00-4205	Y
02/22/18	Cub	29.44	Office Supplies	10-00-4205	Y
02/22/18	Office Depot	145.31	Office Supplies	10-00-4200	Y
02/22/18	CenturyLink	384.28	Office Internet	10-00-4240	Y
02/22/18	Freshwater Society	135.00	Road Salt Symposium Registration	10-00-4800	Y
		$1,216.93	**General Administration Total**		
02/07/18	Nothing Bundt Cake	54.00	CAC/Board Meet & Greet	20-08-4260	Y
02/08/18	SuperAmerica	77.33	Gas for Vehicle	20-05-4322	Y
02/13/18	SuperAmerica	62.17	Gas for Vehicle	20-05-4322	Y
02/13/18	Home Depot	81.56	E & O Canoe Supplies	20-08-4260	Y
02/13/18	Dan's Southside Marine	51.29	Boat Repair	20-05-4650	Y
02/31/18	Bruegger's Bagels	34.77	Riley Summit Meeting Food	20-02-4205	Y
02/13/18	Lakewinds	13.36	Master Water Steward Meeting	20-08-4275	Y
02/13/18	Normark Corporation	74.60	Data Collection Field Supplies	20-05-4650	Y
02/22/18	Facebook	82.12	Campaigns	20-08-4275	Y
02/22/18	Bachman's	11.29	Grass Seed for E & O	20-08-4275	Y
		$542.49	**Bluff Creek Total**		
		$1,759.42	**GRAND TOTAL**		

RESOLUTION 2018-002

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
BOARD OF MANAGERS

RESOLUTION ORDERING SUBMISSION OF WATER MANAGEMENT PLAN FOR FINAL REVIEW

Manager _____ offered the following Resolution and moved its adoption, seconded by Manager _____:

WHEREAS Riley Purgatory Bluff Creek Watershed District is responsible for the preparation of a watershed management plan for the Riley Purgatory Bluff Creek watershed pursuant to Minnesota Statutes section 103B.231, subdivision 3; and

WHEREAS in accordance with Minnesota Statutes section 103B.231 and Minnesota Rules chapter 8410, beginning in early 2015 the District solicited input for a 10-year update of its watershed plan from watershed residents and other stakeholders, state agencies with jurisdiction over water resources, and counties and municipalities with jurisdiction in the Riley Purgatory Bluff Creek watershed to ensure that current issues in watershed management were identified prior to preparing the update;

WHEREAS the District, relying on and informed by the input received, prepared a watershed management plan, entitled "Riley Purgatory Bluff Creek Watershed District: Planning for the Next Ten Years 2018-2027" (hereinafter "the Plan") in accordance with Minnesota Statutes sections 103B.201 through 103B.255, chapter 103D and Minnesota Rules 8410.0050 through 8410.0150 to set forth the goals, policies, programs and projects the District would adopt and implement to fulfill its statutory role;

WHEREAS the District submitted a draft of the Plan to local, regional and state governmental organizations for review and comment in accordance with Minnesota Statutes section 103B.231, subdivision 7, and the District analyzed the comments and revised the plan in consideration thereof;

WHEREAS the District held a duly noticed public hearing on the Plan, in accordance with Minnesota Statutes section 103B.231, subdivision 7(c), on March 15, 2018, and duly considered the comments made at the public hearing;

WHEREAS the Board of Managers finds that the District has completed the required process to update its 10-year Plan, and that the Plan fairly reflects nearly three years of engagement in the planning process with watershed residents, communities, and agencies and will serve as a sound document to guide the management of the Riley Purgatory Bluff Creek Watershed in the next ten years;

NOW THEREFORE BE IT RESOLVED that the Board of Managers of the Riley Purgatory Bluff Creek Watershed District hereby approves the Riley Purgatory Bluff Creek Watershed District: Planning for the Next Ten Years 2018-2027 for final review in accordance with Minnesota Statutes section 103B.231, subdivision 9; and

BE IT FURTHER RESOLVED that the Board of Managers directs the administrator to send the draft plan, any amendments to the plan, all written comments received on the draft plan, a record of the public hearing, and a summary of changes incorporated as a result of the review process to the Metropolitan Council, the state review agencies, and the Board of Water and Soil Resources for final review.

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

	Yea	Nay	Absent
CHADWICK	☐	☐	☐
CRAFTON	☐	☐	☐
PEDERSON	☐	☐	☐
WARD	☐	☐	☐
YETKA	☐	☐	☐

Upon vote, the chair declared the resolution adopted.

Richard Chadwick, Secretary Dated: _____, 2018

* * * * * * * * * * * *

I, Richard Chadwick, secretary of the Riley Purgatory Bluff Creek Watershed District, do hereby certify that I have compared the above resolution with the original thereof as the same appears of record and on file with the District and find the same to be a true and correct transcript thereof.

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2018.

Richard Chadwick, Secretary

Plan_Final ReviewDraft_2017Plan_2-2-18_REDLINE_SP_nts_2-17-18.docx

Main document changes and comments

Page 1: Deleted	**Scott Sobiech**	**2/2/2018 9:18:00 AM**

60-Day

Page 1: Inserted	**Scott Sobiech**	**2/2/2018 9:18:00 AM**

Final

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60-Day

Page 1: Inserted	**Scott Sobiech**	**2/2/2018 9:18:00 AM**

Final

Page 1: Deleted	**Scott Sobiech**	**2/2/2018 9:18:00 AM**

November 1, 2017

Page 1: Inserted	**Scott Sobiech**	**2/2/2018 9:18:00 AM**

February 2, 2018

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60-Day

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Final

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November 1, 2017

Page 2: Inserted	**Scott Sobiech**	**2/2/2018 9:18:00 AM**

February 2, 2018

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60-Day

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Final

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November 1, 2017

Page i: Inserted	Scott Sobiech	2/2/2018 9:18:00 AM

February 2, 2018

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Pollution

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Pollutant

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Generally the plan should be careful to distinguish between "RPBCWD"/"the District" (the organization) and "the watershed" (the geographic area) in text throughout.

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e

Page xii: Inserted	Michael Welch	2/14/2018 8:08:00 PM

i

Page xii: Deleted	Michael Welch	2/14/2018 3:47:00 PM

s

Page xiii: Inserted	Scott Sobiech	2/2/2018 12:47:00 PM

Updated page 3 of executive summary as follows:

Revised the inform public arrow to only be going one way to inform public

Revised Goal 3 to read "Design, maintain, and implement Education and Outreach programs to educate the community and engage them in the work of protecting, managing, and restoring water resources."

Page xiii: Inserted	Michael Welch	2/14/2018 8:09:00 PM

Needs to have:

A. the purpose of RPBCWD;
B. a map of the watershed;
C. the primary issues addressed in the plan;
D. the main goals in the plan;
E. the major actions in the plan; and
F. the responsibilities of local governments related to implementation of the plan including any changes in responsibilities from the previous plan.

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MinneWatershed

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Minnesota Watershed Act of 1955

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Law

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chapters

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chapter

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are included in

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contribute to

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governance

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work

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ADDED FIGURE NUMBER

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County Soil and Water Conservation District

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French (France)

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Did you know?
The stormwater pipes and facilities are typically owned and maintained by the property owner or government unit responsible for installing it.

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added Figure number and revised MnDNR description

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(later known as the 2011 Water Management Plan)

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s section

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.231

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phosphorous

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phosphorus

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(2011 Water Management Plan).

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phosphorous

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phosphorus

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to be known later as the 2011 Water Management Plan.

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chapter

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chapter

Page 2-3: Inserted	Michael Welch	2/18/2018 12:21:00 PM

chapter

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2015

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2014

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or

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and

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This is vague in comparison with regulatory-implementation framework statements elsewhere in the plan.

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These are topic statements without indication of the commentor's perspective. I.e., did comments want buffer requirements to be promoted and enforced, or just note that promotion and enforcement of buffer requirements is an issue?

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as

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pollutants

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pollutants

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has

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the following

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Isn't it rather that RPBCWD will, by adopting this plan, adopt the goals in this section, or have the goals already been separately adopted and this section simply incorporates them into the plan?

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Water Resources

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for

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to

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Add Sentence about not in priority

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protect, manage

1.

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educate the community

1.

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restore

1.

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engage them in the work of protecting, managing, and restoring

1.

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S

1.

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are

Admin S1.

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provide water-resource protection equivalent to or better than

Admin S1.

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consistent with

Admin S1.

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exercise of

Admin S1.

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protect, manage

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educate the community

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restore

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engage them in the work of protecting, managing, and restoring

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projects

Reg S1.

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proposed land-disturbing activity and ensuring, through issuance of permits,

Reg S1.

Page 3-7: Commented [TJ6]	Terry Jeffery	2/19/2018 5:48:00 PM

What abot ground and surface water appropriation

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for

Reg S1.

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and permit

Reg S1.

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WQual S1.

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by implementing the District's capital improvement, incentive and regulatory programs.

WQual S1.

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capital improvement,

WQual S1.

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-managed

WQual S1.

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(e.g., water reuse)

Ground S1.

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(e.g., water reuse)

Ground S1.

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the two watershed counties (which have statutory authority to develop groundwater-management plans) and

Ground S1.

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WQuan S1. The District will investigate alternatives to infiltration practices to promote volume reduction in areas not conducive to standard infiltration BMPs.

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It would be helpful to have a brief description/definition early on here of the scope of "projects" that will be included. Is it just for capital projects?

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Rainfall[1]

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Snowmelt[2]

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T--60 Earth Dams and Reservoirs (NRCS)

1

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2

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Figure 5-5 shows the delineated wellhead protection areas within the RPBCWD. This diagram illustrates that the WHP areas cover the entire District and that the most of the WHP areas for each city is overlapping.

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s section

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8

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6

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Figure 5-7 Revisions to ditch description in legend

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Spanish (Guatemala)

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Added WOMP monitoring locations to Figure 5-8

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chapter

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chapter

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The TMDL analysis include target goals for water quality improvement. A Watershed Restoration and Protection Strategy (WRAPS) is currently underway and is expected to be completed in 2018. The WRAPS includes information from the TMDL. The study monitors, analyses the data and develops strategies to restore and protect the water resources. The study also identifies partners who would be responsible in restoration efforts.

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Minn.

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MN

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Minn.

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MN Rule

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Minn. Rules

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Updated Figure 5-9 to reflect MPCA 2018 Draft Impaired Waters

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in this Plan,

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on

Page 5-37: Commented [MW8]	Michael Welch	2/17/2018 11:37:00 AM

Needs to include information on high-priority areas for wetlands preservation, enhancement, restoration and establishment. (Parallel/restate text a la suggestions already provided to Terry for subsection 9.5.2.3.)

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Statutes

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Stat. §

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1.1

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Practices

1.1

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Programs

1.1

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on selecting projects

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Table 9-1

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Sections 9.1 and 9.2

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Added footnotes to Table 6-2 indicating 2017 dollars and referring reader to Section 4 for description of scores

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Added Project ID to Figure 6-1

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Enhance regulatory program

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by implementing the District's capital improvement, incentive and regulatory programs

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Enhance regulatory program

Page 6-7: Inserted	Scott Sobiech	2/2/2018 9:18:00 AM

capital improvement,

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Enhance regulatory program

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French (France)

Page 6-8: Inserted	Scott Sobiech	2/2/2018 9:18:00 AM

Enhance regulatory program

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on selecting projects

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Table 9-1

Page 7-4: Inserted	Scott Sobiech	2/2/2018 9:18:00 AM

Sections 9.1 and 9.2

Page 7-6: Inserted	Scott Sobiech	2/2/2018 9:18:00 AM

Added footnotes to Table 7-2 indicating 2017 dollars and referring reader to Section 4 for description of scores

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Added Project ID to Figure 7-1

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Enhance regulatory program

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by implementing the District's capital improvement, incentive and regulatory programs.

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Enhance regulatory program

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capital improvement,

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Enhance regulatory program

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Enhance regulatory program

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Implementation Program

1.1

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Programs and Projects

1.1

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(see

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on selecting

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Selected

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projects

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Table 9-1

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Sections 9.1 and 9.2

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Added footnotes to Table 8-2 indicating 2017 dollars and referring reader to Section 4 for description of scores

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Added Project ID to Figure 8-1

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In addition, three opportunity projects were identified in the Downtown Chanhassen BMP Retrofit Assessment Findings Report (Barr Engineering Co., 2017)

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, including a stormwater reuse system for downtown Chanhassen, West Village rain gardens and tree trenches at Chanhassen Cinema.

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Enhance regulatory program

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by implementing the District's capital improvement, incentive and regulatory programs.

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Enhance regulatory program

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capital improvement,

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Enhance regulatory program

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Enhance regulatory program

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possible

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Right?

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The overarching district-wide outcomes of implementing this plan over the next 10 years will be:

- 41,000 linear feet of streambank, shoreline, ravine and slope stabilization
- 3,200 pounds of phosphorus reduction per year
- 11 acres of habitat restored
- 4.1 million gallons of groundwater conserved per year

Ten (10) annual reports summarizing the following items:

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Are the annual reports meant to satisfy the biennial implementation progress evaluation required by 8410.0105, subp. 1?

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-
    - Budget
    - Capital Improvement Program
    - Data Collection
    - Education and Outreach

Regulatory

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Added footnotes: 1. For more information on the scoring details and multiple benefits see Tables 6-2, 7-2, and 8-2.

2. Estimated levy presented in 2017 dollars. The District levied funds for some multi-year projects before 2018.

3. Estimated costs are from UAA studies, City information, RPBCWD 2015 Creek Restoration Action Strategy, or other RPBCWD studies, preliminary cost estimates will be added to the 5-year working CIP and refined through the feasibility study process.

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Revised Figure 9-2 to include "develop Action Plan" under unhealthy terrestrial vegetation

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For lakes that are not achieving the goals, the District will work with stakeholders and agencies to develop an action plan and implement projects included in the capital improvement program (see Table 9-1).

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If a project is in the CIP, it should mean RPBCWD has data and analysis in hand indicating a need for the project, and has taken at least some steps to identify elements and resources needed (e.g., land-use rights, partners, funding source) to complete the project. This paragraph states, by contrast, that the CIP includes projects that may or may not be needed, which runs contrary to the earlier statement that RPBCWD has already compiled a wealth of data and conducted solid analysis to improve its understanding of existing conditions and near- and far-term needs.

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futher the District's understanding on

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learn more about

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This suggests that RPBCWD does not now know enough about lake vegetation to have any ecological restoration projects scheduled. That isn't the case is it?

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Again, doesn't RPBCWD already have a lot of information and analysis and partnerships formed to support projects that will address already known and analyzed water quality problems? Table 9-1 indicates it does, but this makes it sound like RPBCWD is just getting started.

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Should "wait" be removed from the graphic to the right? Also, doesn't alum treatment address internal loading?

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The District's implementation plan includes a capital improvement program (CIP) which identifies and describes structural solutions and internal control measures over $100,000 to

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The District's implementation plan includes a capital improvement program (CIP) which identifies and describes structural solutions and internal control measures over $100,000

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Needs discussion. This statement raises questions and creates uncertainty with regard to what's included in the CIP (and what isn't). Does RPBCWD intend to undertake structural projects that are expected to cost less than $100,000 as something other than capital improvements? Does RPBCWD intend not to undertake any structural project that cost less than $100,000? There is no legal basis for determining that a project that costs less than $100,000 'automatically' isn't a capital improvement project. Also, what is an 'internal control measure'? Not clear that internal control measures would necessarily be a capital project.

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to

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Watershed law states that the CIP is "an itemized program for at least a five-year prospective period, and any amendments to it, subject to at least biennial review,

setting forth the schedule, timing, and details of specific contemplated capital improvements by year, together with their estimated cost, the need for each improvement, financial sources, and the financial effect that the improvements will have on the local government unit or watershed management organization." Table 9-1 hews to this definition, and should be confidently presented in text.

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Text here needs to be clarified, But see comment at top of this page on definition of capital improvement.

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policy

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The prior list – other than the ambiguous "local needs" – are not policy considerations, they are correctly cited as feasibility factors assessed in deciding whether to proceed with a project or not.

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collaborative

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collaborations

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the District

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watershed property owners

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included

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are estimates and

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BWSR may require a plan amendment i

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, the District will undertake a minor plan amendment to ensure the plan and CIP reflect the accurate scope of the project

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required

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undertaken

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affecting project feasibility

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efforts are

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remain effective for at least

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or more

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each party's responsibilities, commitments, rights and role

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Such as????

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would be the subject of an

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in Table 9-1

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required to have insurance

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insurance

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, American Water Resources Association)

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, League of Minnesota Cities, etc.)

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RPBCWD is a LMC member by dint of its participation in the league's insurance trust.

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insurance,

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such as

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and follow due process

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in accordance with statutory and regulatory requirements

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land use

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of land-disturbing activities presenting risk of harm to water resources

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and the rule text itself and the Wetland Conservation Act are incorporated herein by reference as the thresholds, standards and criteria for regulatory protection of water resources in the watershed. (WCA is incorporated for purposes of RPBCWD's serving, where requested by the relevant city, as the Local Government Unit

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The District began the process of updating provisions of its rules in parallel with the development of this refreshed management plan. The rulemaking was largely focused on clarifications and process-improvements, though specific policy-driven enhancements and the adoption of an enforcement rule were undertaken as well. More information about the process and outcome of the concurrent rulemaking can be found on the regulatory section of the District's website: www.rpbcwd.org/permits.

In adopting the final revisions to the rules, the RPBCWD Board of Managers will concurrently take the necessary statutory steps to incorporate the revised rules into this plan as an appendix to continue to provide the thresholds, standards and criteria for regulatory protection of water resources in the watershed.

1.1.1

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In adopting the final revisions to the rules, the RPBCWD Board of Managers will concurrently take the necessary statutory steps to incorporate the revised rules into this plan as an appendix to continue to provide the thresholds, standards and criteria for regulatory protection of water resources in the watershed.

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will regularly

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(part 8410.0160)

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agreed upon by the city and district are

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8410.0105, subpart 9, and part

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's decision as to whether it

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to RPBCWD. A city opting to exercise sole regulatory authority itself will also need to

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for the work covered by

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commit to updating its ordinance(s)

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the revised rule

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The RPBCWD will assess the number, location and functions and values of wetlands in the watershed (utilizing and, where necessary, updating existing data and analyses), then will identify specific subwatersheds within which hydrologically integrated wetland systems can be preserved and/or restored. The near-term goal of the wetland program will be the identification of high-priority wetland areas for restoration, enhancement, and preservation . Based upon the identification of these areas, the District may take further action as necessary to ensure that wetlands are protected consistent with WCA and its implementing rules. The District will develop and implement its program in partnership with key stakeholders, with particular focus on working closely with cities to

integrate the District's wetland-protection efforts with their land-use plans and goals. This will

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. One purpose of the wetland program will be the identification of "high-priority area" as defined in MN Rules 8420.0835 and "wetland preservation areas" as defined in MN Rules 8420.040. Based upon the identification of these areas, the District may take further action as necessary to This will ensure that wetlands are protected so that they can

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One purpose of the wetland program will be the identification of "high-priority area" as defined in MN Rules 8420.0835 and "wetland preservation areas" as defined in MN Rules 8420.040. Based upon the identification of these areas, the District may take further action as necessary to

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Modifications to this section provided to TJ 2-13-18.

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capital improvement,

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-management

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and other partners

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and the cost of removing obstructions and accumulations of foreign substances from a drainage system,

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Somewhat contradictory to immediately prior text. Also, RPBCWD will remove obstructions from "drainage systems"?

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TJ has revisions for several subsections within this section.

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s section

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Suggestions for this section have been provided to Terry.

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This was the second-most selected water resource among all choices. With this knowledge, the District acknowledges that the protection of this resource is tremendously important. Among other efforts described elsewhere in this section, the District is willing to partner with and assist local government units (LGU) in their efforts to protect and enhance wetland resources. The District also is willing to assume LGU responsibility for the administration of the Wetland Conservation Act, if desired by a watershed city currently serving such role.

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It's a little odd that this is in the "values" section, but ... not fatal by any stretch.

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With this knowledge, the District acknowledges that the protection of this resource is tremendously important and is willing to assist local government units (LGU) in their efforts to protect and enhance wetland resources, including assumption of LGU responsibility for the administration of the Wetland Conservation Act.

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With this knowledge, the District acknowledges that the protection of this resource is tremendously important and is willing to assist local government units (LGU) in their

efforts to protect and enhance wetland resources, including assumption of LGU responsibility for the administration of the Wetland Conservation Act.

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Suggestions for this section have been provided to Terry.

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Suggestions for this section have been provided to Terry.

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locations, areas, public values, and functions

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These assessments, and additional functional assessments will also be used to identify high-priority

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areas and wetland protection areas as defined in Minnesota Rules 8420.0835 and 8420.0840.

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areas as well as wetland protection areas as defined in MN Rules 8420.035 and 8420.040 respectively.

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areas as well as wetland protection areas as defined in MN Rules 8420.035 and 8420.040 respectively.

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and 103D.341 together support

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section

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Revised Figure 9-6 by replacing "Identify Solutions" with "IDENTIFY, PRIORITIZE, AND IMPLEMENT SOLUTIONS"

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which are intended to support during implementation of this plan

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Sentence doesn't scan, and the version of table 9-1 to which we have access includes only a broad, general groundwater line item.

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– 10-Yr Management Plan Update and Amendments.

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Alternatively, the city may opt in its plan to defer the sole exercise of regulatory authority to the District.

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Address how collaboration with RPBCWD helps cities comply with NPDES MS4 requirements?

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(see Section 9.4.2 for additional discussion)

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Did you know?

The stormwater pipes and facilities are typically owned and maintained by the property owner or government unit responsible for installing it.

Header and footer text box changes

Footnote changes

Endnote changes

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Riley-Purgatory-Bluff Creek Watershed District Board of Managers
From: Katie Wolohan and Scott Sobiech, Barr Engineering
Subject: Lake Susan Park Pond Watershed Treatment and Stormwater Reuse Project – Recommendation to Award Project
Project: 23/27-0053.14 013B
c: Claire Bleser – RPBCWD Administrator

In 2017, RPBCWD completed a feasibility study to improve the water quality in Lake Susan in the City of Chanhassen and for the reuse for stormwater from an existing stormwater pond, Lake Susan Park Pond. The project proposes the following:

- Installation of an iron enhanced sand filter (IESF) to reduce phosphorus loading in Lake Susan
- Installation of a pump-and-treat system to draw stormwater from an existing stormwater pond, Lake Susan Park Pond, for irrigation of the site's ballfield, making use of an existing irrigation system and reducing groundwater demand for irrigation
- Lake Susan Park Pond outlet retrofit to address erosion issues immediately downstream of the pond

In 2015, RPBCWD secured a $233,400 Clean Water Fund grant for a watershed treatment and stormwater reuse project at Lake Susan. In July 2017, the RPBCWD Board of Managers approved authorized final design and preparation of construction documents for the watershed treatment and stormwater reuse system recommended in the feasibility study completed in early 2017.

At the February 2018 board meeting, the RPBCWD Board of Managers authorized Barr Engineering to solicit bids. Following the Board's authorization, an advertisement for bid was circulated in local publications and on Quest Construction Data Network (CDN). Barr Engineering facilitated an optional pre-bid meeting on March 9, 2018 which was attended by one contractor (two representatives). Bids were opened on March 20, 2018 at Barr Engineering's office. Three bids were received and are listed below in Table 1.

Table 1. Summary of Bids Received for the Lake Susan Park Pond Watershed Treatment and Stormwater Reuse Project

Bidder	Total Base Bid Entered on the Bid Form[1]
Peterson Companies	$467,490.69
Urban Companies	$579,355.00
G.F. Jedlicki, Inc.	$652,667.00

[1]Engineer's opinion of probable cost was $392,000.00.

Peterson Companies was the low, responsive bidder. **It is recommended that the RPBCWD Board of Managers award the project to Peterson Companies at the bid price of $467,490.69 and authorize the Board President or Administrator to sign the notice of award, form of agreement, and notice to proceed at the appropriate points in the contracting process. We also recommend that the Board authorize the Administrator to execute change orders not to exceed 10% of the original contract amount.**

If the Board of Managers decides to award the project the following would be completed:

- An Authorized Representative signs the Notice of Award to be sent to the successful bidder
- Successful bidder provides the following information:
    - Fully executed Notice of Award
    - Three fully executed counterparts of the Form of Agreement
    - Performance and Payment Bond
    - Certificate of Insurance and all other insurance documentation identified in the Contract Documents
- Barr Engineering will coordinate with the successful bidder regarding the construction schedule
- May 2018 – Issues Notice to Proceed
- Construction Commences – July 9, 2018 after 4th of July activities in the park (or 10 days after the Notice to Proceed, whichever is later)
- Substantial Completion – within 12 weeks after the July 9th or Notice to Proceed, whichever is later
- Construction Complete – September 2018

RILEY
PURGATORY
BLUFF CREEK
WATERSHED DISTRICT

18681 Lake Drive East
Chanhassen, MN 55317
952-607-6512
www.rpbcwd.org

Matt Clark
City of Chaska
One City Hall Plaza
Chaska, MN 55318

Re: Chaska Local Surface Water Management Plan

Thursday, April 5, 2018

Dear Mr Clark,

Riley-Purgatory-Bluff Creek Watershed District completed its review of the Chaska's Local Surface Water Management Plan (Plan). RPBCWD received and considered the Metropolitan Council's [DATE], 2018, comments in completing its review. RPBCWD's review was conducted pursuant to Minnesota Statutes section 103B.235, subdivision 3. And at its April 4, 2018, meeting the RPBCWD board of managers approved the Plan conditioned on Chaska's revision of the Plan as follows:

- The Capital improvement program (Table 6-1) needs to be extended, by year, through life of the Plan (2028).

The RPBCWD board's conditional approval was premised on reading sections 3.3.7 and 6.9, as well as table 6-2, to authorize RPBCWD's to continue to exercise regulatory authority in Chaska, as provided in Minnesota Statutes section 103B.211, subdivision 1(a)(3)(iii).

The District also recommends that the plan be updated to reflect the findings from the Lower Minnesota River WRAPS when these are finalized.

Sincerely,

Claire Bleser
District Administrator

Technical Pre-Proposal

Assessment and treatment of internal phosphorus loading in stormwater ponds

Principal Investigator: John S. Gulliver
Professor
St. Anthony Falls Laboratory
2 Third Ave. SE
Minneapolis, MN 55414
Phone: (612) 625-4080
Fax: (612) 626-7750
gulli003@umn.edu

I. Proposal Summary

A. Project activities

The proposed project will (i) investigate the internal phosphorus release in five stormwater ponds located in the Riley-Purgatory-Bluff Creek Watershed District (RPCWD) (pre-treatment study), and (ii) implement an iron filings treatment in selected ponds and assess the phosphorus water quality in the ponds (post-treatment study). The pre-treatment study will measure the sediment phosphorus release using laboratory mesocosms of pond sediment-water columns, and monitor the *in situ* water quality in the ponds. If internal loading is substantial in the ponds, the results will be utilized to chemically-inactivate the pond sediment phosphorus using iron filings, and then monitor the water quality in the ponds to assess the treatment effectiveness. The overall goal is to mitigate phosphorus pollution from stormwater ponds, and eventually minimize negative impacts on the downstream water quality.

B. Relevance

The US EPA has listed ~3000 surface water impairments due to excess phosphorus and eutrophication (US EPA 2016). Stormwater ponds are one of the widely implemented stormwater control measures (SCMs) for runoff quantity and quality control in urban areas. In Minnesota, there are over 30,000 stormwater treatment ponds that are used to remove pollutants such as solids, nutrients, metals and hydrocarbons from runoff. There is increasing evidence, however, that some ponds are no longer retaining phosphorus, and have become potential phosphorus sources due to the release of phosphorus from the bottom sediments (i.e., internal phosphorus loading). The Riley-Purgatory-Bluff Creek Watershed District's multi-year survey and sampling project has already found several stormwater ponds containing high summertime total phosphorus concentrations. Since ponds are part of the watershed network that delivers runoff with phosphorus to lakes and streams, excess phosphorus and algae in ponds present

increased risks of harmful algal bloom occurrences and water quality degradation in the receiving waterbodies. Internal loading in stormwater ponds is not a well-researched topic, and methods to identify ponds that are providing poor phosphorus retention and requiring maintenance have not been thoroughly investigated. There is a need to understand the significance of internal loading in stormwater ponds, and develop management tools including effective treatment strategies to improve the water quality not only in ponds but also in lakes and streams.

C. Project outcomes

The proposed project will assess the importance of internal phosphorus loading in stormwater ponds in the District, and determine the effectiveness of iron filings treatment in accomplishing the goals of reducing the phosphorus loading and improving the water quality in the ponds. The project will be one of the earliest field-applications of iron filings as a sediment phosphorus inactivation method in stormwater ponds. If successful, iron filings application can be a viable tool for treating ponds to reduce the net phosphorus load discharged from ponds. Given that a large number of ponds can experience periodic temperature stratification and anoxia that can cause phosphorus re-release and eutrophication due to high internal loading, a decrease in pond phosphorus levels will greatly benefit the waterbodies receiving the pond outflows. Ultimately, this can lead to adaptive management of stormwater ponds, which can have important implications for Total Maximum Daily Load (TMDL) implementation plans for impaired waterbodies.

II. Background

Stormwater retention ponds are primarily designed to detain and treat urban stormwater runoff. Phosphorus is one of the critical pollutants in runoff because phosphorus is the limiting nutrient for primary production in temperate freshwaters (Schindler 1977). Ponds typically act as sinks for phosphorus washed off from lawn fertilizers, degrading organic matter, animal wastes and other non-point sources in the surrounding watershed area. However, under certain environmental conditions, ponds can become a source of phosphorus due to the recycling of phosphorus accumulated in the bottom sediments (internal loading). The increased phosphorus concentrations due to internal loading mechanisms can negate the intended purpose and diminish the overall efficacy of ponds. Internal loading is a known, significant summertime phenomenon in lakes, and needs to be addressed to improve the lake water quality and satisfy TMDL allocation goals.

Internal loading in ponds, as such, is poorly understood and has been a less-researched topic, although very high phosphorus levels, algal blooms, and low phosphorus retention are being observed in ponds. For example, the 98 stormwater ponds sampled in five cities in the Riley-Purgatory-Bluff Creek Watershed District (RPBCWD) between 2010 and 2013 showed total phosphorus (TP) concentrations ranging between <0.010 mg/L to 8.1 mg/L (mean = 0.41 mg/L;

median = 0.19 mg/L, 95% confidence interval = 0.47 mg/L; n = 748 water samples) during summer. On average, the TP levels were higher than levels typically expected in pond outflows (RPBCWD 2014). The MPCA's TP water quality standard for lakes in the North Central Hardwood Forest ecoregion is set at 0.060 or 0.040 mg/L to prevent eutrophic conditions. Export of dissolved phosphorus (i.e., output > input) has also been observed in some urban stormwater ponds (Song et al. 2015), indicating failure to provide adequate phosphorus treatment. In a recent study on five stormwater ponds in the Twin Cities area (Olsen 2017), laboratory mesocosms of pond sediments demonstrated phosphorus release from the sediments back into the water column under low dissolved oxygen (i.e., anoxic conditions). The phosphorus (primarily orthophosphate) release rates were between 2.27±0.44 and 7.50±2.94 mg/m^2/day, which can substantially increase pond phosphorus concentrations. Sediment oxygen demand measured in the mesocosms and water column dissolved oxygen (DO) concentrations measured *in situ* confirmed that the ponds are susceptible to developing anoxic conditions during no-flow periods, which in turn can induce internal phosphorus release. DO levels < 1 mg/L were measured within 0.5-m water depth below the surface in the ponds (Olsen 2017).

Thus, there is a need to assess stormwater ponds causing phosphorus pollution, and develop management or remediation strategies that can control the net phosphorus released from ponds so that the impacts on downstream waterbodies are minimized. Sediment dredging is a standard pond maintenance technique, but the associated costs and regulatory needs for proper sediment disposal in case of PAH presence can sometimes make sediment removal a less favorable option. One of the lake management techniques for reducing phosphorus release is chemical inactivation of sediment phosphorus using aluminum, iron chloride, or lanthanum. There are some known applications of alum and iron chloride for treating phosphorus in pond inflows in the Twin Cities area.

The addition of zero-valent iron metal filings to lake sediments as a measure for internal load reduction was investigated in a recent research project (Natarajan et al. 2017). Sediment cores from two eutrophic Minnesota lakes (Rush Lake in Chisago County and Ann Lake in Wright County) were subject to experimental doses of iron filings in a laboratory-scale mesocosm setup. The anoxic phosphate release from the natural (unamended) lake sediments were approximately five times the oxic phosphate release at 20 °C. The addition of > 0.05 g iron/cm^2 sediment area significantly reduced the anoxic phosphate release. Detailed analysis of the sediment phosphorus species revealed that the iron-dosed sediments contained very low mobile phosphorus in the porewater, which resulted in the decreased phosphate flux across the sediment-water interface and the very low phosphate concentrations (<0.050 mg/L) in the water overlying the sediments. The placement of an appropriate dose of iron filings in sediments is a potential method to manage phosphorus release in stormwater ponds.

III. Proposal Narrative

A. Pre-treatment study

1. Objectives

The first phase of the proposed project is pre-treatment study. The main objective is to determine the internal phosphorus loading in five stormwater ponds in the Riley-Purgatory-Bluff Creek Watershed District. Using laboratory-scale mesocosms of pond sediment-water columns, the phosphorus release rates will be measured under varying environmental conditions. Periodic field measurements of dissolved oxygen (DO), temperature, conductivity and total phosphorus in the pond water column will be taken to verify the environmental conditions of the ponds. The water quality data and mesocosm study results will be used to assess the importance of internal phosphorus loading in the ponds. The pre-treatment study will provide the information necessary for recommending an appropriate iron filings dose to reduce the release of phosphorus from the pond sediments.

2. Proposed sites

Five stormwater ponds will be selected in consultation with the Riley-Purgatory-Bluff Creek Watershed District. The ponds will be short-listed from the District's database of ponds that have been monitored for phosphorus water quality. Stormwater ponds with high phosphorus concentrations indicating phosphorus release problems will be considered.

3. Methods and tasks

The laboratory mesocosm systems will consist of pond sediment cores placed with pond water column. Oxic (high DO) or anoxic (low DO) conditions will be simulated in the water columns, and the phosphorus release from the sediments to the overlying water will be measured. The oxic and anoxic phosphorus release rates will be quantified as the linear change in phosphorus mass in the water column over the respective experimental duration. *In situ* DO, temperature and conductivity profiles will be taken at select locations in the five ponds during the growing season. Water samples for total phosphorus will also be collected. If a pond is found to be stratified, water samples will be collected at the surface and below the stratified layer. The laboratory data and field conditions will be related to evaluate the internal phosphorus loading potential in the ponds.

Task 1. Sediment core collection

Six intact sediment cores with overlying water, spatially distributed across the pond area, will be collected through ice or from a boat. The DO, temperature and conductivity at the coring locations will be measured.

Task 2. Laboratory mesocosm studies

The sediment-water columns will be kept at 20 °C at the St. Anthony Falls Laboratory (SAFL). Bubblers will be placed above the sediment-water interface to create oxic conditions (by air bubbling) or anoxic conditions (by nitrogen gas bubbling) in the water column. The concentrations of soluble reactive phosphorus (primarily phosphate) in the water will be monitored throughout the experimental duration, and the oxic and anoxic phosphorus release rates determined.

Task 3. In situ water quality sampling

Profiles of DO, temperature and conductivity, and water samples for total phosphorus will be collected from the ponds. Data collection will be done a few times during the growing season.

Task 4. Sediment analysis

The pond sediments will be extruded from the columns and will be analyzed for phosphorus and associated metal concentrations. The available (redox-sensitive and labile organic phosphorus) and unavailable (aluminum- and mineral-bound) forms of phosphorus in the pond sediments will be determined by the sequential phosphorus extraction method. Concentrations of metals (Fe, Al, Ca) in the pond sediments will be measured in digested sediment samples. The data will be related to the phosphorus release rates measured in the mesocosms. Since the sediment phosphorus forms are expected to change because of iron filings addition, comparison between the pre-treatment and post-treatment sediment quality will help understand the impacts of iron dosing on the phosphorus retention (or release) in the ponds.

Task 5. Interim project report

An interim project report, summarizing the results of the laboratory mesocosm studies and the pre-treatment *in situ* water quality observations in the five stormwater ponds, will be prepared.

The budget subtotal for the pre-treatment study is $35,204.

B. Iron filings treatment (in-kind match)

The application of iron filings is proposed to chemically-inactivate the sediment phosphorus and reduce the internal phosphorus release in the ponds. At the end of the pre-treatment study, three ponds will be proposed as candidates for iron filings treatment and the remaining two ponds will serve as "control" (i.e., no iron treatment) for the next phase of the project. The dosing requirements developed in a lake sediment mesocosm study (Natarajan et al. 2017) will be used as reference. The iron filings treatment will be implemented with the assistance of the RPBCWD personnel, and this task will be the in-kind match provided by the District. One iron application method is to spread iron filings over a frozen pond surface in winter so that the iron filings will eventually settle to the pond bottom as the ice thaws. An alternate option is to apply the iron

filings using a spreader device attached to a boat during early Spring. The second phase of the project, post-treatment water quality monitoring study, will follow the iron treatment.

As the expense for the iron filings is dependent upon the ponds chosen and the cost of the filings, purchase of the iron filings will be made by RPBCWD or partners, with guidance from SAFL staff.

C. Post-treatment water quality monitoring

1. Objectives

The main objective of the post-treatment study is to measure the effectiveness of iron treatment in improving the phosphorus water quality in the ponds. Water quality in the three iron-treated ponds will be compared to two control ponds over a period of two years. Factors affecting phosphorus release/retention in the ponds will be identified based on detailed sediment analysis.

2. Proposed sites

Three out of the five stormwater ponds evaluated during the pre-treatment study will be proposed for iron filings treatment. The remaining two ponds will be the control ponds for the post-treatment assessment.

3. Methods and tasks

Post-treatment water quality in the iron-treated ponds and the control ponds will be monitored by grab sampling technique for two years. Sediments from the iron-treated ponds will be analyzed to explain the pond phosphorus levels.

Task 1. Year 1 water quality sampling

Total phosphorus concentrations, and DO, temperature and conductivity profiles will be measured in the iron-treated (three ponds) and control (two ponds) ponds at various sampling frequencies during the growing season. Frequent sampling will be conducted during select wet-weather periods. One possibility is to take daily *in situ* measurements during a period before and after a major storm. The goal is to follow an adaptive monitoring technique based on the field measurements.

Task 2. Sediment analysis

Three to five sediment cores will be collected from the treated pond area after the completion of one-year field monitoring. The upper 10 cm of sediments will be subject to sequential phosphorus extraction to determine the concentrations of available (redox-sensitive and labile organic phosphorus) and unavailable (aluminum- and mineral-bound) forms of phosphorus in the sediments. The phosphorus and metal concentrations in the iron-treated sediments will be compared to the pre-treatment levels (Task 4, pre-treatment study).

Task 3. Interim project report

An interim report, summarizing the first-year water quality in the ponds after iron filings treatment, will be prepared at the end of the monitoring period.

Task 4. Year 2 water quality sampling

It is possible that weather conditions during the first-year monitoring could create unusual conditions in terms of phosphorus release from the sediments and hence affect the phosphorus dynamics in the pond. Water quality monitoring in the five stormwater ponds will be continued for a second year. Total phosphorus concentrations, and DO, temperature and conductivity profiles will be measured at various sampling frequencies during the growing season. Frequent sampling will be conducted during select wet-weather periods. One possibility is to take daily *in situ* measurements during a period before and after a major storm. The goal is to follow an adaptive monitoring technique based on the field measurements.

Task 5. Final project report

A final project report summarizing the effectiveness of iron filings treatment in improving the phosphorus water quality in the ponds will be prepared.

The budget subtotal for the two-year post-treatment monitoring study is $70,376.

IV. Results and deliverables

The first phase of this project, the pre-treatment study, will evaluate the significance of internal loading in five stormwater ponds under different environmental conditions. The phosphorus release rates measured in laboratory mesocosms and *in situ* pond water quality data will help interpret the phosphorus release vis-à-vis retention abilities of these ponds. An interim project report summarizing the results will be the deliverable for the pre-treatment study. Following the pre-treatment study, iron filings treatment for reducing internal phosphorus release in the ponds will be implemented with the help of the RPBCWD. The second phase of the project, the post-treatment study, will assess the effectiveness of iron filings application in improving phosphorus retention in the treated stormwater ponds. The phosphorus water quality in the treated ponds vis-à-vis untreated ponds will indicate the success of the treatment method. The final deliverable for this project is a report summarizing the pre-treatment and post-treatment studies.

V. Budget and timetable

The pre-treatment study consists of five tasks (budget subtotal = $35,204). The post-treatment study will encompass two years following one year of pre-treatment study (budget subtotal = $70,376). The implementation of iron filings treatment will be the District's in-kind match for the project, and hence the budget for this task (material and mobilization cost) is $0 in Table 1.

The total budget for the proposed project is $105,580. The timeline listed for each task is approximate.

Table 1. Budget and timetable proposed for the project.

Phase I: Pre-treatment study				
	Tasks	**~Start by**	**~End before**	**Budget**
1.	Sediment core collection	02/15/2018	05/31/2018	$ 3,909
2.	Laboratory mesocosm studies	02/15/2018	08/31/2018	$ 9,025
3.	*In situ* water quality sampling	05/01/2018	09/30/2018	$ 4,531
4.	Sediment analysis	09/01/2018	10/30/2018	$ 8,840
5.	Interim project report		12/30/2018	$ 8,899
			Pre-treatment study (Tasks 1-5) subtotal	$ 35,204
Iron filings treatment in ponds (in-kind match of RPBCWD)				
	Application of iron filings in the ponds	01/15/2019	04/30/2019	$0
Phase II: Post-treatment water quality monitoring				
1.	Year 1 water quality sampling	05/01/2019	09/30/2019	$ 15,270
2.	Sediment analysis	09/01/2019	10/30/2019	$ 12,550
3.	Interim project report		12/30/2019	$ 8,899
			Post-treatment Year 1 study (Tasks 1-3) subtotal	$ 36,718
4.	Year 2 water quality sampling	05/01/2020	09/30/2020	$ 15,170
5.	Final project report		12/30/2020	$ 18,488
			Post-treatment Year 2 study (Tasks 4-5) subtotal	$ 33,657
			Post-treatment water quality monitoring study (Tasks 1-5) subtotal	$ 70,376
			TOTAL	**$105,580**

References

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Olsen, T. (2017). *Phosphorus dynamics in stormwater ponds*. M.S. Thesis, University of Minnesota, Minneapolis, MN, 1-106. <https://conservancy.umn.edu/handle/11299/191245> (accessed December 2016)

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Schindler, D.W. (1977). "Evolution of phosphorus limitation in lakes: Natural mechanisms compensate for deficiencies of nitrogen and carbon in eutrophied lakes." *Science*, 195, 260-262.

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