

**Riley-Purgatory-Bluff Creek Watershed District**  
Board of Managers Workshop and Regular Meeting

**Wednesday, June 7, 2017**  
**5:30pm Board Workshop**  
**7:00pm Regular Board Meeting**  
DISTRICT OFFICE  
18681 Lake Drive East  
Chanhasen

**Draft Agenda**

1. Call to Order
2. **Board Workshop - 10 Year Plan** **Information**
3. **Approval of the Agenda** (Additions/Corrections/Deletion)
4. Matters of general public interest

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.

5. **Reading and approval of minutes** **Action**

Board of Manager Meeting, May 3, 2017

Board of Manager Meeting, May 15, 2017

6. **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 Engineer's Report (with attached Inspection Report)
  - b. Accept Staff Report
  - c. Accept May Engineer's Report w/attached May Inspection Summary
  - d. Approve Permit 2015-036: Saville West Modification Request with staff recommendations

- e. Approve Permit 2015-050: Arbor Glen Modification Request with staff recommendations
- f. Approve Permit 2017-023: Eden Prairie Assembly of God Church Addition with staff recommendations
- g. Approve Permit 2017-036: Minnetonka High School Upper Field Access Road with staff recommendations
- h. Approve Review Period Extension for Permit 2017-024: Prairie Bluffs Senior Living
- i. Approve Lake Riley Alum Monitoring Task Order with Wenck

7. Citizen Advisory Committee

**Information**

8. Action Items

**Action**

- a. Approve Paying of the Bills
- b. Accept March Treasurer's Report
- c. Order Lake Susan Park Pond
- d. Permit 2017-007: Cedarcrest Stables variance request
- e. Permit 2017-031: Lion's Tap variance request
- f. Accept Engineer's Recommendation for Chanhassen High School Reuse Project and authorize rebidding of project

9. Discussion Items

**Information**

- a. Upcoming Meeting

10. Upcoming Events

**Information**

- Citizen Advisory Committee, District Office, June 19th, 6:30pm, 18681 Lake Drive East, Chanhassen
- Board of Managers Regular Meeting and Workshop, July 12th, Riley Purgatory Bluff Creek Watershed District office, District Office, 5:30pm.
- Citizen Advisory Committee, District Office, July 17th, 6:30pm, 18681 Lake Drive East, Chanhassen
- Save the Date: Watershed Tour 10 year plan highlight, District Office, July 31st, 4:00pm
- Board of Managers Regular Meeting and Workshop, August 2nd, Riley Purgatory Bluff Creek Watershed District office, 5:30pm

## MEETING MINUTES

### Riley-Purgatory-Bluff Creek Watershed District

May 3, 2017, Board of Managers Plan Workshop and Monthly Meeting

PRESENT:

Managers: Mary Bisek, Secretary

Richard Chadwick

Jill Crafton, Treasurer

Perry Forster, President

Leslie Yetka, Vice President

Staff: Claire Bleser, District Administrator

Zach Dickhausen, Water Resources Technician\*

Terry Jeffery, Project Permit Manager

Michelle Jordan, Community Outreach Coordinator

Josh Maxwell, Water Resources Coordinator\*

Louis Smith, Attorney (Smith Partners)

Scott Sobiech, Engineer (Barr Engineering Company)

Other attendees: Brian Beck, Wenck Assoc.\*

Bob Kruempelstaedter, Chanhassen Resident

John Bender, Westwood\*

Matt Lindon, CAC

Joe Bischoff, Wenck\*

Sharon McCotter, CAC\*

Dan Blake, Pentom\*

Dave Modrow, City of Eden Prairie\*

Paul Bulger, CAC

Dorothy Pedersen, CAC

Mark Costello, Eden Prairie Resident\*

Robin Ruben, Eden Prairie Resident\*

Laurie Hable, LRIA

Laurie Susla, Chanhassen Resident

Peter Iversen, CAC

Ken Wencil, Chanhassen Resident

John Kirk, Eden Prairie Planning Comm.\*

David Ziegler, CAC

\*Indicates attendance at the monthly board meeting and public hearing but not the plan workshop

### 1. Plan Workshop

President Forster called to order the Wednesday, May 3, 2017, Board of Managers Plan Workshop at 5:45 p.m. in the District Office, 18681 Lake Drive East, Chanhassen, MN 55317.

Administrator Bleser reported that the draft 10-year plan Table of Contents has been updated. She handed out the updated version and reviewed the updates. She asked for and recorded manager comments about the draft sections staff introduced at the Board's April regular monthly meeting.

Administrator Bleser handed out and reviewed with the Board the draft plan's Introduction section and draft section 5.0 Land and Water Resource Inventory. She requested and recorded comments about the two sections.

Administrator Bleser addressed the topic of the timing of alum treatments. She talked about the idea of looking at the sedimentation rates at waterbodies and possibly developing a sedimentation rate criterion. She asked the Board if it would like staff to look further into the idea of developing such a criterion and to bring back more information to the Board in June. There was discussion. Administrator Bleser said that based on the managers remarks, she will check to see if any agencies have relevant Paleolimnological or historical sedimentation data and will gather information to present to the Board at its next meeting.

Administrator Bleser said that at the next monthly meeting she will gather manager comments about the draft plan sections she handed out tonight and she will hand out the draft sections about Riley, Purgatory, and Bluff Creeks.

Manager Bisek said that the issue to understand is the level and rate of sedimentation at which an alum treatment can be successful. President Forster stated that he would like to receive information explaining the probability of an alum treatment being successful.

Manager Crafton moved to close the workshop. Manager Yetka seconded the motion. Upon a vote, the motion carried 5-0. President Forster closed the Plan Workshop at 6:58 p.m.

## **2. Monthly Board Meeting Call to Order**

President Forster called to order the Wednesday, May 3, 2017, Board of Managers Monthly Meeting at 7:14 p.m. in the District Office, 18681 Lake Drive East, Chanhassen, MN 55317. He noted that immediately prior to this monthly meeting the Board held a plan workshop.

## **3. Approval of the Agenda**

President Forster requested moving item 10d – Permit 2017-007 Cedarcrest Stables Variance Request – ahead in the agenda to immediately follow item 3 – Approval of the Agenda. He also requested moving item 8f – Approve Permit 2017-009 Emerson Process East Renovation with staff recommendations – off the Consent Agenda and to put it as an Action item. Manager Crafton requested removing items 10 b – Approve Paying of the Bills and item 10c – Accept March Treasurer’s Report – off of this month’s agenda and for those two items to come in front of the Board at its next meeting. Manager Chadwick requested that when those two items are put on the next agenda that the item to accept the Treasurer’s Report precedes the paying of the bills.

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

## **4. Permit 2017-007 Cedarcrest Stables Variance Request**

Engineer Sobiech stated that this permit application is for the construction of a 17-lot single-family-home subdivision in Eden Prairie just north of Riley Creek. He discussed the information received from the applicant, the District rules that are triggered, and the variances requested by the applicant.

Engineer Sobiech described his review of the permit application and the request for two variances, the conditions recommended by the District Engineer, and the information that the District Engineer would still like to receive from the applicant. Engineer Sobiech responded to questions from the managers. He introduced Mr. John Bender of Westwood, the applicant’s civil engineer. Mr. Bender handed out information and described the proposed project. He talked about the idea of oversizing the north treatment basin in lieu of constructing the raingardens in the backyard’s of three of the lots because the long-term maintenance of those three rain gardens would fall on the

property owners and because constructing the rain gardens would disturb existing vegetation. Mr. Bender responded to questions. Mr. Dan Blake of Pentom provided comments as well.

President Forster stated that he would like to know the impact of not having those three Best Management Practices – the three rain gardens – installed versus the impact with those rain gardens installed. Manager Crafton said that she would like to know the impact of the volume of water coming out of the pipe into the creek. There was discussion.

Manager Chadwick moved that the Board take action at its next monthly meeting at which time the managers will have the requested information as discussed. Manager Crafton seconded the motion. Upon a vote, the motion carried 5-0.

## **5. Chanhassen Town Center Study**

Administrator Bleser said this is a study for which the District was awarded Clean Water Land & Legacy funds. She noted that the City of Chanhassen partnered in on this study as well. She explained that the purpose of the study was to look at downtown Chanhassen, particularly the section that drains to Rice Marsh Lake, and to identify any opportunities to implement Best Management Practices (BMPs) during retrofitting that may occur down the road.

Administrator Bleser described the considered BMPs and displayed a PowerPoint map identifying possible sites for future BMPs.

Manager Yetka remarked that this study is a valuable tool and could be used for other cities and businesses. She asked if there are next steps. Administrator Bleser responded that the District's step would be to recognize these possible BMP projects as opportunity projects as defined in the District's draft 10-year plan.

## **6. Rice Marsh Lake Alum and Lake Susan Alum Feasibility Study**

Mr. Joe Bischoff of Wenck described Wenck's adaptive approach to alum treatments. He said Wenck focuses on sediment chemistry, making sure to set a target for the sediment chemistry and to measure after the treatment in order to hit those targets.

Mr. Bischoff talked about Lake Susan and the sediment cores from that lake. He went into detail about the lake's sediment, including that it is incredibly dense and may require multiple alum treatments. Mr. Bischoff recommended treating Lake Susan in three doses with three years of monitoring between doses. He said the estimated cost of the three-dose alum treatment on Lake Susan in \$275,000.

Mr. Bischoff also talked about Rice Marsh Lake and its sediment, which is totally different from Lake Susan's sediment. He recommended treating this lake in two applications with four to five years between applications. Mr. Bischoff also recommended conducting a lab alum assay to confirm the alum dosage. He provided an alternate plan, which is conducting additional study with additional sediment cores, exposing varied labile P concentrations to alum and measuring binding efficiency. Administrator Bleser said that staff thinks that additional study would be helpful. Mr. Bischoff responded to questions.

## **7. Matters of General Public Interest**

President Forster explained the procedure for bringing forward matters of general public interest and opened the floor.

Mr. Paul Bulger, CAC member and Eden Prairie Resident, commented on the Lake Susan alum treatment project and the proposed multiple doses. He recommended that before proceeding, the District develop in writing objective criteria to establish when the future doses are applied. He also remarked that it has been helpful on other projects to understand the cost per pound of phosphorous removal and it would be helpful to know such information about the alum treatment projects. Mr. Bulger said he appreciated the level of detail of the Engineer's Report. He had a comment about the information in the report under Task Order 17 on page 31, and he asked that the report referenced in that section get sent out for public comment and distributed to the CAC for comment before the report is finalized. Mr. Bulger requested the same regarding the report referenced in the information in the Engineer's Report about Task Order 22.

Mr. Matt Lindon, CAC member, stated that he hopes that it is clear that the information the District is seeking from the applicant for Permit 2017-007 Cedarcrest Stables regarding the pond capacity is the current pond capacity, not the original designed capacity. Mr. Lindon also commented that he thinks it behooves the Board to think about what is the phosphorous sedimentation loading going in those lakes or any lakes in the future. He said the Board will want to know the rate at which a lake receives phosphorous that renders the alum treatment no longer effective.

Ms. Laurie Susla, Chanhassen Resident, asked if the core samples on Lake Susan and Rice Marsh Lake were taken in the areas in which treatment was being considered. She also asked if the information discussed at Board workshops could be included in the monthly Board meeting packets. Ms. Susla thanked the Administrator for coming to the recent AIS rapid response meeting attended by many stakeholders. Ms. Susla commented on the minutes from the previous monthly Board meeting and specifically remarked on a comment by President Forster about the draft plan not being at the stage of setting dates. Ms. Susla said that there are dates being associated with projects in the draft. Also Ms. Susla expressed the LLCA's concern about waiting until 2025 to do an alum treatment on Lotus Lake. She said that the LLCA would appreciate moving the project to an earlier year in the draft 10-year plan.

President Forster called for additional comments. Upon hearing none, he moved on to the next agenda item.

## 8. Reading and Approval of Minutes

### a. April 5, 2017, RPBCWD Board of Managers Plan Workshop, Public Hearing, and Monthly Meeting

Manager Chadwick requested a correction on page 1 to replace the word "identified" with "identify" and a correction on page 4 to replace the word "has" with "does."

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

### b. April 26, 2017, RPBCWD Board of Managers Special Meeting

Manager Crafton requested an edit to the last sentence under action item 2 to read, "...would report to the Board." Administrator Bleser requested a correction to update a title to "Water Resources Coordinator."

Manager Crafton moved to accept the minutes as amended. Manager Chadwick seconded the motion. Upon a vote, the motion carried 4-0 [Manager Bisek abstained from the vote because she had not attended the April 26<sup>th</sup> meeting.]

## 9. Consent Agenda

President Forster read aloud the Consent Agenda items: a. Accept Engineer's Report (with attached inspection report); b. Accept Staff Report; c. Approve and Adopt Amended Governance Manual d. Approve entering into a Cooperative Agreement with the City of Chanhassen and Eastern Carver County Schools; e. Approve Permit 2017-001 Kopesky 2<sup>nd</sup> Addition with Staff Recommendations; g. Approve permit 2017-011 Galpin Boulevard Water Main Improvements with Staff Recommendations; h. Approve Permit 2017-022 Chanhassen High School Reuse with Staff Recommendations; i. Approve Review Period Extension for Permit 2017-023 Eden Prairie Assembly of God.

Attorney Smith noted that regarding the Cooperative Agreement between the District and the City of Chanhassen and the Eastern Carver County School District, the Board's approval of that item should authorize President Forster to sign the Cooperative Agreement under advisement of the District's Legal Counsel who has made non-substantive changes.

Manager Yetka moved to approve the Consent Agenda as read and including item d the Cooperative Agreement and authorizing President Forster to sign the Cooperative Agreement including non-substantive changes. Manager Crafton seconded the motion. Upon a vote, the motion carried 5-0.

## 10. Citizen Advisory Committee (CAC)

Ms. Dorothy Pedersen reported that the CAC has worked on the Adopt-A-Storm Drain Project and has worked on developing subcommittees. She noted that the CAC will look at the draft 10-year plan in the subcommittee groups. Ms. Pedersen also reported that the CAC has been working on the Education and Outreach concept in the draft 10-year plan and that a number of CAC members have submitted comments to the District.

## 11. Action Items

### a. Order Lake Susan Park Pond Project

Administrator Bleser stated that the action in front of the Board is deciding whether to go forward with the pump and treat option. She said that the design would come in front of the Board at its next monthly meeting. She said that the City of Chanhassen is interested in partnering on the pump and treat and the District has not heard back from Emerson. Administrator Bleser said that an additional \$170,000 is needed for the pump and treat option for this project. She said staff's proposal is for the City of Chanhassen to contribute \$100,000 and the District to levy \$70,000 next year, since the project will not be built this year. Administrator Bleser noted that staff is recommending that the City of Chanhassen contributes a 31.25% match to what the District is contributing through its grant and other funds and that this would come into play if the current project cost estimate is on the high end.

There was discussion about the project timeline, the cost-benefit of the project in terms of phosphorous removal, and contacting Emerson again. Attorney Smith suggested the District contact Emerson through a written letter, which he could help draft, that clearly outlines the idea of the project and the opportunity.

Manager Crafton encouraged that the District send a letter to Emerson and see if the District gets a response and then at the Board's June monthly meeting receive an update from staff. President Forster requested that the District Engineer also bring to the June meeting a calendar that outlines the sequence of events for this proposed project and when the Board needs to make decisions. The Board indicated consent to these directions to staff.

**b. Approve Permit 2017-009 Emerson Process East Renovation with Staff Recommendations**

Engineer Sobiech described the project, handed out a map, and pointed out on the map where project work will occur. He explained that an area of property drains across the parking lot, into a couple of catch basins, then into the storm sewer, and then discharges into the wetland. Engineer Sobiech said that the water does not directly discharge into the wetland, so the District Engineer and District Attorney agree in their interpretation in this instance that the wetland buffer rule is not triggered. Engineer Sobiech said he is bringing this item to the Board's attention to make sure that staff is interpreting the rule in the way that the Board intended. Engineer Sobiech responded to questions. There was discussion including the recommendation that the Engineer clarify in the permit review findings that a portion of the site is treated by the sump manhole prior to discharging to the wetland.

Manager Crafton moved permit 2017-009 with the additional language as described to be added to the findings and with the staff's recommended conditions. Manager Yetka seconded the motion. Upon a vote, the motion carried 5-0.

**c. Professional Services**

President Forster reported that the District received one response for legal services, one response for accounting services, and six responses for Engineering services. He said that the response for legal services was from Smith Partners, the District's current legal services provider.

Manager Yetka moved that the District continue to retain legal services from Smith Partners for another two years. Manager Crafton seconded the vote. Upon a vote, the motion carried 5-0.

President Forster stated that the District received the single response for accounting services from its current accounting services provider. He noted that that District can terminate services in fewer than two years if the District finds the performance of services unacceptable. Manager Crafton moved to accept the accounting services from JMSC. Manager Chadwick seconded the motion. Upon a vote, the motion carried 5-0.

President Forster reported that the District received responses for Engineering Services from Barr Engineering, LimnoTech, Sambatek, SRF, WSB, and Wenck. He summarized the information received and talked about which services meet the District's needs. There was a discussion about the Engineering services.

President Forster moved to retain Barr Engineering for another two years. Manager Bisek seconded the motion. Upon a vote, the motion carried 5-0.

## 12. Discussion Items

**a. Aquatic Invasive Species**

Administrator Bleser reported that she has developed a draft AIS (Aquatic Invasive Species) Decision Tree outlining considerations, decisions, and steps in the case of AIS and to be used to determine if a



rapid response is needed and possible. She walked the group through the draft decision tree, answered questions, and listened to comments. President Forster recommended adding to the decision tree a step to notify the public of news through newspapers and other outlets.

Administrator Bleser said that based on the comments today this decision tree seems like the right direction so she will continue working on it to catalog the contacts. The Board indicated agreement.

**b. Upcoming Meetings**

Administrator Bleser noted the need for a special meeting to hold a public hearing. The Board determined to hold the special meeting on Monday, May 15, 2017, at 6 p.m. at the District Office.

The managers discussed the date of the July monthly meeting. Manager Crafton moved to change the July 5, 2017, meeting to Wednesday, July 12, 2017, and to direct staff to advertise in the newspaper the change. Manager Chadwick seconded the motion. Upon a vote, the motion carried 5-0.

**13. Upcoming Events**

- Rain Barrel Sale, May 5, 1-6 p.m. and May 6 9-noon, District Office, 18681 Lake Drive East, Chanhassen
- District Special Board Meeting, Monday, May 15, 6 p.m., District Office, 18681 Lake Drive East, Chanhassen
- Bluff Creek Plan Amendment and Ordering Public Hearing, Monday, May 15, 6 p.m., District Office, 18681 Lake Drive East, Chanhassen
- Citizen Advisory Committee, Monday, May 15, 6:30 p.m., District Office, 18681 Lake Drive East, Chanhassen
- Preparing for Our Changing Climate, Wednesday, May 31, 6:30-8 p.m., Nine Mile Creek Watershed District Office, 12800 Gerard Drive, Eden Prairie.

**14. Adjourn**

Manager Chadwick moved to adjourn the meeting of the Board of Managers. Manager Crafton seconded the motion. Upon a vote, the motion carried 5-0. The meeting adjourned at 9:58 p.m.

Respectfully submitted,

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Mary Bisek, Secretary

## MEETING MINUTES

### Riley-Purgatory-Bluff Creek Watershed District

May 15, 2017, Board of Managers Public Hearing and Special Meeting

#### PRESENT:

Managers: Mary Bisek, Secretary  
Richard Chadwick  
Jill Crafton, Treasurer  
Perry Forster, President

Staff: Claire Bleser, District Administrator  
Terry Jeffery, Project Permit Manager  
Michelle Jordan, Community Outreach Coordinator  
Louis Smith, Attorney (Smith Partners)  
Scott Sobiech, Engineer (Barr Engineering Company)

Other attendees: Tom Dietrich, City of Minnetonka      Jeff Sandberg, WSB & Assoc.  
Max Fagan, Chanhassen High School      Dennis Yockers, CAC  
Adam Galler, Chanhassen High School      David Ziegler, CAC  
Shelly Manning, Resident

\*Indicates attendance at the monthly board meeting and public hearing but not the plan workshop

#### 1. Call to Order

President Forster called to order the Monday, May 15, 2017, Board of Managers Public Hearing and Special Meeting at 6:07 p.m. in the District Office, 18681 Lake Drive East, Chanhassen, MN 55317.

#### 2. Public Hearing: Bluff Creek Tributary Plan Amendment

Administrator Bleser explained that the process for this project started when the District was trying to find an alternative to the Bluff Creek Fish Passage project. She described the project and the section of the Bassett Creek where the project is located. Administrator Bleser noted that the District received comments on the project from the Minnesota Department of Natural Resources (DNR). She added that the City of Chanhassen is supportive of the project but did not submit comments within the comment period.

[Attorney Smith arrived].

Administrator Bleser reviewed with the group the materials in the meeting packet and noted that the plan amendment includes the revisions staff made based on the DNR's comments. She talked about the DNR's comments and read aloud the proposed plan amendment.

President Forster called for comments.

Attorney Smith stated that the plan amendment lists construction costs at \$200,800 but District staff now have updated information and that cost needs to be adjusted. Engineer Sobiech said that the estimated costs should be revised to \$258,000. President Forster said that the Plan Amendment will be updated to reflect the change.

Upon hearing no other comments, President Forster requested a motion to close the public hearing. Manager Crafton moved to close the public hearing. Manager Bisek seconded the motion. Upon a vote, the motion carried 4-0 [Manager Yetka absent from vote].

Manager Crafton moved to adopt the Plan Amendment for the Bluff Creek Southwest Branch Stabilization and Restoration Project. Manager Bisek seconded the motion. Manager Chadwick commented that he thinks that the Board is moving fast on this project. He also asked if the District could find any partners from this project like the City of Chanhassen, Mn/DOT, and the Lower Minnesota River Watershed District. Administrator Bleser said that she will contact those parties and see if they are willing to financially partner on this project and she will bring the information back to the Board.

Attorney Smith addressed the comment about partners and about the concern about the project schedule. He said the Board could consider adopting the plan amendment, proceed to hold the public hearing on whether or not to order the project and proceed to approve ordering the project but add some conditions to direct the Administrator to investigate partnering opportunities and come back with a Cooperative Agreement.

Upon a vote, the motion carried 4-0 [Manager Yetka absent from vote].

### **3. Public Hearing: Order Bluff Creek Tributary Project**

Administrator Bleser said that this is a follow-up to the information just presented. She noted that the project cost is \$258,000 and that by ordering the project, it would go into design. She described the project again. President Forster called for comments. Upon hearing none, Manager Crafton moved to close the public hearing. Manager Bisek seconded the motion. Upon a vote, the motion carried 4-0 [Manager Yetka absent from vote].

Manager Chadwick asked that a condition be placed that the Administrator is directed to make inquiries to try and secure contributions as possible from the City of Chanhassen, Mn/DOT, and the Lower Minnesota River Watershed District to help fund this project. Attorney Smith said that he has just drafted possible language to add and he read aloud the additional paragraph. The Board indicated that the attorney's language was satisfactory. President Forster noted that the project cost should be revised to \$258,000.

Manager Crafton moved to pass resolution to order the Bluff Creek Southwest Branch Stabilization and Restoration Project as revised and with the additional language. Manager Chadwick seconded the motion. Upon a vote, the motion carried 4-0 [Manager Yetka absent from vote].

### **4. Approve Task Order 21b-Bluff Creek Reach BT3A Stabilization Project-Final Design and Construction Administration**

Engineer Sobiech explained that this task order is to provide engineering, design, and construction observation services. He provided a breakdown of anticipated costs and pointed out the anticipated project schedule is included in the packet. Engineer Sobiech said that hopefully construction would begin this fall. He stated that the estimated cost for this task order is \$65,700. President Forster said that would be the cost if the Board agrees to the environmental assessment optional task.

Engineer Sobiech replied that the District Engineer recommends the optional task to be included and provided the reasons why. He responded to questions and noted that the optional task is included within the \$258,000 estimated project cost.

Manager Bisek moved to approve Task Order 21b-Bluff Creek Reach BT3A Stabilization Project including the option of the Phase 1 Environmental Assessment. Manager Crafton seconded the motion. Upon a vote, the motion carried 4-0 [Manager Yetka absent from vote].

#### **5. Permit 2017-010: Lake Riley Park Improvement with Variance Request**

Engineer Sobiech described the project, the Engineer's review of the permit application, and the conditions recommended by the District Engineer including a condition that the applicant will submit the project-specific permit from the DNR for District review.

There was a discussion.

Manager Crafton moved to approve permit 2017-010 with the conditions recommended by staff. Manager Bisek seconded the motion. Upon a vote, the motion carried 3-0 [Manager Yetka absent from vote. Manager Chadwick abstained from the vote.]

#### **6. Permit 2017-029: Tweet Dental**

Terry Jeffery discussed the review of the permit application and staff recommendations. Mr. Jeffery and Engineer Sobiech responded to manager questions.

Manager Chadwick moved to approve permit 2017-029 contingent on the Engineer's recommendations. Manager Bisek seconded the motion. Upon a vote, the motion carried 4-0 [Manager Yetka absent from vote].

#### **7. Repair and Maintenance Fund Request Minnetonka – Covington Road**

President Foster highlighted the letter the District received from the City of Minnetonka. Administrator Bleser displayed PowerPoint photos of the area and described the site and issues. She said that the City estimates the project cost to be \$75,000 and is requesting a grant of \$25,000 from the District. Administrator Bleser reported that currently the District has approximately \$202,000 in its Repair and Maintenance Fund.

President Forster commented that he thinks this project is worthy of the District's support. Administrator Bleser and Mr. Tom Dietrich of the City of Minnetonka responded to questions.

Manager Bisek moved to approve the Repair and Maintenance Fund request from the City of Minnetonka for the Covington Road pipe replacement and to use up to \$25,000 from the District's Repair and Maintenance funds. Manager Crafton seconded the motion. Upon a vote, the motion carried 4-0.

#### **8. Accept the Treasurer's Report**

Treasurer Crafton said that this report was pulled from the District's May 3<sup>rd</sup> meeting because all of the information had not yet been received. She said that all of the information has now been received and reviewed in line with the District's processes and internal controls. She moved to accept the Treasurer's Report as submitted. Manager Bisek seconded the motion.

Administrator Bleser pointed out that she is working with the Accountant on a few items. She described the specific discrepancies that will be corrected. President Forster noted that he, Administrator Bleser, and Treasurer Crafton will be meeting with the auditor on Wednesday.

Manager Chadwick requested that future meeting packets contain a letter from the Administrator and Treasurer

indicating that they have reviewed the material. Manager Chadwick asked for clarification about the invoice from Life Time. Administrator Bleser said that it is the return of Life Time’s escrow. Administrator Bleser pointed out an additional expense of \$6,000 from the Clearwater Watershed District for monitoring equipment. President Forster commented that this invoice would be covered under the paying of the bills.

Upon a vote, the motion carried 4-0.

### 9. Approve Paying of the Bills

President Forster noted that with the additional invoice in the amount of \$6,000 would make the total accounts payable \$130,974.05 plus \$6,000, which would also be reflected in the total disbursements.

Manager Crafton moved to pay the bills. Manager Bisek seconded the motion. Upon a vote, the motion carried 4-0.

### 10. Approve Boundary Changes with Carver County Watershed Management Organization

Administrator Bleser explained that this conversation with the Carver County Watershed Management Organization (WMO) began two years ago when staff discovered that some parcels are not hydrologically linked to this watershed’s resources. She described the review process undertaken by District staff, and she said that these boundary changes are what the District staff and Carver County WMO have agreed upon regarding the western boundaries. Administrator Bleser stated that this information will go to the Minnesota Board of Water and Soil Resources, who will handle the process. She requested that this resolution be renumbered as 2017-004.

Manager Crafton moved to pass resolution 2017-004. Manager Chadwick seconded the motion. Upon a roll call vote, the motion carried 4-0.

Manager	Aye	Nay	Abstain	Absent
Bisek	X			
Chadwick	X			
Crafton	X			
Yetka				X
Forster	X			

### 11. Approve Signage Proposal for District Office

Administrator Bleser talked about the signage options and their costs. She recommended the non-lit option, stated that the cost is approximately \$6,000, and said that it would take four to six weeks for installation. Administrator Bleser announced that this summer she will likely ask the Board for more budget for office expenditures.

## 12. Adjourn

Manager Chadwick moved to adjourn the meeting of the Board of Managers. Manager Crafton seconded the motion. Upon a vote, the motion carried 4-0[Manager Yetka absent from vote]. The meeting adjourned at 7:12 p.m.

Respectfully submitted,

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Mary Bisek, Secretary

## Memorandum

**To:** Riley-Purgatory-Bluff Creek Watershed District Board of Managers and District Administrator  
**From:** Barr Engineering Co.  
**Subject:** Engineer's Report Summarizing May 2017 Activities for June 7, 2017, Board Meeting  
**Date:** May 31, 2017

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 May 2017.

### General Services

- a. Met with Administrator Bleser and city of Deephaven on May 4<sup>th</sup> to discussion potential coordination on ravine erosion restoration projects.
- b. Met with Administrator Bleser, new natural resource project manager Jeffery, and Karen Wold (Barr) to discuss 10-year plan process and wetland management process on May 12<sup>th</sup>.
- c. Assisted Administrator Bleser with preparation for 10-year plan update to Board of Manager's at May 3<sup>rd</sup> workshop.
- d. Met with Administrator Bleser, Project Manager Jeffery, and Counsel Smith on May 25<sup>th</sup> to discuss the status of the District's ongoing projects, project implementation process, and 10-year plan process.
- e. Worked on developing implementation timing for the Lake Susan Park Pond reuse and iron enhanced sand system per Manager's request.
- f. Participated in May 15, 2017 special Board meeting.
- g. Prepared Engineer's Report for engineering services performed during May 2017.
- h. Regular and frequent communication and coordination with Administrator Bleser discussing Board workshop, meeting agenda, carp management and status updates for various task orders.
- i. Overall project management, administration, webmap data management, and coordination of task orders.

### Permitting Program

- a. *Permit 2015-025: Blossom Hill Development*- Subdividing a 6.5 acre lot into 12 single family lots at 10841 Blossom Road, Eden Prairie, MN. Reviewed as-builts drawings, infiltration testing results, and information from applicant engineer about preliminary financial assurance release.

- b. *Permit 2016-030: IDI Distribution Building Expansion* – Expansion of existing building and northern parking lot. Stormwater management facilities, including pervious pavers, a filtration basin with underlying infiltration, and a water reuse system will be constructed to provide volume control, water quality, and rate control for runoff prior to discharging offsite. The site is located at 8303 Audubon Road, Chanhassen, MN. Analyzed a permit modification request, notified applicant the modification request was incomplete for electronic modeling files, snowmelt analysis, and plans containing design sections of the proposed underground system.
- c. *Permit 2015-036: Saville West*: This is a residential development in Minnetonka located at the southeast quadrant of CSAH 101 and Excelsior Boulevard. The project was conditionally approved at the Board's September 7, 2016 meeting. Met with city of Minnetonka on May 12<sup>th</sup> to coordinate review comments. Reviewed submittal for permit modification, provided comments to the applicant, analyzed revised submittal materials and drafted staff report for Manager consideration at the June 7<sup>th</sup> meeting.
- d. *Permit 2015-050: Arbor Glen*: This project involves construction of an 18 lot residential subdivision at 9170 Great Plains Blvd in Chanhassen. The permit was conditionally approved at the October 2016 regular meeting. Reviewed the applicant's submission for a permit modification to reduce the number of lots and reconfigure the site best management practices.
- e. *Permit 2016-017: Southwest Green Line LRT Extension*: This project involves the construction of a light rail transit line between Eden Prairie and downtown Minneapolis. The portion of the project within the RPBCWD jurisdiction includes approximately 1.5 miles of proposed rail track and two stations. The project adds approximately 5 acres of impervious surface within the RPBCWD. Stormwater BMPs designed for compliance with RPBCWD rules include pervious pavement, infiltration basins, wetland buffers, vegetated swales, and detention ponds. The project triggers RPBCWD Rules B, C, D, E, G, and J. Manager's conditionally approved the permit in November 2016. Met with the applicant and WSB on May 2<sup>nd</sup> to discuss addressing conditions.
- f. *Permit 2017-001: Kopesky 2<sup>nd</sup> Addition*: This project involves construction of an 8-lot single family home subdivision at 18340 82<sup>nd</sup> Street in Eden Prairie. The project will trigger Rules B, C, D, and J. The project is considered complete on January 18, 2017. Notified applicant of Board's conditional approval at May 3<sup>rd</sup> meeting.
- g. *Permit 2017-007: Cedarcrest Stables*: This project involves construction of a 17-lot single family home subdivision. The project will trigger Rules C and J. Reviewed submittal and provided comments to applicant. Presented variance request to Board at May 3<sup>rd</sup> meeting, worked with applicant to identify additional information needed per Board request, met with applicant on May 18<sup>th</sup>, reanalyze additional information on downstream ponds to support variance request. Revised staff report for consideration at June Manager's meeting.
- h. *Permit 2017-009: Emerson Process East Renovation*: This project involves construction of a building addition and associated site work. The project will trigger Rules C and J and may trigger Rule D depending on the area of site disturbance. Notified applicant of Board's conditional approval at May 3<sup>rd</sup> meeting.



- i. *Permit 2017-010*: Riley Lake Park: This project involves construction of site improvements at Riley Lake Park and the public boat launch. The project will trigger Rules B, C, E, F, G, and J. Reviewed submittal and provided comments to applicant. Several phone calls with applicant's engineer on April 17<sup>th</sup> to address questions. Reviewed revised submittal and prepared staff report for Manager consideration at May 15<sup>th</sup> special meeting. Notified applicant of Board's conditional approval at May 15<sup>th</sup> meeting.
- j. *Permit 2017-011*: Galpin Blvd Watermain Improvements: This project involves construction of watermain improvements on Galpin Blvd from Longacres Drive to Lake Lucy Road. The project will trigger Rules B, C and D. Notified applicant of Board's conditional approval at May 3<sup>rd</sup> meeting. Drafted permit form.
- k. *Permit 2017-023*: Eden Prairie Assembly of God: This project involves construction of a building addition and associated site modifications at 16591 Duck Lake Trail. The project will trigger Rules C and J. Answered applicant questions on review comments, reviewed revised submittal materials and draft staff report for Manager consideration at June 7<sup>th</sup> meeting.
- l. *Permit 2017-024*: Prairie Bluffs Senior Living: This project involves construction of a senior living facility, parking lot, and landscaping at 10280 Hennepin Town Road in Eden Prairie. The project will trigger Rules C, D, and J. Reviewed revised submittal and provided comments to applicant engineer. Additional phone discussion with applicant's engineer to discuss latest review comments.
- m. *Permit 2017-029*: Elevate Apartments: This project involves construction of 222 apartments combined with approximately 12,000 square feet for commercial retail and associated site infrastructure located near the intersection of Prairie Center Drive and Highway 212. Stormwater reuse, green roof, permeable pavement and a tree trench system will provide storm water quantity, volume and quality control. Applicant was notified on May 11<sup>th</sup> of an incomplete application for (1) missing rate control computations, (2) electronic modeling files, (3) drainage maps, and (4) documentation of property rights to use and maintain downstream off-site pond. A complete application was received on May 19<sup>th</sup>. Reviewed revised submittal and provided comments to applicant engineer.
- n. *Permit 2017-036*: Minnetonka High School Upper Field Access Road: This project involves construction of 480 foot impervious access road and 190 feet of retaining wall on the Minnetonka High School property. An existing underground detention system will provide the required storm water rate, volume and quality control. The project will trigger Rules C and J. Met with applicant on May 18<sup>th</sup>, answered applicant questions on review comments, reviewed revised submittal materials and draft staff report for Manager consideration at June 7<sup>th</sup> meeting.
- o. Attended several preapplication meeting with developers.
- p. Performed erosion control inspections of active sites during the week of May 17<sup>th</sup> (see attached inspection report).
- q. Conversations with several project engineers/developers about permit requirements for potential development and redevelopment projects.
- r. Updated inspections tool to include photo collection.

### **Data Management/Sampling/Equipment Assistance**

- a. Uploaded and verified ten laboratory reports to EQUIS.

### **Task Order 6: WOMP Station Monitoring**

#### **Purgatory Creek Monitoring Station at Pioneer Trail**

- a. Download and review data. File management.
- b. Storm event sampling – set station for sampling; collect, prep, and deliver sample to lab.

#### **Purgatory Creek Monitoring Station at Valley View Rd**

- a. Downloaded and reviewed data. File management.
- b. Storm event sampling – set station for sampling; collect, prep, and deliver sample to lab.

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

- a. Met the contractor on site to help field-fit plantings and contractor completed plantings shortly before rain began during a wet week of May 15<sup>th</sup> to take advantage of the “free watering” to help the plants become established.
- b. Completed a site visit to investigate a report of a downed tree in the project area. A tree at the very edge of the project area and undisturbed by the project fell over during storms over the weekend of May 20-21. The fallen tree has not adversely impacted other portions of the project. The site visit also provided an opportunity to review the rest of the project after the previous wet week and the project looked good with no issues. See photos below.
- c. Construction of this project is substantially complete. Project close-out items remain, but the project was completed under budget. The overall timeline was impacted by efforts to secure easements and working out an agreement with Minnetonka, however the construction proceeded on the anticipated schedule once it began.

### **Task Order 12: Downtown Chanhassen BMP Retrofit Assessment**

- a. During the next month Barr will begin the process to conclude the Board of Water and Soil Resources (BSWR) accelerated implementation grant that provided partial funding for the project.

### **Task Order 13a: Lake Susan Watershed Treatment and Stormwater Reuse Enhancements**

- a. Responding to questions regarding individual elements of the project recommendations.
- b. Upon authorization, the next phase of work will entail final engineering design and construction.
- c. Worked on developing implementation timing per Manager's request

#### **Task Order 14b: Lower Riley Creek Final Design**

- a. Completed additional surveying of reference cross sections in the lower valley that are to be used as a template for design to create a stable geometry.
- b. Adjusted design incorporate the reference geometry
- c. Completed a site visit to observe high flows during the wet spring in order to incorporate observations into the design.
- d. Met with geotechnical engineers to discuss stabilization options of toes of the large eroding slopes adjacent to the creek.
- e. Worked with Administrator Bleser to help draft an agreement with the City of Eden Prairie.

#### **Task Order 16: Watershed Management Plan Refresh**

- a. Continued work on draft of the 2017 Watershed Management Plan document, including revisions to document formatting to reflect District branding and document organization.
- b. Worked on revisions to figures based on comments received from Administrator Bleser.
- c. Developed draft text, tables, and figures of the watershed sections (formerly "One Water" sections) and provided drafts of the to Administrator Bleser for review.
- d. In the next month, Barr staff will continue drafting text of the plan document, including associated tables and figures. Barr will provide Administrator Bleser draft sections as they are completed.
- e. Met with District staff to discuss a strategy for wetland management planning.

#### **Task Order 18: MPCA Resiliency Grant**

- a. The data collected at the resilience workshop series has been sorted by U of MN Humphrey Institute students. Barr has been sorting and analyzing the data by separate community in order to produce a final results report for each of the three communities that participated: Edina, Bloomington and Hopkins.

#### **Task Order 19: Chanhassen High School Stormwater Reuse Design**

- a. Project bid coordination, including advertising for bid, bid period, mandatory pre-bid meeting, development of bid addendums, and bid opening and follow-up.

#### **Task Order 21: Bluff Creek Feasibility Study**

- a. Began design process after the project was approved at the May 15<sup>th</sup> meeting.
- b. Completed a site visit to observe high flows and erosion.

To: Riley-Purgatory-Bluff Creek Watershed District Board of Managers and District Administrator  
From: Barr Engineering Co.  
Subject: Engineer's Report Summarizing May 2017 Activities for June 7, 2017, Board Meeting  
Date: May 31, 2017  
Page: 6

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#### **Task Order 22: Groundwater Assessment**

- a. Completed analysis of groundwater and surface water interactions for all lakes, streams, and wetlands in the District.
- b. Completed analysis of vulnerability of surface waters to changes in the groundwater system (see attached draft figure)
- c. Completed preliminary "infiltration score" across the District that highlights areas best suited for larger scale infiltration
- d. Started reporting. Draft report mid-summer.

#### **Task Order 23: Scenic Heights School Forest Restoration**

- e. Design continued on the forest restoration plans and specifications, including the redesign of the failed flared end section draining into the pond on site. Project scheduling for bidding and construction has been outlined and will be discussed at upcoming meetings.

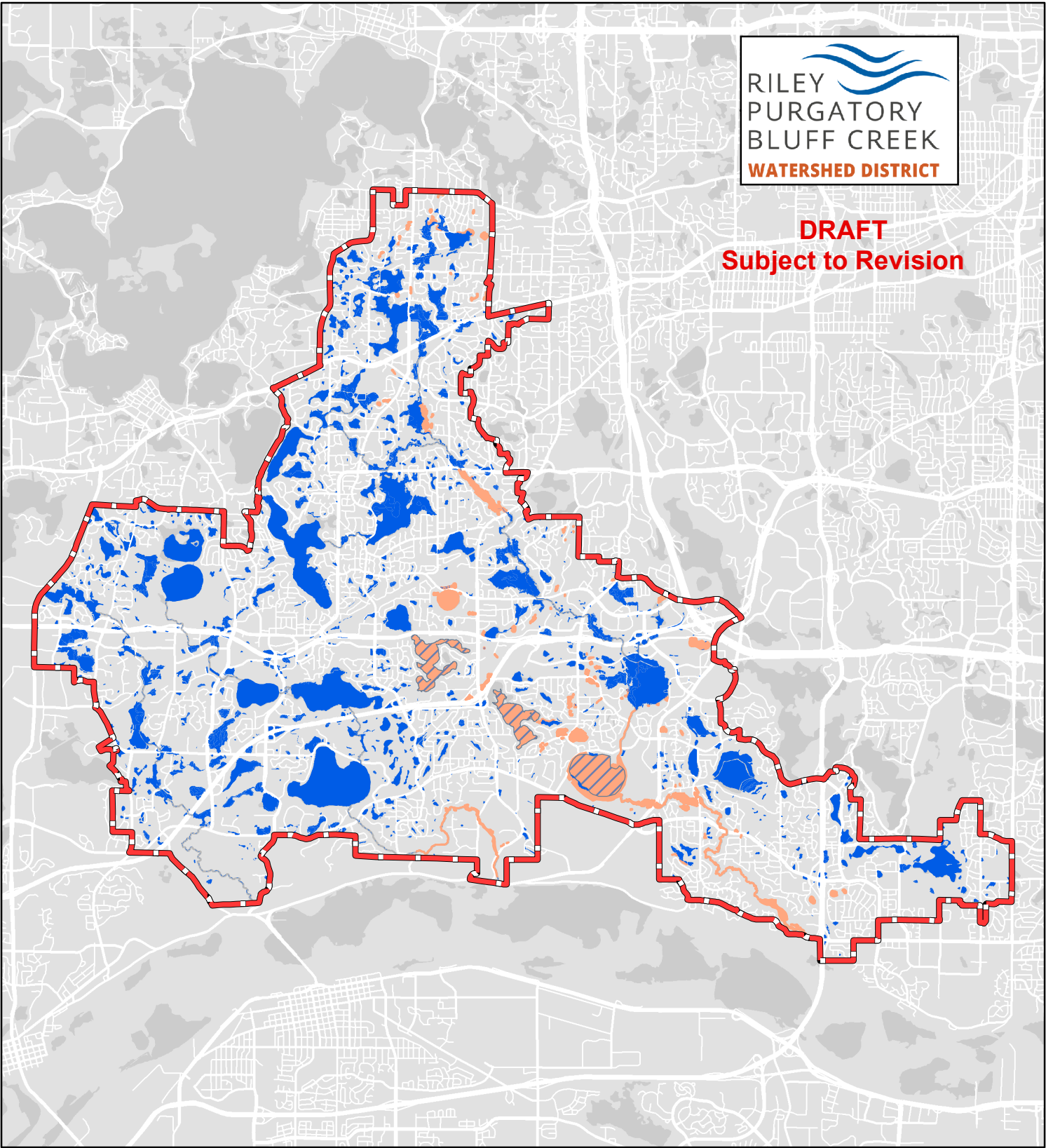
#### **Creek Restoration Action Strategy (CRAS)**

- a. Updated report submitted in April to address comments provided by District Staff.

Barr Footer: ArcGIS 10.4.1.1, 2017-05-17 15:46 File: \\barr.com\gis\client\RPBC\_WD\Work\_Orders\2017\_TO22\_Groundwater\_Assessment\Maps\Reports\Figure 3 Vulnerability of Surface Waters.mxd User: jrc3



**DRAFT**  
**Subject to Revision**



 RPBCWD Boundary

Vulnerability to changes in groundwater system

 Vulnerable

 Vulnerable with wide littoral zone

 Not Vulnerable



Miles



Kilometers

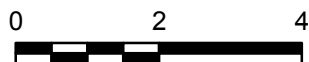


Figure 3  
**DRAFT**

Vulnerability of Surface Waters  
to Changes in Groundwater System  
Groundwater/Surface Water  
Interaction Study

To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
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. The sites were inspected from May 17, 2017.

## Site Inspections

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<b>2015-005</b>	<b>CSAH 101 Mntka</b>	<b>2017-05-18</b>
<p>Eastern side streets have final top coat laid-vegetation is established-catch basin protection has been removed in many areas. BMP's look good. Site is inspected and well maintained by contractor/site inspector. Construction is completed at creek crossing-BMP's look good at this location. Curb/gutter/side walk installation at south end and eastern side of project continues (May-2017). Many areas have been spray-tac'd. Street cleanup is done quite frequently. Paving and sidewalk work continues. Entire site is being graded and matted or sod is installed. (May-2017)</p>		
<b>2015-008</b>	<b>3520 Meadow Lane</b>	<b>2017-05-18</b>
<p>Concrete driveway has been installed. Site BMP's are adequate. Silt fence is down in some areas on west side--will not affect site runoff. (May-2017)</p>		
<b>2015-010</b>	<b>Children's Learning Adventure</b>	<b>2017-05-16</b>
<p>Building construction complete. Inlet protection has been removed. Site BMP's look good. Onsite storm water ponds to west has been constructed. Parking lot curb/gutter installation complete. Asphalt has been installed. Grading and hydro mulching has been completed in some locations. Landscaping is complete. Sod was installed and application of spray tac to exposed soils. Vegetation growing thru mats and in spray-tac'd areas.</p>		
<b>2015-011</b>	<b>Eden Prairie Ponds</b>	<b>2017-05-16</b>
<p>Construction complete. Exposed soils covered with hay. (April) vegetation growing. Wetland buffer signage location staked.</p>		
<b>2015-012</b>	<b>Meditech Site Improvements</b>	<b>2017-05-18</b>
<p>Construction activities complete. Inlet protection has been removed. Bio-logs still in place SE parking lot. Bio-logs at catch basin near east entrance</p>		



To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 3

---

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<b>2015-038</b>	<b>Improvements to Field 8 at Miller Park</b>	<b>2017-05-17</b>
	BMP's look good. Site construction complete. Soils have been covered--- some vegetation is growing.	
<b>2015-039</b>	<b>Miracle Field</b>	<b>2017-05-16</b>
	Construction complete. Inlet protection (SE side of project site) has been removed. All temporary BMP's have been removed. Site is stable. This will be last field inspection for this permit.	
<b>2015-048</b>	<b>Page I Ice Facility Addition</b>	<b>2017-05-18</b>
	Construction of building foundation/walls complete. Silt fences in place. Rock entrance installed. Site BMP's look good. Site grading underway. Parking lot torn up. Slope on south side of building nee --covered with plastic. Erosion and silt runoff on southwest corner of site need to be cleaned up--Catch basin protection installed.	
<b>2015-051</b>	<b>Chapel Hill</b>	<b>2017-05-17</b>
	Site construction complete. Site has been graded and seeded-- vegetation growing. Site looks good. Catch basin protection has been removed as requested. Site is stable. All temporary BMP's have been removed. This will be the last field inspection for this permit.	
<b>2015-053</b>	<b>RBSC Chanhassen LLC</b>	<b>2017-05-17</b>
	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.	
<b>2015-056</b>	<b>Oster Property</b>	<b>2017-05-16</b>
	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 s growing.	
<b>2015-058</b>	<b>Prairie Center Clinic Addition</b>	<b>2017-05-16</b>
	Construction continues on building. BMP's are good. (May) Vegetation growing in some areas. Prep for final parking lot top coat complete. Fencing installation underway.	
<b>2015-059</b>	<b>19108 Twilight Trail</b>	<b>2017-05-17</b>
	Landscaping complete. Orange silt fence on west and north side has been removed. Site is stable. All temporary BMP's have been removed. This will be the last field inspection for this permit.	

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To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 4

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<b>2015-060</b>	<b>Optum Parking Expansion</b>	<b>2017-05-16</b>
	Construction complete. BMP's installed and look good. East parking lot is complete and stable-catch basin protection still installed. Asphalt on west lot is complete and curb-gutter have been installed. Vegetation mats installed (fall-2016)-vegetation has sprouted and is growing/sparse in areas. Overall site conditions are good.	
<b>2015-061</b>	<b>Ingram Property</b>	<b>2017-05-16</b>
	No construction observed to date.	
<b>2015-062</b>	<b>MnDOT SP 1002-100 TH5</b>	<b>2017-05-17</b>
	Construction complete. Bio-logs have been removed. Site looks good. (March). Vegetation established. One 40ft section of silt fence still in place-east of McDonalds has been removed as requested. Site is stable. All temporary BMP's have been removed. This will be the last field inspection for this permit.	
<b>2016-004</b>	<b>Round Lake Park Improvements</b>	<b>2017-05-17</b>
	BMP's look good. Site construction complete--parking lot/lots- curb gutter and asphalt has been installed. (November). Vegetation has sprouted/growing. Final grading underway-additional BMP's installed.	
<b>2016-005</b>	<b>Staring Lake Play Area</b>	<b>2017-05-16</b>
	Construction complete. Vegetation is growing. All temporary BMP's are removed. Vegetation on north slopes has sprouted and established. One small area is bare but stable. Site is stable. This will be last field inspection for this permit.	
<b>2016-006</b>	<b>Soccer Field 10 at Miller Park</b>	<b>2017-05-17</b>
	BMP's look good. Site construction complete. Vegetation established. Site is stable. BMP's still in place.	
<b>2016-007</b>	<b>Meditech Phase II</b>	<b>2017-05-18</b>
	Construction complete. Site is stable. Catch basin protection has been removed. This will be the last field inspection for this permit.	
<b>2016-010</b>	<b>Minnetonka HS Parking Improvements</b>	<b>2017-05-18</b>
	Construction is complete. Parking lot curb/gutter installed-asphalt is in place. BMPs have been removed. All exposed soils have been spray-tac'd and vegetation has started growing. Vegetation is growing and established. Site is stable. This will be the last field inspection for this permit.	

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To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 5

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<b>2016-012</b>	<b>Minnetonka HS Parking Additions</b>	<b>2017-05-18</b>
	Construction is complete. Parking lot curb/gutter installed-asphalt is in place. BMPs have been removed. All exposed soils have been spray-tac'd and vegetation has started growing. Areas of bare soil exposed and no vegetation will grow. Site representative was notified concerning bare soils.	
<b>2016-014</b>	<b>Chanhassen Chick-Fil-A</b>	<b>2017-05-17</b>
	Construction continues. BMP's in place. Parking lot construction underway. Silt fence down on south side in one area.	
<b>2016-015</b>	<b>18321 Heathcote Lane</b>	<b>2017-05-18</b>
	Silt fences installed/in good condition. Rock/gravel entrance is good. BMP's look good. House construction continues. (May-2017)	
<b>2016-018</b>	<b>6830 Utica Terrace</b>	<b>2017-05-17</b>
	House construction complete. Silt fences/bio-logs are in place. Rock walls are complete. Some minor tracking to street. BMP's look good. Landscaping underway--yard area prepped for sod.	
<b>2016-019</b>	<b>Powers Ridge Lot 2</b>	<b>2017-05-17</b>
	No construction has begun to date.	
<b>2016-021</b>	<b>Cedar Hills Park</b>	<b>2017-05-16</b>
	Earthwork has begun. Rock entrance has been "refreshed". Silt fences have been installed. Work near creek is complete-foot bridge installed. BMP's look good. Not much work done since April inspection.	
<b>2016-022</b>	<b>SP 1017-105 Cable Barrier</b>	<b>2017-05-16</b>
	Construction complete. Vegetation mats in place and vegetation is growing thru. Should be stable next month.	
<b>2016-024</b>	<b>Bandimere Park Improvements</b>	<b>2017-05-16</b>
	Construction complete. Silt fences installed. BMP's are good. Sprayed tac and landscaping completed prior to snowfall. Ice rink installation completed. No vegetation growing/some bare areas.	
<b>2016-025</b>	<b>18374 Heathcote Lane</b>	<b>2017-05-18</b>
	Construction of additions complete. Driveway installed and landscaping complete. Site is stable. Bio-logs can be removed. Site representative was notified that BMP's can be removed.	

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To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 6

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<b>2016-026</b>	<b>Foxwood Development</b>	<b>2017-05-16</b>
	House construction has begun-BMP's look good- silt fences and rock entrances installed- good perimeter control. Asphalt has been installed near entrance to site. Silt fences installed on entire site. BMP's look. Areas of exposed soils have been covered with straw. Slight tracking to street. Will contact site representative regarding tracking to street.	
<b>2016-027</b>	<b>Taco Bell</b>	<b>2017-05-16</b>
	Construction complete. Landscaping is complete. Site is stable and all temporary BMP's have been removed. This will be the last field inspection for this permit.	
<b>2016-028</b>	<b>Summit Place Apartments Drainage Improvements</b>	<b>2017-05-16</b>
	No construction observed.	
<b>2016-030</b>	<b>IDI Distribution Building Expansion</b>	<b>2017-05-17</b>
	Construction of addition continues. Catch basin protection has been installed. Silt fences on north side installed. Some over topping of first row of silt fence- 2 additional fences have been installed. Rock entrance installed at new entrance has been refreshed. Catch basin protection at Basin east southeast of entrance has been installed. Stockpiles of dirt are being removed.	
<b>2016-031</b>	<b>MN River Bluffs Trail Crossing</b>	<b>2017-05-16</b>
	Construction complete. BMP's in place. Catch basin protection has been removed. Site was spray tac'd prior to snowfall. Vegetation growth observed (May)	
<b>2016-033</b>	<b>Anderson Lakes-Purgatory Trail</b>	<b>2017-05-16</b>
	No construction observed to date.	
<b>2016-034</b>	<b>Staring Lake Trail</b>	<b>2017-05-16</b>
	Construction complete. Vegetation mats installed. Site looks good. Vegetation has sprouted and is established along trail edges. All temporary BMP's have been removed. Site is stable. This will be last field inspection for this permit.	
<b>2016-035</b>	<b>Riley Lake Road Sidewalk</b>	<b>2017-05-16</b>
	Construction complete. Sidewalk in place. BMP's removed. Sod and vegetation mats installed. Sod was installed last fall--looks good. Some areas have erosion mats in place--vegetation starting to grow.	

To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 7

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<b>2016-036</b>	<b>Collegeview Drive Sidewalk</b>	<b>2017-05-16</b>
	Construction complete. Spray tac applied to soils-fall 2016. Some vegetation growing to date. Wood chip bio-logs in place. (May-2017)	
<b>2016-037</b>	<b>Prestige Day Care</b>	<b>2017-05-16</b>
	Earthwork has begun. Perimeter control silt fence in place, Rock entrance installed. Site looks good.	
<b>2016-038</b>	<b>Optum Technology Drive Improvements</b>	<b>2017-05-16</b>
	Hillside has been scraped--And covered with erosion mats. BMP's installed and are good. Some vegetation has sprouted and growing.	
<b>2016-039</b>	<b>Powers Ridge Senior Apartments</b>	<b>2017-05-17</b>
	Construction continue. BMP's are good. Slight tracking to street.	
<b>2016-040</b>	<b>18995 Minnetonka Blvd</b>	<b>2017-05-18</b>
	Open CA(s): See notes in site description for CA's. Photos taken. Deadline: 5/31/2017	
	Construction of house continues. Silt fence in place. Slopes with vegetation mats have growth showing. Southwest corner needs more BMP's to control sediment erosion. South slope has erosion near white pic stand pipe. Northeast corner cement slag has been dumped and is washing down slope. Notified applicant that BMP's need to be installed and cement slag cleanup should be done and that slag should not be dumped to ground. Photos taken of each location.	
<b>2016-041</b>	<b>Chanhassen West Water Treatment Plant</b>	<b>2017-05-17</b>
	Silt fences have been installed on site. Construction continues. Earthwork underway. Rock entrance is updated. BMP's look good to date. Minor tracking to street observed.	
<b>2016-042</b>	<b>18663 St. Mellion Place--Eden Prairie (Bear Path)</b>	<b>2017-05-16</b>
	Construction continues. BMP's are good. Silt fence in one small area is at 40% of height.	
<b>2016-043</b>	<b>Bongards Redevelopment</b>	<b>2017-05-17</b>
	Construction has started. BMP's are adequate. Parking lot installed-- catch basins installed and protected--awaiting spring for pavement installation. (May)	

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To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 8

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<b>2016-044</b>	<b>Dell Rd &amp; Riley Creek Repair Project</b>	<b>2017-05-16</b>
	Construction complete. Site will be straw/mat covered until spring. Vegetation will be installed in spring-2017. BMP's are good. Observed some erosion near newly beehive catch basin-city is aware of erosion and will repair. (May). Erosion is more prevalent-will call site representative and notify.	
<b>2016-045</b>	<b>MCES Blue Lake Interceptor Rehab</b>	<b>2017-05-17</b>
	No construction observed to date.	
<b>2016-046</b>	<b>Lifetime Fitness Chanhassen</b>	<b>2017-05-16</b>
	Construction continues. BMP's are installed.	
<b>2016-047</b>	<b>9507 Sky Lane Eden Prairie</b>	<b>2017-05-16</b>
	Construction continues. Silt fences down in some areas but secondary containment is good. Rock entrance has been refreshed. Catch basin protection is ok.	
<b>2016-FT02</b>	<b>Mitchell and McCoy Lake Outlet Sediment Removal</b>	<b>2017-05-17</b>
	BMP's look good. Site construction complete. Vegetation growing . Bio-log still in place. Most likely one more month until vegetation established.	
<b>2017-001</b>	<b>Kopesky 2nd Addition</b>	<b>2017-05-16</b>
	No recent activity to date.	
<b>2017-002</b>	<b>7012 Dakota Ave</b>	<b>2017-05-18</b>
	BMP's installed. Bio-log perimeter installed. House tear down complete. New house construction underway.	
<b>2017-003</b>	<b>18761 Heathcote Dr Building Addition</b>	<b>2017-05-18</b>
	House construction continues. BMP's are adequate for stockpile-silt fence would've been best--bio-logs are working. Minor tracking to street observed.	
<b>2017-004</b>	<b>9627 Sky Lane Eden Prairie</b>	<b>2017-05-16</b>
	Minor tracking to street. BMP's have been installed. Catch basin protection in front of property has been removed? BMP's look good.	
<b>2017-005</b>	<b>9527 Sky Lane Eden Prairie</b>	<b>2017-05-16</b>
	Construction continues. Rock entrance has been upgraded. BMP's are ok.	

To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 9

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<b>2017-006</b>	<b>6687 Horseshoe Curve Chanhassen</b>	<b>2017-05-18</b>
	No activity observed to date.	
<b>2017-008</b>	<b>Prairie Meadows Site Renovation</b>	<b>2017-05-16</b>
	Construction has begun. BMP's in place. Site looks good.	
<b>2017-009</b>	<b>Emerson Chanhassen East Renovation</b>	<b>2017-05-17</b>
	No activity observed to date.	
<b>2017-010</b>	<b>Riley Lake Park Renovations</b>	<b>2017-05-16</b>
	No activity to date.	
<b>2017-011</b>	<b>Galpin Blvd Watermain Improvements</b>	<b>2017-05-17</b>
	No activity to date. Supplies are being staged for installation.	
<b>2017-012</b>	<b>9667 Sky Lane</b>	<b>2017-05-16</b>
	BMP's look good. Minor tracking to street. Dirt stockpile in backyard does not have protection but is surrounded by sod and area is flat. (May)	
<b>2017-013</b>	<b>16201 Berger Drive</b>	<b>2017-05-17</b>
	BMP's installed. House construction complete.	
<b>2017-014</b>	<b>3410 Groveland Lane</b>	<b>2017-05-18</b>
	BMP's installed. Construction complete. Landscaping needs to be completed. (May-2017)	
<b>2017-015</b>	<b>9995 Lawson Lane</b>	<b>2017-05-16</b>
	BMP's in place are ok.	
<b>2017-016</b>	<b>9982 Windsor Terrace</b>	<b>2017-05-16</b>
	BMP's in place are ok.	
<b>2017-017</b>	<b>9989 Windsor Terrace</b>	<b>2017-05-16</b>
	BMP's in place are ok. Silt fence down in some areas-no erosion observed.	

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To: RPBCWD Board of Managers  
From: Dave Melmer  
Subject: May 17, 2017—Erosion Inspection  
Date: May 30, 2017  
Page: 10

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<b>2017-018</b>	<b>Bloomington 2017-102 Street Maint</b>	<b>2017-05-16</b>
	No activity observed to date.	
<b>2017-019</b>	<b>Bloomington 2017-110 Trail Improvements</b>	<b>2017-05-16</b>
	Construction has begun. Catch basin protection in place. Silt fences installed where needed. Some minor debris in curb.	
<b>2017-020</b>	<b>8512 Ellet Circle</b>	<b>2017-05-17</b>
	BMP's installed. Silt fence down on south side. Site Representative will be notified again.	
<b>2017-021</b>	<b>8544 Ellet Circle</b>	<b>2017-05-17</b>
	BMP's installed. Construction continues. BMP's at street side for property to west need attention. Will notify representative.	
<b>2017-023</b>	<b>Eden Prairie Assembly of God</b>	<b>2017-05-17</b>
	Site has been surveyed. No construction activity to date.	
<b>2017-025</b>	<b>735 Pleasantview Road</b>	<b>2017-05-18</b>
	Construction continues. BMP's installed. Bio-logs for perimeter control--adequate.	
<b>2017-026</b>	<b>6135 Ridge Road</b>	<b>2017-05-18</b>
	Site has been cleared and surveyed. No BMP's installed to date. Site excavation scheduled in 3 days. Site owner was notified via voice mail that BMP's need to be installed prior to ground breaking. Photos taken of existing conditions.	
<b>2017-029</b>	<b>Tweet Pediatric Dentistry</b>	<b>2017-05-16</b>
	No activity to date.	

Please contact me at 952.832-2687 or [dmelmer@barr.com](mailto: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.

# **RPBCWD Staff Report**

**June 7, 2017**

## **Administrative**

### **10-Year Plan**

Staff continues to work on the 10-year plan.

### **Aquatic Invasive Species**

See individual section below in regards to CLP

### **Audit**

The audit is now complete. The auditor will be presenting at our June meeting.

### **Budget**

No new update.

### **Data Request**

Leslie Stovring from the City of Eden Prairie requested the 2016 lake data, staff sent data.

Tom Payne from Red Rock Lake requested information regarding the curly-leaf pondweed treatment on the lake, including what was treated and why certain areas were selected. Staff explained the reasoning and treatment process and directed him to contact the City of Eden Prairie to see if they were conducting any mechanical harvesting for navigation this year.

Todd Gerhardt from the City of Chanhassen requested lake level data for Lake Lucy. Staff has been updating him weekly and he has been relaying that information to concerned lakeshore owners.

Tim McCotter requested the zero reference elevation for Lake Ann, so that they can track water levels throughout the year.

City of Chanhassen requested lake level data on Lotus Lake. Staff sent the information which was relayed to concerned lakeshore owners.

Hennepin County contacted the District about our AIS sampling in order to ensure no duplication of sampling occurred on Mitchell and Riley. Citizen volunteers will be monitoring AIS in these lakes this year.

### **Grants**

No new updates.



## **Hennepin County**

Administrator Bleser met with Commissioner Callison and Goettel to provide an update on the 10 year plan process and the work the District has been conducting.

## **Office**

Our fiber optic band was finally set-up.

## **Permitting**

It is another busy month. Staff Jeffery has been working permit applicants explaining the permitting process as well as guiding them through the permit application.

## **Site Investigations**

Tom Kingsley contacted the District in April about a barrel he had found a year ago that was leaching a substance into Riley Creek near Eden Prairie Road. He had pulled the barrel out and reported it to Hennepin County however the barrel was not removed. Eden Prairie and the District went out in attempt to locate the barrel but could not find it. District staff has still received no follow up communication from the resident.

Staff went out and investigated a site on Lake Riley 9401 Kiowa Trail Chanhassen, MN 55317. The property owner has now applied for a permit from the watershed district.

## **Citizens Advisory Committee**

### **May meeting**

The CAC met for their regular monthly meeting on May 15. Draft minutes are included in the board packet.

## **Technical Advisory Committee**

No additional updates.

## **Programs and Projects**

### **District-Wide**

### **Cost-share program**

Second round applications are due mid-June.

### **MPCA Community Resiliency Grant**

Results were presented to the community as a part of the Preparing for Our Changing Climate seminar on May 31st.

### **Total Maximum Daily Load**

No additional updates.

## **Data Collection (J. Maxwell)**

### **Rice Marsh Aeration**

The aeration unit was turned off on February 17th due to the very warm weather and large open water area. Overall oxygen conditions were good to excellent this winter. Staff retrieved the thin ice signs. Staff will pulse the unit once a month to make sure lines remain clear. Barr Engineering will repair the motor that went down this year and the District has purchased another one as a back up.

### **Summer Field Season**

Staff began regular lake and creek sampling near the end of April which has continued in May. All lake level sensors have been placed and were checked this month. The Lake Lucy level sensor was having issues connecting with the field computer and staff sent in the unit to ISCO. The sensors internal battery had been depleted so staff has ordered an external battery pack which can be connected directly to the sensor. Many of our lake level sensors are aging, so this will be a good test to see how the battery packs work and if we want to purchase more in the future. Staff also went out and conducted lake profiles and collected water samples to assess curly-leaf herbicide dissipation in Riley, Red Rock, Staring, and Susan this month. Staff has been working with Ray Newman from the University of Minnesota, samples will be sent in soon for analysis. A fisheries permit was sent to the MN DNR and approved mid-May to place trap nets in Staring Lake to collect native fish for the educational event at the Staring Lake Outdoor Center. An auto sampling unit has been placed on the NorthWest side of Rice Marsh Lake (same place as last year) to collect additional nutrient data entering the lake.

### **Carp Management**

The barrier was opened on March 3rd to allow northern pike to move up into the recreational area to spawn and return to Staring Lake. The barrier was closed on April 4th as temperatures reached above 10 degrees Celsius on multiple days prior to closing. Temperatures have been near 15 degrees Celsius. The floating trap net was deployed April 11th to capture fish for education and outreach events and gauge carp movement. Fish species captured included mainly northern pike, black crappie, freshwater drum, black buffalo, bluegills, and black bullheads. The first carp was captured on April 21st and the count is up to about 110 carp so far. Staff has been tracking carp movement via telemetry this spring however were not able to get out last month. Staff did find one carp that had lost its tag.



### **Creek Restoration Action Strategy**

Barr Engineering and District staff has been working on an updated edition of the CRAS and on a future publication for a professional journal. Additionally, staff has been working on a final creek walk summary book to have on hand to easily reference.

Staff also conducted creek walks of the two most southern ravine tributaries of Lotus Lake. Overall, scores were fairly similar to estimated scores as the stream sections were in fairly good shape. Staff will conduct more stream assessments in the fall as the surrounding vegetation has become dense.

### **WOMP Station - Metropolitan Council**

Staff has visited the WOMP stations twice this month and have been using the Met Council's new procedures.

### **Service Learners**

No new update.

### **Volunteering**

Volunteers helped out at the Rain Barrel sale, as well as at two tabling events. In all cases, their work helped to expand the capacity of the district, and staff are very grateful for their time and talent. For one of the tabling events, staff were busy at a different district event, and without a volunteer, would not have been able to participate. To date, volunteers have donated 42 hours of their time (this does not include the work of Master Water Stewards on their capstone projects, or any Master Water Steward hours logged at non-district events).

### **Education and Outreach (M. Jordan)**

#### **Adopt a Dock Program**

All the plates have been distributed and volunteers are logging observations. No mussels have been detected. Two volunteers found bumps that looked suspicious, and reported them to staff. Staff determined they were snails and not mussels. Staff will be using these reports to create some educational pieces on “what not to worry about” for volunteers.

#### **AIS Jr Inspector**

Carver County WMO has requested to use the activity at several events during the summer. Minne Explorer’s club is also interested in having staff AIS Jr inspector program at their site. More information to come.

#### **Arbor day fair**

The District participated in a Eden Prairie’s Arbor Day Fest. Together with Nine Mile Creek WD, the district hosted a table with aquatic insects. Attendees learned how insects can be an indicator of water body health, and got to search for and identify specimens.

#### **How-to Festival**

The District participated in an event at the Eden Prairie Library called the “How-to Festival”. Each station taught attendees how to do something. Together with Nine Mile Creek WD, the district showed people the hows and whys of lawn care that supports clean water. Staff grew traditional and low-mow turf in tubs to demonstrate how they looked, and clipped the grass to the recommended three inches or higher. They also handed out sample packets of low mow, and sticks to measure grass length.



### **Earth Day Mini Grants**

No new updates.

### **Lakes and Creeks Water Quality Report**

To date, over 400 lakes & creeks fact sheets have been distributed in the community, with the help of local lake associations, CAC members, and Master Water Stewards.

### **Master Water Stewards Program**

Staff are beginning to promote and recruit for next year's cohort. Two members of the 2016 cohort, who are also CAC members, are exploring an Adopt a Storm drain type of project as a part of their volunteer hours. One steward helped out with an Eagle Scout shoreline restoration project on Lake Susan as a part of their volunteer hours. While at the project, Lake Susan resident, and former watershed district manager Ken Wencil happened by. He met the scout team and engaged the scouts by commending them on their terrific work and asking some probing questions. They had a good discussion about the project and how it works to control the problem of the eroding shoreline.

The year before the Master Water Stewards program moved beyond Minnehaha Creek Watershed District, one of this districts CAC members went through the program. Their capstone project is taking place in the Minnehaha Creek Watershed District, however, they have engaged a 5th grade class at Clear Springs elementary to participate in the project. The class is learning about raingardens and cisterns, will be helping to plant the garden, and are creating brochures to do outreach in the community. Staff visited the class and presented on how the land around Clear Springs has changed, how that impacts water, and how we can all be a part of protecting clean water. Staff was very impressed by the insightful questions the students asked.



## Project WET

Together with the Nine Mile Creek Watershed District, the District is hosting a Project Wet Training on August 10. The training includes an additional focus on teaching outside, with a resource fair. Staff are recruiting local people/organizations with experience teaching outside to participate in the resource fair.

## Science day at Clear Springs

The district participated in a science day at Scenic Heights Elementary. They facilitated an Aquatic Entomology station. Students learned about how many insects spend part of their lives in the water, how to tell different species apart, and then got to hunt through samples to find and identify insects (and a few crayfish). This was also the first day for the district's summer intern, who got to get her feet wet on a fun program. She will be working two days a week and supporting both the water resource and education programs.



## Staring Lake Outdoor Learning Center

Staff assisted in the spring Lake Study with fourth graders from Oak Point and Prairie View Elementary Schools in Eden Prairie. The District has been partnering with the outdoor center since fall of last year, to support and enrich their water-related programming. For the spring class, the district was able to add a fisheries biology and invasive species component. Students learned how to identify different fish species, why common carp are a problem and how the district manages them. Staff brought the electrofishing boat to show, and had live fish for the students to help measure and ID. It was a fun two days for staff and students both.



### **St. Huberts Water Conservation Presentation**

Staff visited St. Huberts school and taught a lesson on water conservations. Three 8th grade classes participated and learned about where their water comes from, how much water they typically use, and how it compares to people around the world. They then participated in a water hauling relay, reflecting how some people have to haul their water long distances, every day.



### **Rain-barrel sale**

72 rainbarrels (and 25 compost bins) were sold through the rain barrel sale and picked up on May 5th and 6th. Many of the people who picked up barrels signed up for the district's email newsletter.



### **University of MN – 2017 Stormwater Practices Maintenance Workshop**

Joshua Maxwell presented at the 2017 Stormwater Practices Maintenance Workshop to 51 water resource professionals on May 9th. Josh was apart of the field exercise which occurred at the stormwater pond near Christ Lutheran Church and the Chanhassen Recreation Center. The main topics Josh discussed included: introducing a watershed district and its purpose, discussing the main purpose of BMP's (specifically stormwater ponds), and to talk about the status of Bluff Creek which the stormwater pond drains too. Overall the presentation went well and we received great feedback.

### **Website & Newsletter**

A second iteration of the website update was shared with the CAC for thoughts and suggestions.

### **Winter & Turf Maintenance Training**

The district is hosted on May 31 a one-hour turf maintenance refresher course for city of Minnetonka maintenance staff, and seasonal employees. Fortin Consulting conducted the training. A level II winter training will be hosted at the district August 8th.

### **Bluff Creek One Water**

#### **Chanhassen High School**

The board will be given an update on the bid opening at the board meeting.

#### **Bluff Creek**

Staff is working with partners to determine partner cost-sharing on the project.

### **Riley Creek One Water**

#### **Lake Susan Park Pond**

Working with all of our partners to determine contribution and if additional funds needed to complete the project.

#### **Riley Creek**

Staff is working with the City of Eden Prairie to determine final financial support for the project. Lower Minnesota River Watershed District will be contributing \$150,000.

#### **Lake Riley CLP Treatment**

PLM performed the CLP herbicide on Lake Riley. We are now working with the University of Minnesota to determine treatment area for EWM. The District will be applying for the permit shortly.

#### **Lake Riley Water Quality Project (Alum)**

Water Clarity still looks good. We will be working with Wenck to take cores as means of evaluating the first split dose.

#### **Lake Susan CLP Treatment**

Lake Susan herbicide treatment was completed.

### **Purgatory Creek One Water**

#### **Fire Station 2**

District staff, city of Eden Prairie, and Eden Prairie Fire Station representatives met to work on key messaging for the signage at the project. An overall site theme was identified, and preliminary copy is being developed. (see a sneak peek of the first draft below)

# Explore our yard and discover sustainable practices you can take home to yours

This firestation uses practices to conserve water & promote healthy habitat. Explore the grounds to see how the City of Eden Prairie is reducing its water usage, and how you can help by:



Installing a rainbarrel or cistern. Collecting and reusing rainwater reduces ground water use.



Planting turfgrass alternatives. Low mow and native grasses need less water. They also decrease pollution, like fertilizer, to local rivers, lakes, and wetlands.



Using native plants. These plants provide habitat for pollinators, birds, and other animals.



## Purgatory Recreational Area Berm

No new update.

## Purgatory Creek at 101

Final planting were made. The first test for the restoration was successful. Our back to back brought down on mature tree downstream from our restoration but our restoration looked great. We will be monitoring throughout the summer success of the restoration.

## Mitchell Lake Plant Management

The District applied and received a permit from the DNR to perform herbicide treatment for CLP. The treatment was performed. One resident opted out of the treatment as they were concerned by the chemicals that were being utilized.

## Red Rock Lake Plant Management

PLM performed the herbicide treatment for CLP.

## Scenic Heights School Forest

School district, city of Minnetonka, and watershed district representatives met to develop a public engagement framework for the project. The framework identifies the different stakeholder groups, from authorities/decision makers to school and general community members. Methods for building awareness of the project in each group were identified as well as key dates.



## **Staring Lake Plant Management**

The District applied and submitted required documentation for a permit controlling curly-leaf pondweed. The DNR approved the permit. We are all set to go when conditions are optimal for the treatment.

## **Professional Workgroups and Continuing Education**

### **Metro Water Forum - METC**

On May 9th District staff Bleser and Maxwell attended the Metro Water Forum which was organized by the Metropolitan Council. The purpose of the event was to gauge direction on what type of framework (organizational) is most supported in regards to training on topics, the most interesting monitoring topics for trainings, and most interesting topics regarding data. Water resource professionals from across the metro were split into groups and all ideas were collected. Below is a list of the top ideas under each category.

#### Top Three Framework Topics:

1. Metropolitan Council should lead and provide staff. Fits with Met Council mission of well-planned, orderly metro area
2. Focused workshops/training/demos/online resources/ portal
3. Quarterly

#### Top Three Monitoring Topics:

1. Method Standardization and Sharing of SOPs
2. Program Design
3. Pro/Cons of Specific Equipment

#### Top Three Data Topics:

1. Regional/Cross-Agency Data Collection/Storage/Database
2. (Tie) Assessment of Data & Analysis Training
3. (Tie) Setting up Study Design & Public Consumption, Reporting, and Tools

## **Climate Adaptation Forum**

Staff attended the National Climate Adaptation Forum in St. Paul, May 9-11. Staff Jordan attended on the 9th, Administrator Bleser presented and attended on the 10th and Staff Jeffery attended the 11th. The forum was full of great information. Some of the take home messages included:

C2ES has a guide to public-private collaboration on city climate resilience planning. Even though this tool was targeting cities some of the sessions pertained information that we can use.

- Businesses respond to city leadership
- Businesses respond to data
- Need to establish uniform climate scenario planning
- Vulnerability assessment should be done with and share with the businesses
- Small businesses versus big business (one sizer does not fill all)

Explore together, share directly, get business ideas, develop resilience with business, and implement with business support

The City of Cleveland developed a neighborhood toolkit to work develop and implement resiliency at a neighborhood scale and develop actions.

Use story mapping as part of your outreach.

Know your opportunities!

## **Minnesota Association of Watershed District**

The Summer Tour will be June 21-23. Manager Forster and Crafton will be representing the District. Administrator Bleser will be attending the summer tour and will be meeting with the ADA.

## **Watershed Partners**

No new updates.

## Riley Purgatory Bluff Creek Watershed District Permit Application Review

**Permit No:** 2015-036

**Original Application:** Conditionally approved at September 1, 2016 meeting

**Modification Request Received complete:** April 20, 2017

**Applicant:** Lake West Development LLC

**Consultant:** Reid Schulz, Landform Professional Services

**Project:** Saville West Subdivision –Construction of a 5-lot single family home subdivision. Three infiltration basins, two rainwater gardens, vegetated swales and rainwater harvesting/reuse will provide storm water quantity, volume and quality control.

**Location:** 5325 County Road 101, Minnetonka, 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
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	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	Yes	
D	Wetland and Creek Buffers	See Comment	See Rule Specific Permit Condition D1.
J	Stormwater Management	Rate	Yes
		Volume	Yes
		Water Quality	Yes
		Low Floor Elev.	Yes
		Maintenance	See Comment
L	Permit Fee	Yes	\$1,000 was received on July 6, 2015. Additional \$2,860.70 for excess cost recovery

Rule	Issue	Conforms to RBPCWD Rules?	Comments
M	Financial Assurance	See Comment	The financial assurance has been calculated at \$185,700.

### **Project Description**

The applicant proposes to modify the project by reducing the project footprint and the number of lots from 12 in the original submittal to five. The project proposes the subdivision of three existing single-family home properties into five. The proposal includes the construction of three new homes, while two of the lots will retain the existing single family homes. An existing wetland is located on the northeast portion of the site. The project includes three infiltration basins, two rainwater gardens, vegetated swales and rainwater harvesting/reuse to provide storm water quantity, volume and quality control. The Managers conditionally approved the original submittal in September 2016. The applicant has not completed the steps necessary to satisfy the conditions on the approval, so the permit has not been issued, but the conditional approval remains effective to September 2017.

The original permit submittal included the placement of 21 cubic yards of fill below the 100-year flood elevation of the wetland (922.0), the project activities must conform to the RPBCWD's Floodplain Management and Drainage Alterations rule (Rule B). Because the revised submittal eliminated the fill within the floodplain of the wetland Rule B is no longer applicable.

The project site information is summarized below:

	Original Project	Modification Request
Total Site Area (acres)	6.03	3.81
Existing Site Impervious (acres)	0.30	0.24
New (Increase) in Site Impervious Area (acres)	1.24 (413% increase)	0.495 (107% increase)
Total Disturbed Area (acres)	3.4	1.34

Exhibits:

1. Permit Application dated July 6, 2015.
2. Watershed Plan Sheets (12 sheets) dated July 6, 2015 (revised May 25, 2017).
3. Stormwater Management Plan Revised June 26, 2015 (revised May 25, 2017).
4. Geotechnical Exploration and Engineering Review in June 26, 2015 Stormwater Management Plan.
5. Wetland Delineation Report in June 26, 2015 Stormwater Management Plan (dated February 6, 2014).
6. P8 Model in May 26, 2017 submittal.
7. MnRAM documentation received July 17, 2015.
8. MIDS Calculator file received May 11, 2017
9. HydroCad models for existing and proposed conditions received May 26, 2016
10. Response to Comments dated May 9, 2017.

**Rule Specific Permit Conditions**

**Rule C: Erosion and Sediment Control**

Because the project will alter over 1.34 acres 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 Landform Professional Services includes installation of silt fence, inlet protection for storm sewer catch basins, a rock construction entrance, placement of a minimum of 6 inches of topsoil, decompaction of areas compacted during construction, and retention of native topsoil onsite. The applicant indicated Lakewest Excavating will be responsible for all erosion control on the site. The proposed project conforms to the erosion and sediment control requirements of Rule C.

**Rule D: Wetland and Creek Buffers**

Because the proposed work triggers a permit under RPBCWD Rules B and J and the onsite wetland is protected by the state Wetland Conservation Act, Rule D, Subsections 2.1a and 3.1 require buffer on the portion of the wetland downgradient from the proposed land-disturbing activities. No draining, filling of the onsite wetland is proposed.

A 2014 wetland delineation for the site was included with the submittal. The MnRAM analysis dated February 6, 2014 indicates that the wetland onsite is a medium value wetland according to Appendix D1. Rule D, Subsection 3.1.a.iii requires a wetland buffer with an average of 40 feet from the delineated edge of the wetland, minimum 20 feet. The applicant proposed wetland buffers for the wetland which provide a 40-foot average, 25-foot minimum consistent with the widths identified in Rule D, Subsection 3.1 for medium value wetlands. The applicant is proposing buffer monument locations consistent with criteria in Rule D, Subsection 3.3. The Applicant is proposing revegetating disturbed

areas within the proposed buffer with native vegetation in conformance with Rule D, Subsection 3.2. A note is included on the plan sheet indicating 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. To conform to the RPBCWD Rule D the following revisions are needed:

- D1. Buffer areas and maintenance requirements must be documented in a declaration recorded after review and approval by RPBCWD in accordance with Rule D, Subsection 3.4.

**Rule J: Stormwater Management**

Because the project will alter over 1.34 acres 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 will apply to the entire project parcel because the project will increase the imperviousness of the entire parcel by more than 100 percent (Rule J, Subsection 2.3).

The developer is proposing construction of three infiltration basins, two rainwater gardens, vegetated swales and three rainwater harvesting/reuse facilities to provide the rate control, volume abstraction and water quality management on the site. The rainwater gardens will have an elevated underdrain to promote infiltration of runoff. Water collect in the raingarden underdrain is directed to the rainwater harvesting/reuse systems. Vegetated filter strips and swales will provide pretreatment for the infiltration basins and rainwater gardens.

**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
Tracy Lynn	2.8	2.7	5.3	5.1	10.1	9.9	1.5	1.5
South	1.1	<0.1	2.2	1.6	4.3	4.1	0.6	0.6
Wetland	2.7	1.1	5.1	2.9	9.9	9.3	1.5	1.5

**Volume Abstraction**

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from all impervious surface of the parcel. An abstraction volume of 1,983 cubic feet is required from the 0.495 acres (21,561 square feet) of impervious area on the project for volume retention. The applicant has proposed three infiltration basins, vegetated swales, and three rainwater harvesting/reuse to abstract 1,029 cubic feet, 12 cubic feet, and 1,034 cubic feet, respectively of runoff from the site. Pretreatment of runoff is provided vegetated filter strips.

Soil borings performed by Northern Technologies, Inc. show that soils in the project area are primarily clays; the MN Stormwater Manual indicates an infiltration rate of 0.06 inches per hour for such soils. The soil borings show no groundwater was observed to a boring depth of 21 feet. Groundwater is at least 3 feet below the bottom of the proposed underground infiltration system (Rule J, Subsection 3.1.b.ii).

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Volume (cubic feet)
1.1	1,983	2,075

Because the proposed water reuse irrigation systems require consistent use at a specified rate to meet District requirements, performance monitoring for the site will be required to ensure that the project is able to meet the RPBCWD volume abstraction requirement as has been proposed. In accordance with Rule J, Subsection 2.6 performance monitoring, and as a stipulation of issuing a permit for this project, the Applicant must submit an operations plan and monitor the proposed irrigation systems to determine the ability of the system to achieve the estimated volume abstraction as presented in the design. The monitoring program must be included in the maintenance declaration that is recorded with the County. The recorded reuse volume must be submitted to the RPBCWD on a yearly basis. If it is determined that the system is not performing as designed, the applicant will need to submit a revised design and construction plan to demonstrate that the volume abstraction standard will be achieved.

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

**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 three infiltration basins, two

rainwater gardens, vegetated swales and three rainwater harvesting/reuse to achieve the required TP and TSS removals and submitted a P8 model and MIDS calculator file to estimate the TP and TSS removals.

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

Pollutant of Interest	Regulated Site Loading (lbs/yr)	Required Load Removal (lbs/yr) <sup>1</sup>	Provided Load Reduction (lbs/yr)
Total Suspended Solids (TSS)	418.0	376.2(90%)	376.7 (90.1%)
Total Phosphorus (TP)	1.66	1.0 (60%)	1.37 (82.5%)

<sup>1</sup>Required load reduction is calculated based on the removal criteria in Rule J, Subsection 3.1c and the load generated from all the impervious area on the site.

**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 according to Rule J, Subsection 3.6. The low floor elevation of the homes and the adjacent stormwater management feature is summarized below. The project meets the requirements of Rule J, Subsection 3.6.

Location Riparian to Stormwater Facility	Low Floor Elevation of Building (feet)	100-year Event Flood Elevation of Adjacent Stormwater Facility (feet)	Freeboard (feet)
Lot 1	918.43	929.0	10.57
Lot 2	926.89	931.0	4.11
Lot 3	926.89	928.9	2.01
Lot 4	927.0	924.29	2.71
Lot 5	918.4	914.12	4.28

**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 ..... \$1,000



The RPBCWD permit fee schedule adopted in December 2015 indicates that costs of site inspections, analysis of the proposed activities, services of consultants and compliance assurance in excess of \$2,000 for properties less than 5 acres will be charged to the permit applicant. The review of this permit application has resulted in \$4,860.70 of consultant time.

- L1. In accordance with the adopted RPBCWD permit-fee schedule, because the engineer and legal time to review this permit exceeded \$2,000 the applicant must submit an additional permit fee of \$2,860.70 for excess cost recovery.

**Rule M: Financial Assurance:**

Rules C: Silt fence: 1,800 L.F. x \$2.50/L.F. = .....	\$3,700
Restoration: 3.4 acres x \$2,500/acre = .....	\$3,350
Rules D: Wetland Buffer: \$5,000 + \$1,000/acre over 10 acres = .....	\$5,000
Rules J: Infiltration: 7,116 sq. ft. x \$6/sq. ft. = .....	\$42,700
Water Reuse: \$60,000 x 125%= .....	\$75,000
Contingency (10%) .....	\$13,000
Administration (30%) .....	<u>\$42,900</u>
Total Financial Assurance.....	\$185,700

**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. The applicant must require the installation of water reuse irrigation system with flow meter to record the usage for each lot as part of the performance monitoring requirement of the permit.
4. 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 conforms to Rule C and will conform to Rules D and J if the Rule Specific Permit Conditions listed above are met.

**Recommendation:**

Approval of the permit contingent upon:

1. Continued compliance with General Requirements.
2. Financial Assurance in the amount of \$185,700.
3. Receipt in recordation a maintenance declaration for the stormwater management facilities and wetland buffer. The declaration must also include a stormwater reuse monitoring and reporting plan. A draft must be approved by the District prior to recordation.
4. Receipt of an additional permit fee of \$2,860.70 for excess cost recovery.

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

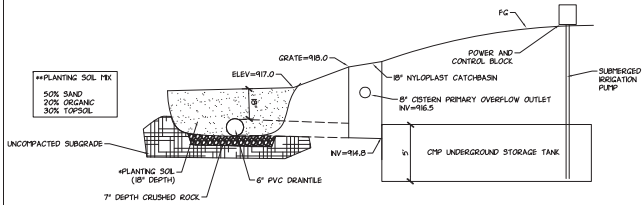
1. Per Rule J Subsection 4.5, upon completion of the site work, the permittee must submit as-built drawings demonstrating that at the time of final stabilization, stormwater facilities conform to design specifications as approved by the District.
2. Per Rule J Subsection 2.6, performance monitoring, the applicant must monitor the proposed irrigation systems to provide the volume abstraction as presented in the design. The recorded reuse volume must be submitted to the RPBCWD annually. If it is determined that the irrigation systems are not performing as designed, a revised design must be submitted to the District for approval to demonstrate that the volume abstraction and water quality standard is achieved.
3. Single-family homes to be constructed on lots in the subdivision created under the terms of permit 2015-036, if issued, must have an impervious surface area and configuration materially consistent with the approved plans. Home design proposed that differs materially from the approved plans will be subject to re-review for compliance with all applicable regulatory requirements.

**Board Action**

It was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_ to approve permit modification for permit No. 2015-036 with the conditions recommended by staff.

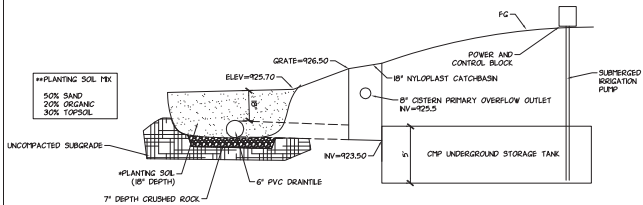






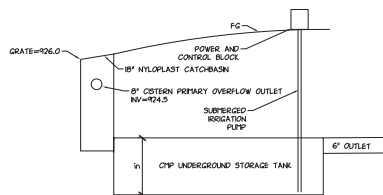
RAIN GARDEN A/CISTERN LOT 1

NO SCALE



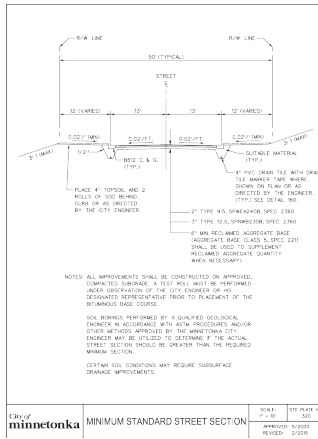
RAIN GARDEN B / CISTERN LOT 2

NO SCALE



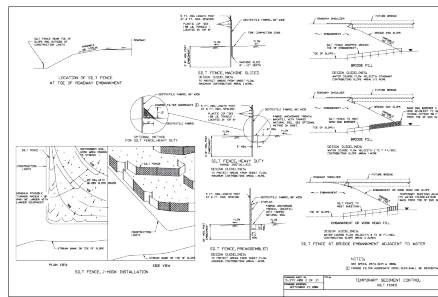
RAINWATER CISTERN LOT 3

NO SCALE



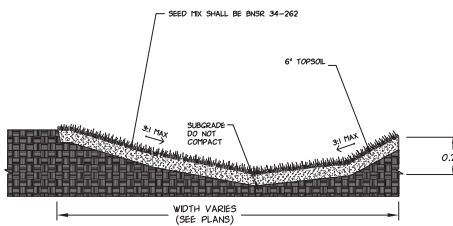
STANDARD STREET SECTION

NO SCALE



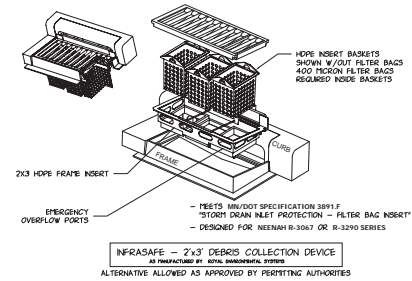
SILT FENCE

NO SCALE



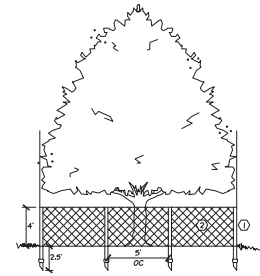
INFILTRATION BASINS (TYP.)

NO SCALE



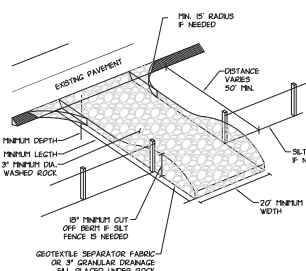
INLET PROTECTION 2'x3'

NO SCALE



TREE PROTECTION

NO SCALE



VEHICLE TRACKING PAD

NO SCALE

DEVELOPER

LAKE WEST DEVELOPMENT CO., LLC.  
15400 HIGHWAY 7  
MINNETONKA, MN 55345  
TEL: 952.930.3000

MUNICIPALITY

City of  
minnetonka

PROJECT  
SAVILLE WEST  
1ST ADDITION  
MINNETONKA, MN

SHEET INDEX

NO.	DESCRIPTION
C01	CIVIL TITLE SHEET
C11	EXISTING CONDITIONS
C21	GRADING AND EROSION CONTROL PLAN
C41	UTILITY PLAN
C71	CIVIL CONSTRUCTION DETAILS
C72	CIVIL CONSTRUCTION DETAILS
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L12	TREE PRESERVATION PLAN (SOUTH)
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REVISION HISTORY

DATE	REVISION	BY
04 NOV 2016	BY ADDITION PLAT SUBMITTAL	
04 JAN 2017	BY ADDITION WATERSHED SURVEILLANCE	
04 MAR 2017	BY ADDITION CITY COMMENTS	
04 MAY 2017	CITY COMMENTS	
02 MAY 2017	WATERSHED SURVEILLANCE #1	
25 MAY 2017	WATERSHED SURVEILLANCE #2	

PROJECT MANAGER REVIEW

DATE: 04/25/2017

CERTIFICATION

DATE: 04/25/2017

PROJECT MANAGER REVIEW

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PROJECT MANAGER REVIEW

DATE: 04/25/2017

**PRELIMINARY**  
**NOT FOR CONSTRUCTION**

WATERSHED REVISION #3  
05-25-2017

LANDFORM  
From Start to Finish

105 South Fifth Avenue  
Suite 515  
Minneapolis, MN 55401

Tel: 612-252-6070  
Fax: 612-252-6077  
Web: landform.net

FILE NAME: C711.WD01.DWG

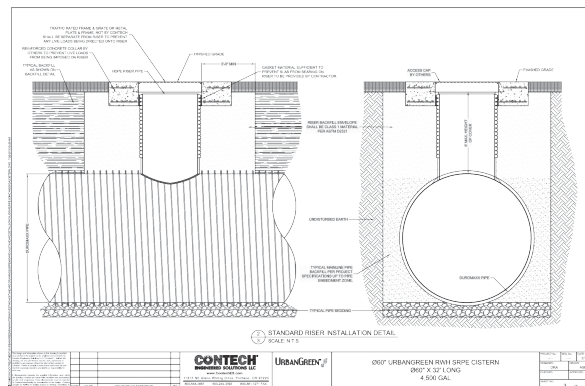
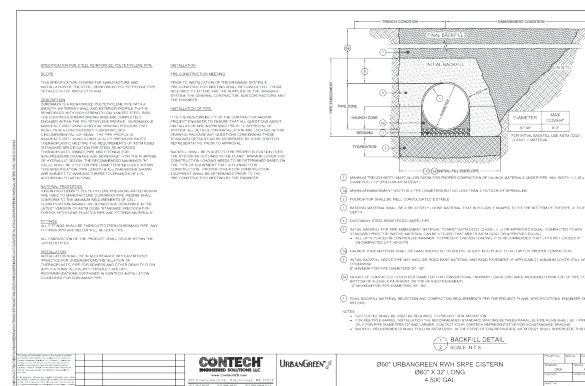
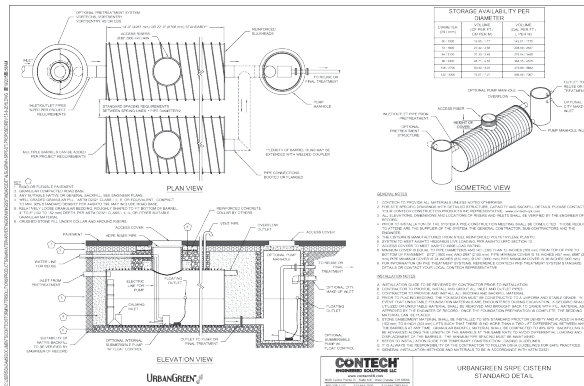
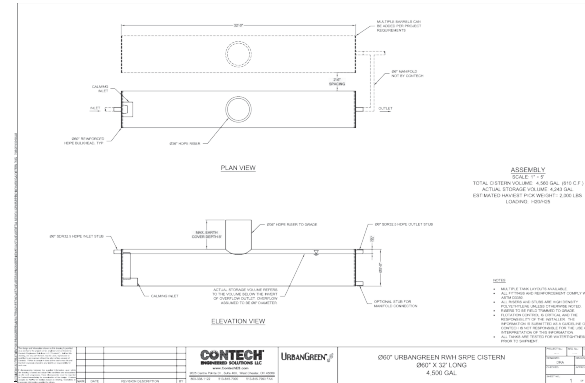
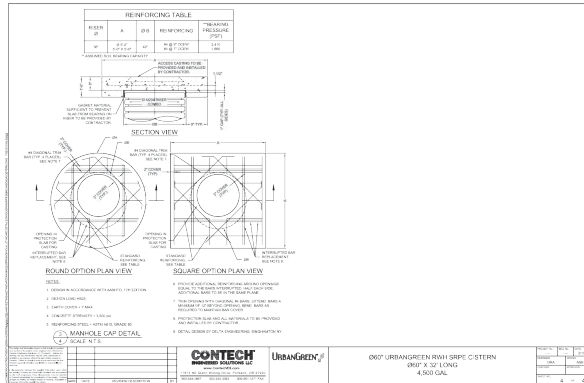
PROJECT NO: LW14001

CONSTRUCTION DETAILS

**C7.1**

SHEET NO. 12/11

Landform and Soil & Rock are services marks of Landform Professional Services, LLC.



**DEVELOPER**  
LAKE WEST DEVELOPMENT CO., LLC.  
15400 HIGHWAY 7  
MINNETONKA, MN 55345  
TEL: 952/938-3000

**MUNICIPALITY**  
City of  
**minnetonka**

**PROJECT**  
SAVILLE WEST  
1ST ADDITION  
MINNETONKA, MN

**SHEET INDEX**

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04 JAN 2017	BY ADDITION WATERSHED SUBMITTAL	
04 APR 2017	BY ADDITION CITY COMMENTS	
04 MAY 2017	WATERSHED REVISION #1	
04 MAY 2017	CITY COMMENTS	
12 MAY 2017	WATERSHED REVISION #2	
25 MAY 2017	WATERSHED REVISION #3	

**PROJECT MANAGER REVIEW**  
CERTIFICATION

**PRELIMINARY NOT FOR CONSTRUCTION**

LANDFORM

**WATERSHED REVISION #3**  
05-25-2017

**LANDFORM**  
From Start to Finish

105 South Fifth Avenue  
Suite 515  
Minneapolis, MN 55401

Tel: 612-252-6070  
Fax: 612-252-6077  
Web: landform.net

FILE NAME: C702.WD01.DWG  
PROJECT NO.: LW014001

**CONSTRUCTION DETAILS**  
**C7.3**

SHEET NO. 1011



**L A N D F O R M**  
From Site to Finish

# RAINWATER REUSE MAP

# Water Conservation System

## Summary of Maintenance

### Summary of Equipment:

**SkyHarvester System with Touch Screen fully integrated monitoring and control.**

- SkyHarvester system controls have several alarms and are designed to self protect against conditions such as low water level, high or low voltage, high or low pressure, phase imbalance, filter status, and control power. This system reduces the amount of time and money spent on preventative maintenance and unnecessary manual monitoring. See system credentials or specifications for all alarms provided with your system.
- Underground SkyHarvester storage tank(s)
- Rainwater tank pre-filter(s)
- Discharge filtration to 5 micron with automatic self cleaning filter(s)
- Motorized valves for city water automatic back up
- Ultra Violet light unit(s)

### Monthly:

#### **Pump station:**

- Visually inspect pump station and all components to ensure they are free from debris.
- Inspect pump station for any leaks or loose bolts. Note: bolts can become loose from vibration and temperature changes.
- Insure system has no active alarms indicated on operator interface

#### **Rainwater tank pre-filter**

- Visually inspect rainwater pre-filter to ensure it is free from debris and is in proper working condition. This time interval can decrease after owner/operator has a familiarity with their system.



- Note operation of self cleaning nozzles (if equipped). If debris is too large, or is building up on screen, remove and clean with pressurized hose and re-install.

#### **Bi-annually:**

##### **Pump Station and Filtration:**

- Consult a PSN service technician to perform an inspection and check operation of system. [www.pumpservicenetwork.com](http://www.pumpservicenetwork.com)
- Self cleaning filter is monitored and flushed by control package. Contact your PSN provider to perform a filter inspection, or see detail filter breakdown in Watertronics owner's manual.
- Check pump flow, pressure, and amperage against initial start-up measurements. If pump or impellers, or rotating assembly needs maintenance a disparity will show in the performance. Initial start-up measurements available from PSN service provider.

#### **Annually:**

##### **Inspect Cistern (clean as required to the standards below)**

- The interior of the tank will be washed out to remove all mud, silt, and other contaminants. The pressure washing will allow for proper inspection of the coating and substrate.
- If required, disinfect the tank(s) by spray method prior to returning each tank back into service.
- Tank and all piping to storage tank should be kept clean and free of construction debris and garbage during construction, until the time that construction is complete. Whenever possible allow the first rain event to by-pass the tank and act as a flush of the piping system before putting rainwater harvesting system into operation.

##### **Sensors and Switches**

- Inspect float switch to ensure mechanical float switch is in proper working order.
- Inspect digital level sensor to ensure it is free from sediment and debris.
- Check digital level reading with actual measured level, if large disparity, contact a PSN provider to calibrate level sensor

- Check digital pressure reading with actual measured level, if large disparity, contact a PSN provider to calibrate pressure sensor

### **UV Equipment**

- Replace UV bulb every 365 days. Replacement lamp and quartz sleeve should be inspected for imperfections and cleaned with a soft, lintless wipe wetted with a Lamp/Reflector cleaning solution prior to installation. Improper installation or cleaning will degrade the performance of the UV system. Do not touch UV bulb directly, oils from skin can cause the bulb to prematurely fail. Note, Watertronics may use different UV manufactures on various Watertronics systems. Please consult actual UV manual contained inside Watertronics owner's manual.

### **Pump Station and Discharge Filter**

- Disassemble discharge filter, inspect internal rotating assembly and gear for wear, add grease if needed.
- Check pressure relief valve opening pressure. If pressure is lower than initial setting, adjust accordingly.

Maintain System per required maintenance of each component as provided in the operations manual provided with each customized solution. Control system monitors pump, power, filtration, and level. System is self protecting, may only require service due to a component failure to site condition.

## Riley Purgatory Bluff Creek Watershed District Permit Application Review

**Permit No:** 2015-050

**Original application:** Conditionally approved at October 5, 2016 meeting

**Modification Request Received complete:** May 16, 2017

**Applicant:** Tom Giannetti

**Consultant:** Dan Schmidt, Sathre-Bergquist, Inc.

**Project:** Arbor Glen Subdivision – Construction of a 18-lot single family home subdivision. A NURP pond, vegetated swales, and a water reuse system will provide storm water quantity, volume and quality control.

**Location:** 9170 Great Plains Blvd, Chanhasen, MN

**Reviewer:** Candice Kantor and 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
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	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.
D	Wetland and Creek Buffers	See Comment	See Rule Specific Permit Condition D1-D3.
J	Stormwater Management	Rate	Yes
		Volume	Yes
		Water Quality	Yes
		Low Floor Elev.	Yes
		Maintenance	See Comment
L	Permit Fee	See Comment	\$1,000 was received on October 29, 2015, but permit fee is \$2,000 plus an additional \$2,668.60 for excess cost recovery.
M	Financial Assurance	See Comment	The financial assurance has been calculated at \$170,100.

## **Project Description**

The applicant proposes to modify the project by reducing the number of lots from 21 in the original submittal to 18 lots, increasing the pond size, and removing the private stub streets. The project proposes the subdivision of the parcel into 18 single family lots and construction of 18 single family homes, and also appears to include grading and construction on Hennepin County right-of-way adjacent to the subject property. Documentation of authorization to enter, construct and occupy the county property at issue must be provided for the permit, if issued, to authorize such work. An existing wetland is located on the southern portion of the site. The project includes a NURP pond, vegetated swales, and a water reuse system. The permit was conditionally approved on October 5, 2016. The conditions of approval have not be satisfied, and permit 2015-050 has not yet been issued; the conditional approval is valid through October 2017.

The project site information is summarized below:

	<b>Original Project</b>	<b>Modification Request</b>
Total Site Area (acres)	8.5	8.5
Existing Site Impervious (acres)	0.1	0.1
New (Increase) in Site Impervious Area (acres)	1.77 (>100% increase)	1.55 (>100% increase)
Total Disturbed Area (acres)	6.0	6.0

Exhibits:

1. Permit Application dated October 29, 2015.
2. Design Plan Sheets (Sheets 1-12) dated May 29, 2015 (revised April 21, 2017).
3. Stormwater Quality and Quantity Management Plan dated June 5, 2015 (revised May 16, 2017).
4. HydroCAD Model in June 5, 2015 Stormwater Quality and Quantity Management Plan (revised May 23, 2017).
5. Geotechnical Exploration Report by Stork Materials Technology dated January 19, 2007.
6. Wetland Delineation Report dated May 6, 2015.
7. MnRAM documentation dated December 22, 2015.
8. P8 Model in June 5, 2015 Stormwater Quality and Quantity Management Plan.
9. MIDS Calculator file dated July 24, 2016 (revised May 16, 2017).
10. Permit-review extension request dated January 19, 2016.
11. RPBCWD Board of Managers' action, extending review period to April 26, 2016 – minutes of February 3, 2016, RPBCWD meeting

12. Permit-review extension request dated April 1, 2016.
13. RPBCWD Board of Managers' action, extending review period to May 29, 2016 – minutes of April 6, 2016, RPBCWD meeting
14. Permit-review extension request dated April 26, 2016.
15. RPBCWD Board of Managers' action, extending review period to August 27, 2016 – minutes of May 3, 2016, RPBCWD meeting
16. Permit-review extension request dated July 12, 2016.
17. RPBCWD Board of Managers' action, extending review period to October 26, 2016 – minutes of August 3, 2016, RPBCWD meeting
18. Buffer Figure dated May 29, 2015 (revised April 21, 2017).
19. Response to Comments dated November 16, 2015.
20. Response to Comments dated July 26, 2016.
21. Response to Comments dated September 12, 2016.
22. Response to Comments dated September 21, 2016.
23. Design Plans for Water Reuse System (Sheets IR 1.0 – IR 2.1) by Water-in-Motion dated July 19, 2016 (revised May 19, 2017).
24. Response to Comments from Water-In-Motion dated August 30, 2016.
25. Draft Maintenance Declaration received November 23, 2015.
26. BMP Cost Estimate Calculations dated September 21, 2016 (revised September 23, 2016).
27. Hard Cover Calculations dated September 21, 2016 (revised May 16, 2017).

### **Rule Specific Permit Conditions**

#### **Rule C: Erosion and Sediment Control**

Because the project will alter 6.0 acres (261,360 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 Sathre-Bergquist, Inc. includes installation of silt fence, inlet protection for storm sewer catch basins, a 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 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 and the onsite wetland is protected by the state Wetland Conservation Act, Rule D, Subsections 2.1a and 3.1 require buffer on the portion of the wetland downgradient from the proposed land-disturbing activities. No draining, filling of the onsite wetland is proposed.

A May 6, 2015 wetland delineation for the site was included with the submittal. The MnRAM analysis dated December 22, 2015 indicates that the wetland onsite is a high value wetland according to Appendix D1. Rule D, Subsection 3.1.a.ii requires a wetland buffer with an average of 60 feet from the delineated edge of the wetland, minimum 30 feet. As shown in the site plan attached here, the Applicant proposed wetland buffers with an average width of 60 feet, minimum of 30 feet for the wetland which meet the average and minimum widths identified in Rule D, Subsection 3.1 for high value wetlands. The Applicant is proposing revegetating disturbed areas within the proposed buffer with native vegetation in conformance with Rule D, Subsection 3.2. A note is included on the plan sheet indicating 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.

To conform to the RPBCWD Rule D the following revisions are needed:

- D1. There appears to be proposed grading and trail construction outside the parcel boundary along Highway 101. This proposed trail work is upgradient from the wetland and will therefore require wetland buffer with a 30 foot minimum, 60 foot average. Please indicate if the property rights to construct the trail allow for restoration with native vegetation, the designation of a buffer and the right to maintain that buffer.
- D2. Buffer marker locations must be shown on the design drawings. A marker must be placed along each lot line, with additional markers at an interval of no more than 200 feet. The monumentation requirement applies to each lot of record to be created.
- D3. Buffer areas and maintenance requirements must be documented in a declaration recorded after review and approval by RPBCWD in accordance with Rule D, Subsection 3.4.

### **Rule J: Stormwater Management**

Because the project will alter 6.0 acres (261,360 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 entire project parcel because the project will increase the imperviousness of the entire parcel by more than 1,550 percent (Rule J, Subsection 2.3).

The developer is proposing construction of a NURP pond, vegetated swales, and a water reuse system to provide the rate control, volume abstraction and water quality management on the site. The northern

and eastern portions of the site are routed to vegetated swales which discharge to the NURP pond. The remainder of the developed portion of the site drains to a storm sewer system which discharges to the NURP pond. A water reuse system will use water stored below the normal water level of the NURP pond to irrigate the northern portion of the site. There is ultimately one discharge point from the site to the wetland at the southern edge of the property. The vegetated swales provide water quality treatment. The NURP pond provides rate control and water quality treatment. The water reuse system provides volume abstraction and water quality treatment. The NURP pond will provide pretreatment for the water reuse system.

**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
Wetland	4.5	2.4	11.8	5.2	29.4	13.6	1.1	1.0

**Volume Abstraction**

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from all impervious surface of the parcel. An abstraction volume of 6,189 cubic feet is required from the 1.55 acres (67,518 square feet) of impervious area on the project for volume retention. The Applicant proposed a water reuse system with pretreatment of runoff provided by a NURP pond. The table below summarizes the volume abstraction on the site.

Soil borings performed by Stork Materials Technology show that soils in the project area are clays (CL); the MN Stormwater Manual indicates an infiltration rate of 0.06 inches per hour for the clay soil is appropriate. Soil borings performed by Stork Materials Technology show no groundwater to a boring elevation of 914.5 feet. This indicates that groundwater is at least 3 feet below grade at the irrigation area for the water reuse system (Rule J, Subsection 3.1.b.ii). The applicant submitted calculations from Water In Motion to demonstrate an abstraction volume of 9,942 cubic feet is provided by the proposed water reuse system.

The table below summarizes the volume abstraction on the site.

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Volume (cubic feet)
1.1	6,189	9,942

Because the proposed water reuse irrigation system requires consistent use at a specified rate to meet District requirements, performance monitoring for the site will be required to ensure that the project is able to meet the RPBCWD volume abstraction requirement as has been proposed. In accordance with Rule J, Subsection 2.6 performance monitoring, and as a stipulation of issuing a permit for this project, the Applicant must submit and operations plan and monitor the proposed irrigation system to determine the ability of the system to achieve the estimated volume abstraction as presented in the design. The monitoring program must be included in the maintenance declaration that is recorded with the County. The recorded reuse volume must be submitted to the RPBCWD on a yearly basis. If it is determined that the system is not performing as designed, the Applicant will need to submit a revised design and construction plan to demonstrate that the volume abstraction standard will be achieved.

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

**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 a NURP pond, vegetated swales, and a water reuse systems to achieve the required TP and TSS removals and submitted a MIDS calculator file to estimate the TP and TSS removals. Based on information reviewed, the proposed project conforms to Rule J, Subsection 3.1.c.

Pollutant of Interest	Required Removal (%)	Estimated Removal (%)
Total Suspended Solids (TSS)	90	90.7
Total Phosphorus (TP)	60	79.7

**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 according to Rule J, Subsection 3.6. The low floor elevation of the homes and the adjacent stormwater management feature is 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)
Lot 10	914.5	903.5 (NURP Pond)	11.0
Lot 11	914.5	903.5 (NURP Pond)	11.0
Lot 12	914.0	903.5 (NURP Pond)	10.5
Lot 13	913.4	903.5 (NURP Pond)	9.9
Lot 14	912.3	903.5 (NURP Pond)	8.8
Lot 15	912.9	903.5 (NURP Pond)	9.4
Lot 16	912.1	886.7 (Wetland)	25.5
Lot 17	912.2	886.7 (Wetland)	25.4
Lot 18	912.1	886.7 (Wetland)	25.5

(The other home lots proposed are not adjacent to a stormwater facility.) Based on information reviewed, the proposed project conforms to 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:**

The applicant originally submitted a \$1,000 permit fee on October 29, 2015 which conformed to the fee schedule in effect at that time. However, the 4th review timeline extension approved by the Board at the August 3<sup>rd</sup> meeting indicated that “The application may be subject to any changes in the RPBCWD rules, including additional permit fees.” Therefore, the permit fee for the proposed site was computed at \$1,000 for Rule C and \$1,000 for Rule J for a total fee of \$2,000 based on the RPBCWD permit fee schedule adopted in December 2015. In addition, the RPBCWD permit fee schedule adopted in December 2015 indicates that costs of site inspections, analysis of the proposed activities, services of consultants and compliance assurance in excess of \$3,500 for properties between 5-9.99 acres will be

charged to the permit applicant. The review of this permit application has resulted in \$6,088.600 of consultant time. To conform to the requirements of Rule L the following is needed:

- L1. In accordance with the adopted RPBCWD permit-fee schedule the applicant must submit a permit fee of \$1,000. In addition, because the engineer and legal time to review this permit exceeded \$3,500 the applicant must submit an additional permit fee of \$2,668.60 for excess cost recovery. This results in a total additional required permit fee of \$3,668.60 (\$2,668.60+\$1,000).

**Rule M: Financial Assurance:**

Rules C: Silt fence: 3,161 L.F. x \$2.50/L.F. = .....	\$8,000
Restoration: 6.0 acres x \$2,500/acre = .....	\$15,000
Rules D: Wetland Buffer: \$5,000 + \$1,000/acre over 10 acres = .....	\$5,000
Rules J: NURP Pond: \$22,900 x 125% = .....	\$28,700
Water Reuse: \$46,000 x 125%= .....	\$57,500
Vegetated Swales: \$4,300 x 125%= .....	\$5,400
Contingency (10%) .....	\$11,900
Administration (30%) .....	<u>\$39,500</u>
Total Financial Assurance.....	\$171,100

**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, D and J if the Rule Specific Permit Conditions listed above are met.

**Recommendation:**

Approval of the permit modification contingent upon:

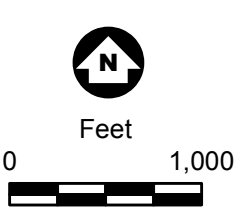
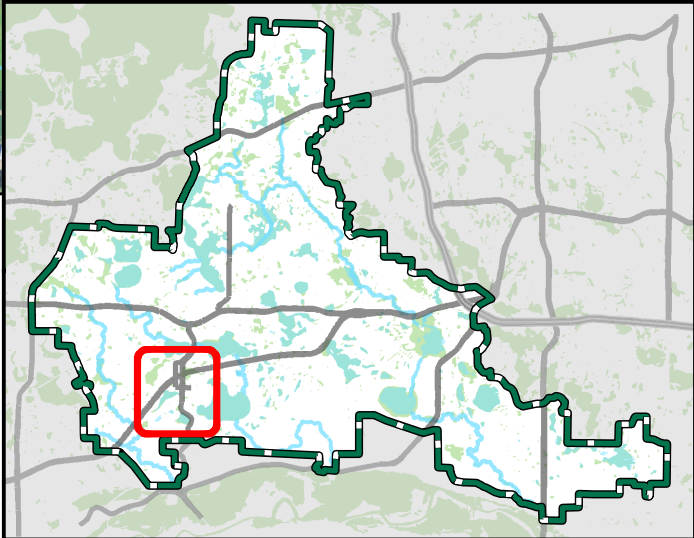
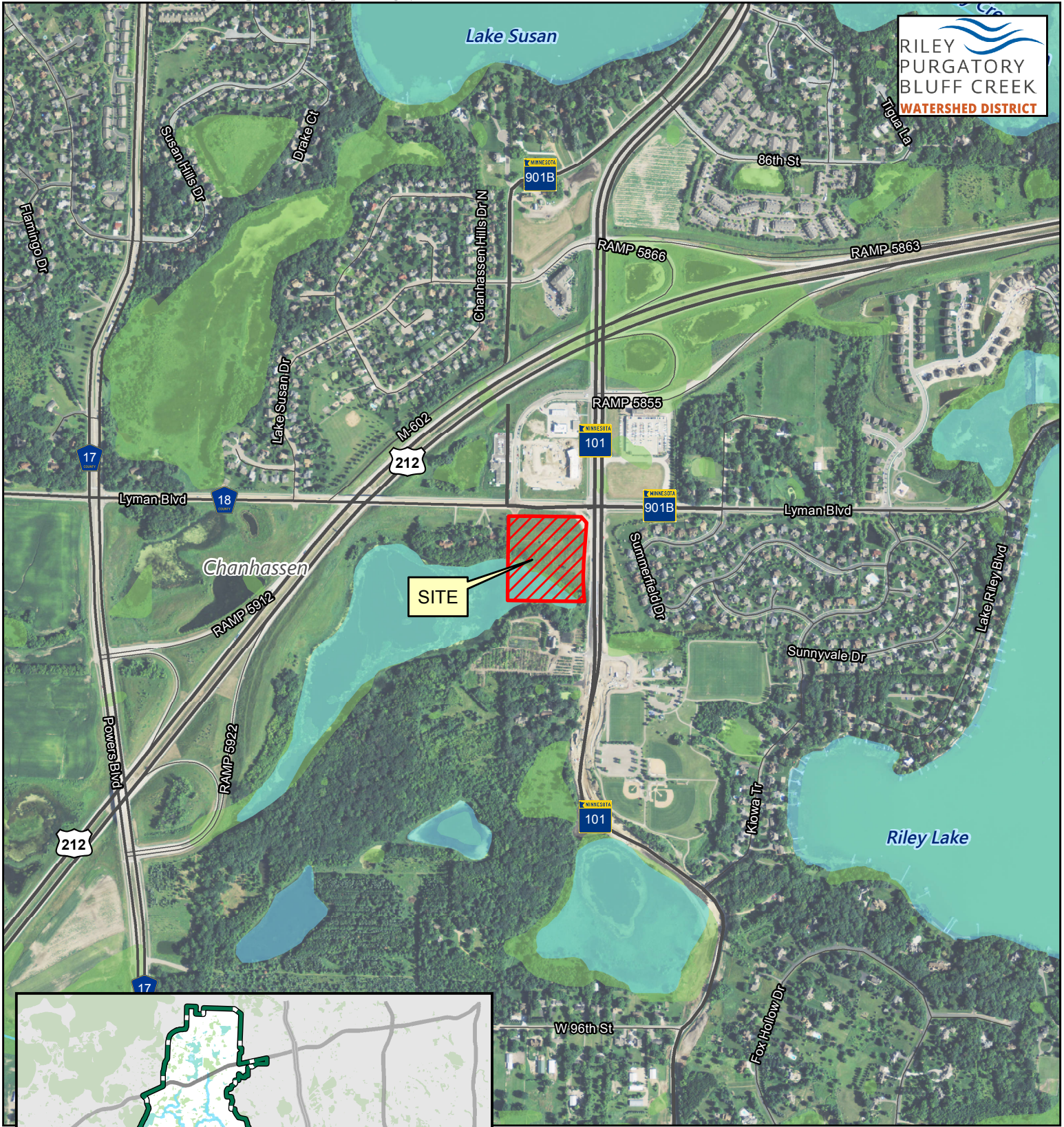
1. Continued compliance with General Requirements.
2. Financial Assurance in the amount of \$171,100.
3. Receipt of documentation demonstrating the Applicant has the necessary permissions to complete the proposed grading, trail and retaining wall construction outside the property boundary along Highway 101. The necessary permissions must be obtained prior issuance of a permit for the work from RPBCWD. The property rights must allow for restoration with native vegetation, the designation of a buffer and the necessary property use rights to maintain that buffer in perpetuity.
4. Receipt of an additional permit fee of \$3,668.60 for rule specific permit fees plus the excess cost recovery (\$2,668.60 +\$1,000).
5. Applicant providing the name and contact information of the general contractor responsible for the site.
6. Receipt of updated drawing showing buffer marker locations. A marker must be placed along each lot line, with additional markers at an interval of no more than 200 feet. The monumentation requirement applies to each lot of record to be created.
7. Receipt in recordation a maintenance declaration for the stormwater management facilities and wetland buffer. The declaration must also include a stormwater reuse monitoring and reporting plan. 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.
2. Per Rule J Subsection 2.6, performance monitoring, the applicant must an operations plan and monitor the proposed irrigation system to provide the volume abstraction as presented in the design. The recorded reuse volume must be submitted to the RPBCWD annually. If it is determined that the irrigation system is not performing as designed, a revised design must be submitted to the District for approval to demonstrate that the volume abstraction and water quality standard is achieved.

**Board Action**

It was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_ to approve permit application No. 2015-050 with the conditions recommended by staff.

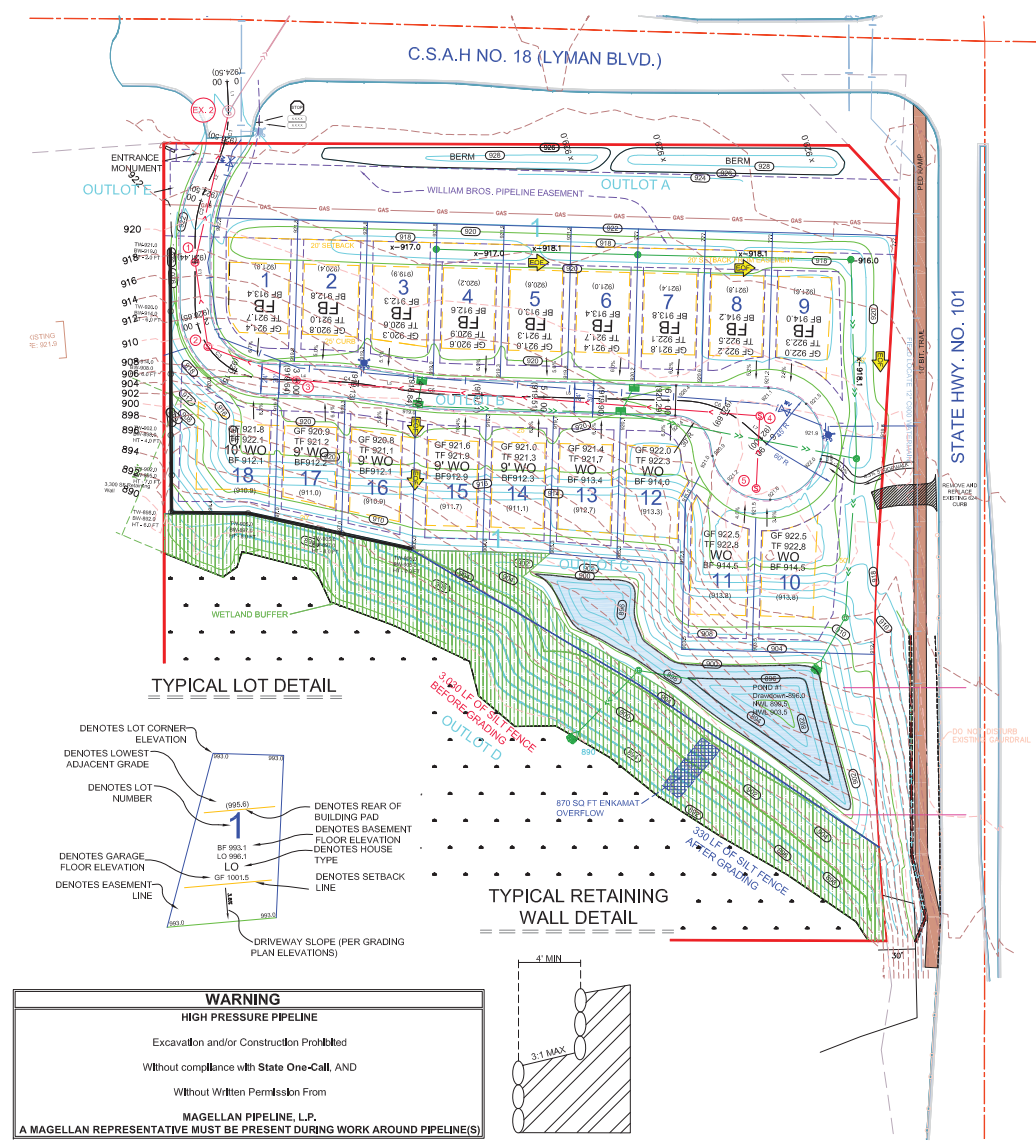


Permit Location Map  
**ARBOR GLEN**  
**Permit 2015-050**  
Riley Purgatory Bluff Creek  
Watershed District

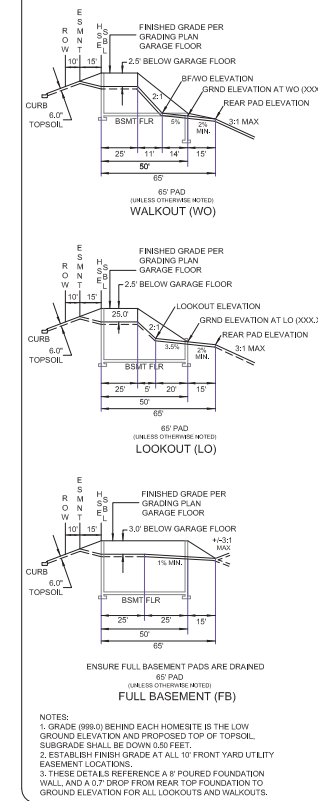
CONSTRUCTION NOTES

1. INSTALL SILT FENCE AS SHOWN ON PLAN, AS REQUIRED BY THE CITY OF CHANHASSEN OR DIRECTED BY THE ENGINEER.
2. THE WATER QUALITY POND MUST BE EXCAVATED AT THE BEGINNING OF GRADING OPERATIONS TO PROVIDE TEMPORARY STORAGE FOR DIRT AND DEBRIS DURING CONSTRUCTION. SHEDS MUST BE REMOVED FROM THE POND AS NECESSARY DURING CONSTRUCTION AND AT THE COMPLETION OF THE PROJECT.
3. BEFORE GRADING, INSTALL PERFORATED RISER PIPES IN PONDS WHEN POND GRADING IS COMPLETE. TEMPORARY OVERHEAD PIPES SHALL BE USED TO REMOVE EXCESSIVE DRAINAGE DURING THE CONSTRUCTION PERIOD AS NECESSARY AND DIRECTED BY THE ENGINEER. INSTALL SILT FENCE AROUND EXCAVATED PONDS.
4. INSPECT PONDS, SILT FENCE, AND ROCK ENTRANCE BERM AFTER ALL RAINFALL EVENTS AS REQUIRED BY THE TOILET PERMITS.
5. LINE ALL PIPES WITH A MINIMUM 3" ORGANIC SOILS & SEED SLOPES BETWEEN MAIL AND 100' HWY WITH A WATER TOLERANT MIX.
6. REMOVE PERFORATED RISER PIPE WHEN STORM SEWER AND OUTLET STRUCTURE FOR PONDS ARE INSTALLED.
7. STREET SECTIONS:
  - 1" 1/2" VIBR. COURSE
  - 2" BASE COURSE
  - 12" C&G S
  - 24" SELECT GRANULAR BORROW
8. DRIVEWAY SLOPES:
  - MINIMUM 4%
  - MAXIMUM 10%
9. POND - 10:1 BENCH (1 FOOT) THEN 3:1 MAX
10. LOT, SEWO, VIO PADS 3:1 MAX, ALL OTHER SLOPES 4:1 MAX (UNLESS NOTED)
11. CONTRACTOR TO REMOVE SEPTIC SYSTEM AND CAP WELL, PROPER REMOVAL, ABANDONMENT OR SEALING OF STORAGE TANKS, HOUSE SEPTIC SYSTEMS, WELLS, ETC IS REQUIRED. PERMITS ARE REQUIRED, AS APPLICABLE.

12. DEVELOPER WILL BE RESPONSIBLE FOR TEMPORARY DUST AND EROSION CONTROL UNTIL TURF IS ESTABLISHED. IF YARDS ARE ADJACENT TO A DITCH OR SWALE, THEN EROSION CONTROL MUST REMAIN UNTIL ALL ADJACENT PROPERTY AND TURF IS ESTABLISHED.
13. RESTORATION - 3+ ACRES
  - A. RESTORE ALL DISTURBED AREAS WITH 1MM #2 OF TOPSOIL MEETING MINIMUM SPECIFICATIONS 3877-1 FOR COMMON TOPSOIL, BORROW PLACED ON ALL AREAS SLOPES. THE SOILS WITHIN THE BUFFER AREAS SHALL BE PROVIDED BY PERMITS TO A DEPTH OF 12 INCHES TO COVER THE AREAS SHALL MEET MINIMUM SPECIFICATION 3877-1 FOR SANDY CLAY LOAM TOPSOIL BORROW.
  - B. SEED POND SLOPES AND DETENTION AREAS WITH MIXED 10:1 OR BASSIN PER SEED MIX AT A RATE OF 100 LBS/ACRE AND FERTILIZE WITH 200-0-0 AT 100 LBS/ACRE.
  - C. BUFFER AREAS MUST BE PLANTED WITH NATIVE VEGETATION. SEED MIX TO BE USED IS: MIX STATE SEED MIX 34271 WET MEADOW SOUTH AND WEST SEED MIX AT A RATE OF 100 LBS/ACRE. BUFFER VEGETATION NOT TO BE INSTALLED.
  - D. ONLY PHOSPHORUS FREE FERTILIZER IS TO BE USED ON SITE.
  - E. MULCH WITH TYPE 1 AT A RATE OF 2 TONS/ACRE AND USE IMMEDIATELY AFTER PLACEMENT. USE WOOD CHIP BLANKET ON ALL SLOPES 3:1 (PT) OR GREATER.
  - F. PLACE APPROVED STORM SEWER INLET PROTECTION OR AROUND ALL STORM SEWER INLETS AND MAINTAIN/REPAIR STREET CONSTRUCTION IS COMPLETED. REFER TO CITY OF CHANHASSEN ST-22 & S-23 FOR APPROVED DEVICES.
  - G. MAINTAIN ALL SILT FENCE UNTIL TURF HAS BEEN ESTABLISHED.
  - H. RESTORATION WORK WILL BE COMPLETED WITHIN 72 HOURS OF GRADING COMPLETION.
14. MATERIALS THAT ARE PROHIBITED FROM RETAINING WALL CONSTRUCTION INCLUDE SMOOTH FACE CONCRETE, POURED IN PLACE CONCRETE, MASONRY, RAILROAD TIES, OR TIMBER, STAMPED OR PATTERNEDED CONCRETE IS ALLOWED IN RETAINING WALL CONSTRUCTION.
15. BOLLERS MAY NOT BE USED ON WALLS TALLER THAN 10 FEET HIGH.
16. A HOMEOWNERS ASSOCIATION SHALL BE CREATED TO TAKE OWNERSHIP OF THE RETAINING WALL.
17. SILT FENCE: BEFORE GRADING - 2000 LF AFTER GRADING - 200 LF
18. CAT 3 EROSION CONTROL BLANKET - 6000 SQ FT
19. FINAL GRADING PLANS AND SOIL REPORTS MUST BE SUBMITTED TO THE INSPECTOR ON BEHALF BEFORE BUILDING PERMITS WILL BE ISSUED
20. ENGINEERED DESIGN AND BUILDING PERMITS ARE REQUIRED FOR RETAINING WALLS EXCEEDING FOUR FEET IN HEIGHT.
21. DETENTION PERMITS MUST BE OBTAINED BEFORE DEMOLISHING ANY STRUCTURES.
22. PERMITS FROM CARVER COUNTY WILL BE REQUIRED PRIOR TO ANY WORK OCCURRING IN THE RIGHT OF WAY.
23. WETLAND BUFFER MONUMENTS TO BE CONCURRENT WITH HCCO DEMONSTRATIONS.
24. WETLAND BUFFER MONUMENTS TO BE INSTALLED IMMEDIATELY SUBSEQUENT TO COMPLETION OF FINAL GRADE AT LOWER ELEVATION OF RETAINING WALLS.
25. WETLAND BUFFER MONUMENTS MUST BE INSTALLED BEFORE BUILDING PERMITS WILL BE ISSUED.
26. RETAINING WALLS TO BE OWNED AND MAINTAINED BY HOA.
27. RETAINING WALLS TO BE CONSTRUCTED OF MATERIAL:
  - 1. PRIOR TO COMPLETION HOME CONSTRUCTION, FIRE APPARATUS ACCESS ROADS CAPABLE OF SUPPORTING THE WEIGHT OF FIRE APPARATUS SHALL BE MADE SERVICEABLE.
  - 2. STREET SIGNS SHALL BE INSTALLED PRIOR TO BUILDING PERMITS BEING ISSUED. FIRE MARSHAL MUST APPROVE STREET SIGNAGE.
  - 3. PRIOR TO COMPLETION CONSTRUCTION FIRE HYDRANTS SHALL BE SERVICEABLE.



HOLDDOWN DETAILS



**SPECIFICATIONS:**

**BUFFER MARKER TEMPLATES**

**CLEAN WATER STARTS HERE**

**MONUMENT**  
CONSISTS OF A POST AND A WETLAND BUFFER SIGN

**WETLAND BUFFER SIGNS**  
MOUNTED FLUSH WITH THE TOP OF THE POSTS  
FASTENED WITH NON-REMOVABLE SCREWS OR RIVETS

**POST MATERIALS**  
4" x 4" SQUARE  
TREATED WOOD OR OTHER CITY APPROVED MATERIAL

**POST INSTALLATION**  
INSTALL POST BLUMB TO A HEIGHT OF FOUR FEET ABOVE GRADE.  
SET AT LEAST 42 INCHES IN THE GROUND  
INSTALLED AT EACH LOT LINE WHERE IT CROSSES A WETLAND BUFFER, WITH A MAXIMUM SPACING OF 200 FEET BETWEEN SIGNS (IF NO BUFFER IS REQUIRED, THE MONUMENT SHALL BE AT THE EDGE OF THE WETLAND)  
PLACE ADDITIONAL POSTS AS NECESSARY TO FOLLOW BUFFER CONTOUR LINE

**STANDARD DETAILS WETLAND BUFFER MONUMENT**

0 25 50 100  
SCALE IN FEET

NORTH

**WARNING**  
**HIGH PRESSURE PIPELINE**  
Excavation and/or Construction Prohibited  
Without compliance with State One-Call, AND  
Without Written Permission From  
**MAGELLAN PIPELINE, L.P.**  
**A MAGELLAN REPRESENTATIVE MUST BE PRESENT DURING WORK AROUND PIPELINE(S)**

EXISTING UTILITIES SHOWN ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES ARISING OUT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.

DRAWING NAME	NO.	BY	DATE	REVISIONS
EKLO BASE	09	DLS	07/26/16	WATERSHED REVISIONS
DRAWN BY	10	MDM	07/26/16	GRADING REVISIONS
LOW	11	DLS	10/12/16	WATERSHED DISTRICT REV.
CHECKED BY	12	DLS	01/25/17	FINAL PLAN SUBMITTAL
DLS	13	MDM	04/07/17	REVISE SITE PLAN
DATE	14	DLS	04/21/17	REVISE SITE PLAN
04/08/15				

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I HEREBY CERTIFY THAT THIS PLAN OR SPECIFICATION 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.

*Daniel Schmidt*  
Daniel Schmidt, P.E.  
Date: 01-11-17

Lic. No. 26147

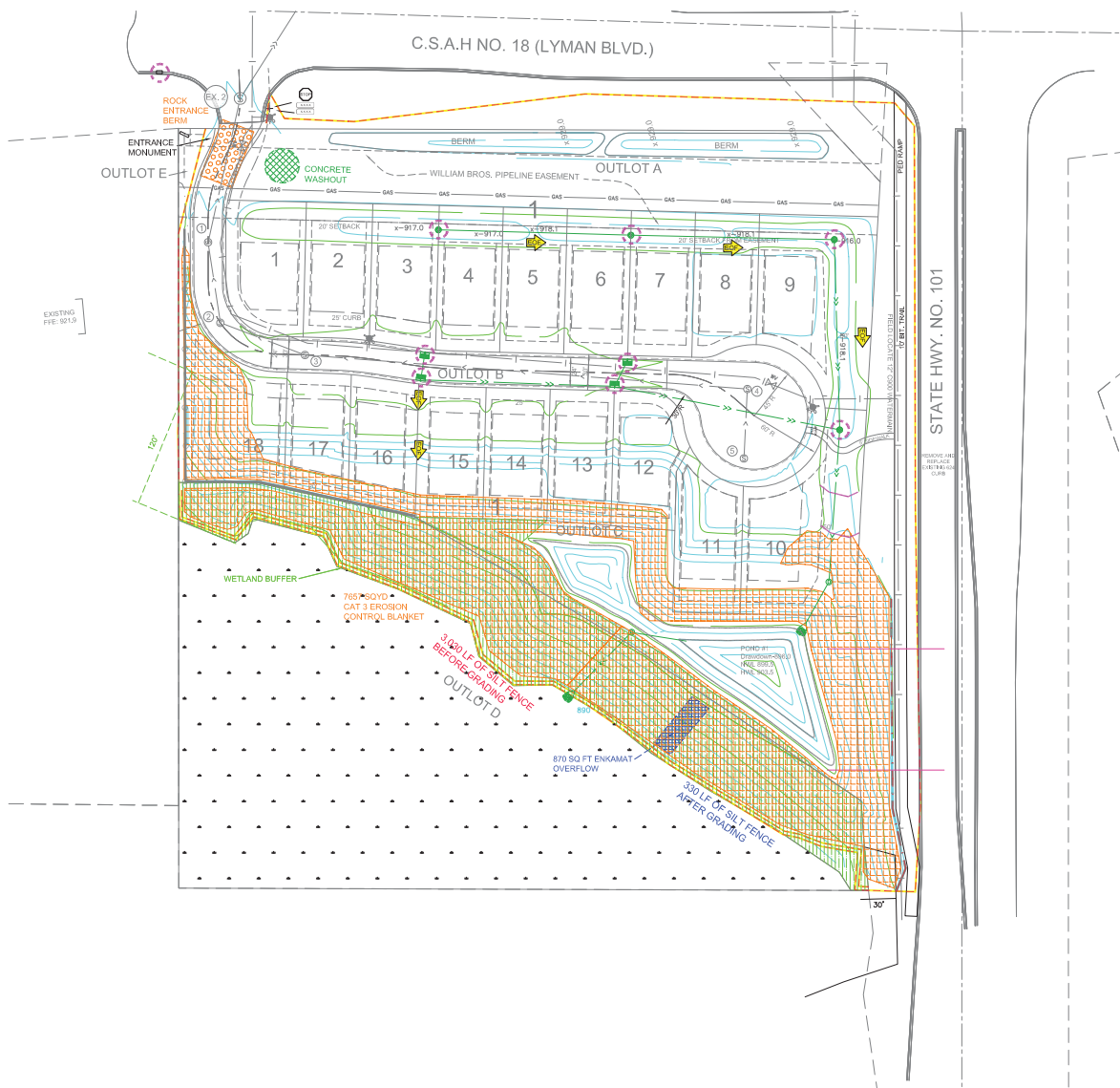
**ENGINEERS ARCHITECTS PLANNERS**

**SATHRE-BERGQUIST, INC.**  
150 SOUTH BROADWAY WAYZATA, MN, 55381 (952) 478-6000

CITY PROJECT NO. —  
**CHANHASSEN, MINNESOTA**

**FINAL GRADING PLAN**  
**ARBOR GLEN GOLF LAKE CONDOS, LLC**

FILE NO. 23805-001  
**5**  
11



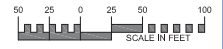
**LEGEND**

- ROCK ENTRANCE BERM
- SILT FENCE
- POST GRADING SILT FENCE
- BIO-ROLL
- CONCRETE WASHOUT
- INLET PROTECTION
- EROSION BLANKET
- WETLAND BUFFER MONUMENT

**CONSTRUCTION NOTES**

1. ALL DITCHES AND SWALES MUST BE STABILIZED WITHIN 24 HOURS OF CONNECTING TO SURFACE WATER OR DISCHARGING OFFSITE.
2. EROSION OBSERVATION MUST BE MAINTAINED AT ALL OUTLETS WITH 24 HOURS OF BEING PLACED ONLINE.
3. ROADS MUST BE CLEARED OF TRACKED MATERIALS DAILY.
4. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION OF NATIVE TOPSOIL TO GREATER EXTENT POSSIBLE.
5. FINAL SITE STABILIZATION TO INCLUDE MINIMUM 4" OF TOPSOIL OR ORGANIC MATERIAL TO BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL.
6. DURING FINAL SITE TREATMENT WHEREVER TOPSOIL HAS BEEN REMOVED.
7. CONSTRUCTION SITE WASTE MUST BE PROPERLY MANAGED SUCH AS DISCARDED BUILDING MATERIALS, CHEMICALS, LITTER AND SANITARY WASTE AT THE CONSTRUCTION SITE.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPs MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATIONS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE, AS DETERMINED BY THE DISTRICT.
9. TEMPORARY EROSION AND SEDIMENT CONTROL BMPs MUST BE REMOVED UPON FINAL STABILIZATION.
10. SOIL SURFACES COMPACTED DURING CONSTRUCTION AND REMAINING PERIODS UPON COMPLETION OF CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR TIPPING TO A DEPTH OF 18" WHILE TAKING CARE TO AVOID UTILITIES. THESE ROOTS OR EXISTING VEGETATION PRIOR TO REDEVELOPMENT OR OTHER STABILIZATION.
11. AT A MINIMUM ON DAYS WORK IS TO BE DONE, INSPECTION, MAINTENANCE, AND REPAIR OF ALL DETACHED SURFACES AND ALL EROSION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES MUST BE CONDUCTED DAILY, AND AT LEAST WEEKLY UNTIL LAND RESTORATION ACTIVITIES CEASE. THEREAFTER, THE DUTIES MUST BE CARRIED OUT WEEKLY UNTIL VEGETATION COVER IS ESTABLISHED.
12. CONSTRUCTION SITE WASTE MUST BE PROPERLY MANAGED, SUCH AS DISCARDED BUILDING MATERIALS, CHEMICALS, LITTER AND SANITARY WASTE AT THE CONSTRUCTION SITE.
13. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPs MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATIONS ESTABLISHED SUFFICIENTLY TO INSURE STABILITY OF THE SITE, AS DETERMINED BY THE DISTRICT.
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16. THE PERMITTEE MUST, AT A MINIMUM, INSPECT, MAINTAIN AND REPAIR ALL DETACHED SURFACES AND ALL EROSION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES EVERY DAY WORK IS PERFORMED ON THE SITE AND AT LEAST WEEKLY UNTIL LAND RESTORATION ACTIVITY HAS CEASED. THEREAFTER, THE PERMITTEE MUST PERFORM THESE RESPONSIBILITIES AT LEAST WEEKLY UNTIL VEGETATION COVER IS ESTABLISHED.

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DRAWING NAME	NO.	BY	DATE	REVISIONS
EKLO BASE	09	DLS	07/26/10	WATERSHED REVISIONS
DRAWN BY	10	MDM	07/26/10	GRADING REVISIONS
REV	11	DLS	08/12/10	WATERSHED DISTRICT REV.
CHECKED BY	12	DLS	01/25/17	FINAL PLAN SUBMITTAL
DLS	13	MDM	04/07/17	REVISE SITE PLAN
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*Daniel J. Schmidt*  
 Daniel Schmidt, P.E.  
 Date: 01-11-17 Lic. No. 26147



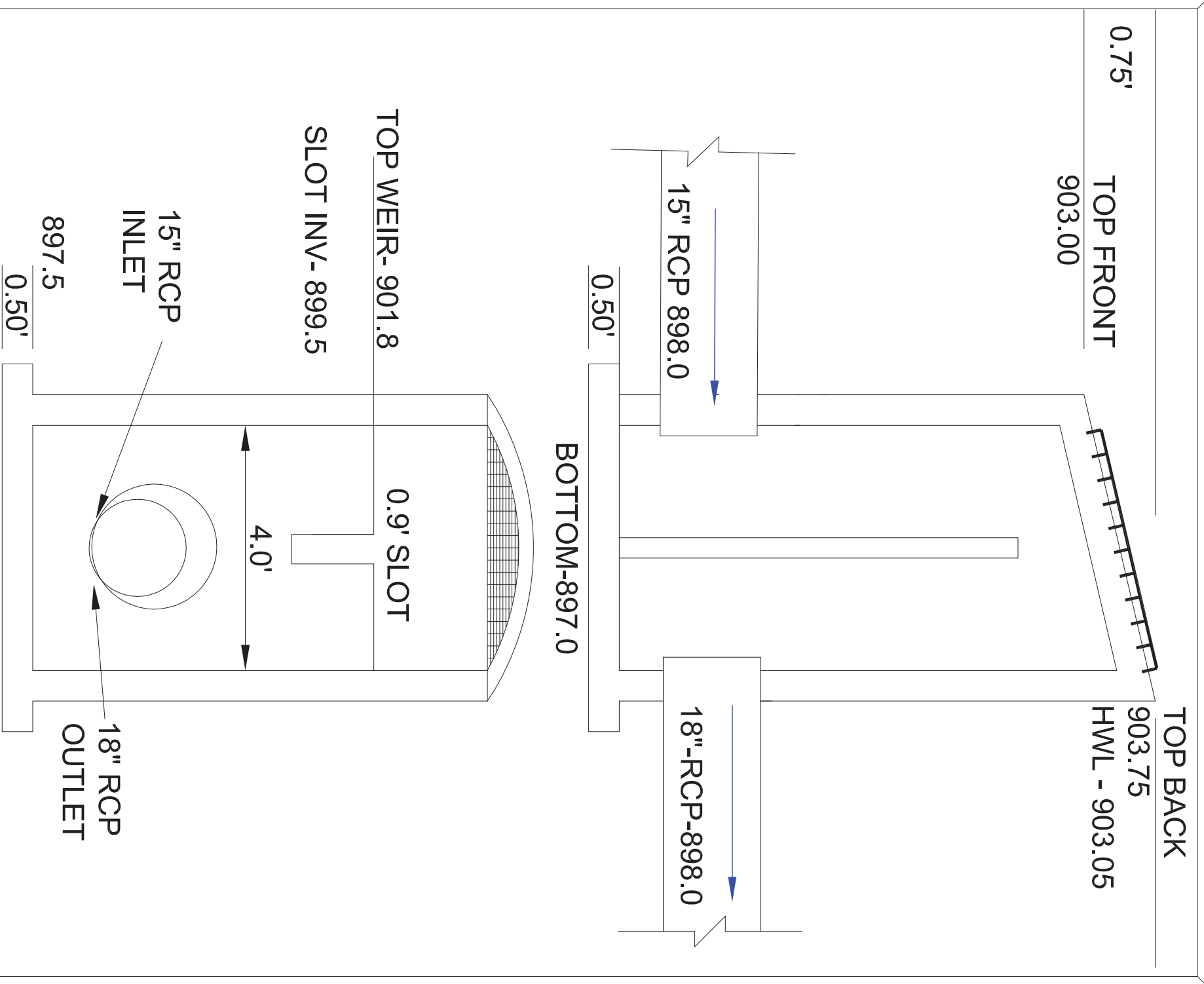
**SATHRE-BERGQUIST, INC.**  
 150 SOUTH BROADWAY WAYZATA, MN, 55391 (952) 476-6000

CITY PROJECT NO.  
 CHANHASSEN, MINNESOTA

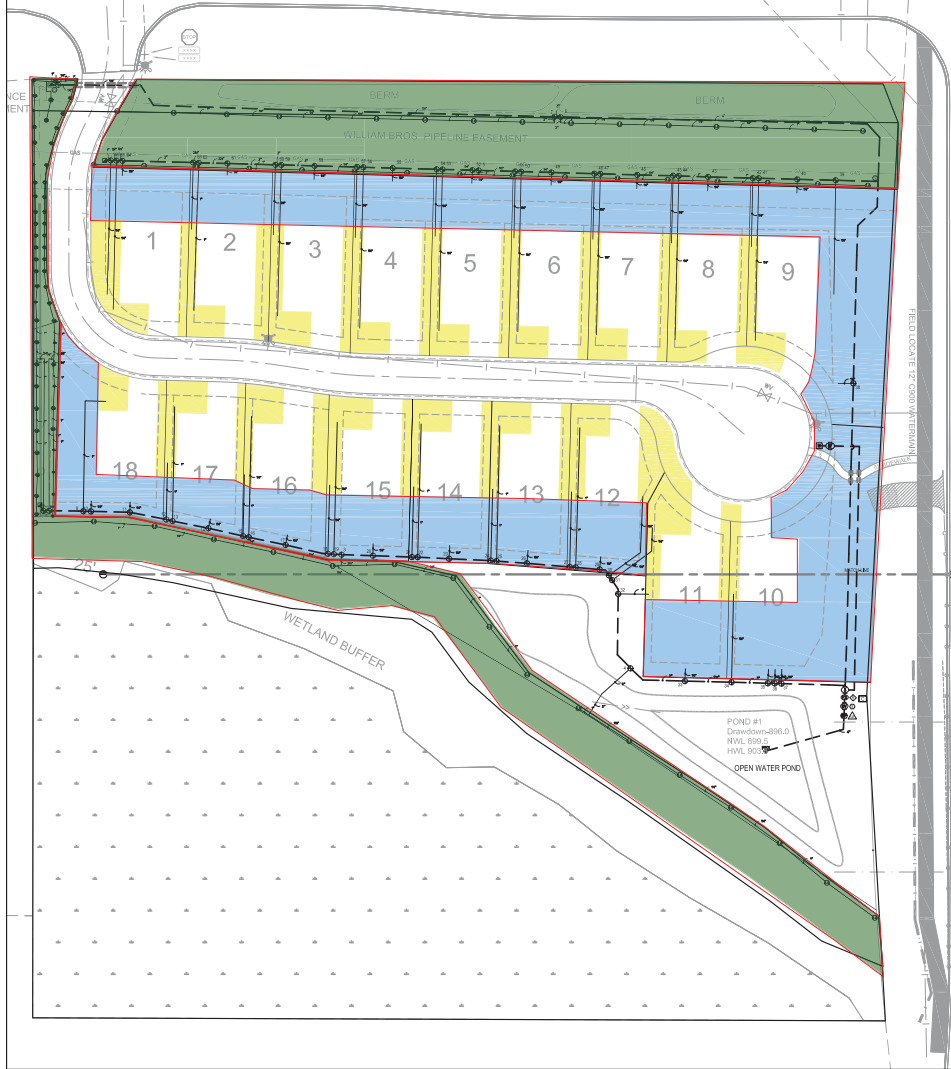
**FINAL EROSION CONTROL PLAN**  
 ARBOR GLEN  
 GOLF LAKE CONDOS, LLC

FILE NO.  
 23605-001  
**6**  
 11

# OUTLET STRUCTURE - POND



C.S.A.H NO. 18 (LYMAN BLVD.)



**NARRATIVE**  
 Arbor Glen is a proposed residential development at Lyman Boulevard (CSAH18) and Highway 101 in Chanhasen, MN. The developer intends to use landscape irrigation as a stormwater management tool consistent with current Riley Purgatory Bluff Creek Watershed District (RPBCWD) stormwater management standards and BMP guidelines.

**DESIGN TO HARVEST STORMWATER**  
 This design calls for an irrigation distribution pipeline to draw stormwater from a stormwater pond located at the southeast corner of the development. The area of the pipeline more completely designed, depicts the first eight stations of equipment (groups of sprinkler emission devices) to distribute stormwater onto non-maintained land within the development. The pipeline distribution segment illustrated schematically, represents the approximately 58 remaining stations of equipment that shall distribute stormwater onto maintained landscape area of the development. Total area to receive stormwater distribution from both distribution segments of irrigation equipment is approximately 3.49 acres. The total area proposed to receive stormwater distribution exceeds the minimum area required of this development.

**WATER BACKUP WATER, METERING AND PROTECTION**  
 All water will be metered. Reduced Pressure Zone backflow prevention assembly (RPZ) will be incorporated into the design to protect the public water supply from cross-contamination hazard protection by the Minnesota Department of Health and shall be regularly tested, reported and immediately repaired upon failure of testing.

**ACHIEVING STORMWATER BMP GOALS, SYSTEM DESIGN AND OPERATION**  
 Current RPBCWD stormwater treatment volume calls for a minimum of the first 1.05" of stormwater treatment per qualifying rain event. The minimum treatment volume is divided as follows:

- Volume Retained - 0.5 inches from the site impervious area
  - Water Quality Treatment - 0.55 inches from the site impervious area
- The irrigation distribution equipment will result in a system that exceeds minimum required RPBCWD stormwater treatment volumes listed above as well as ability to execute horticultural BMPs for landscape irrigation - including efficient use of water resources upon the area of horticulturally-maintained landscape. Although the intended goal is to harvest and distribute stormwater upon the site, proper and efficient use of all water can be accomplished while also accomplishing the goals of stormwater distribution during or following a rain event.

All components selected for this project will be of high quality, high market presence and will be designed and constructed in a workmanlike, maintainable fashion. The stormwater pump station will be a pre-manufactured unit of integrated, maintainable components and UL-listed as an assembly. Pump station controls will include external meter-reader, adjustable stormwater-level equipment to enable pump station engagement when pre-set water levels are met and to interrupt pump station operation and convert to backup municipal water when stormwater levels are at or below minimum, vandal-resistant alarm light and points of seasonal equipment maintenance.

Secondary protected, non-potable water source will flow through a meter and reduced pressure zone backflow prevention assembly and will include points of seasonal equipment maintenance consistent with local practices. A low voltage, three-port valve will distinguish between stormwater harvest and municipal water use based on pond level and pump station controls.

RPBCWD stormwater guidelines call for controls to manage pond bounce to not less than four-feet of depth upon completing stormwater distribution following a storm event. The proposed system controls will accomplish this goal. The stormwater pond normal water level (NWL) is proposed to be 899.5 and not less than four-feet of depth at NWL. The 100-year high water level (HWL) is proposed to be 903.5. The adjustable level controls will be set to engage stormwater harvest at levels higher than 899.5.

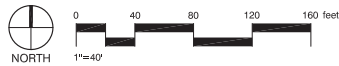
There will be an irrigation controller to operate distribution equipment. The controller will be WaterSense® (labeled as promoted by the US Environmental Protection Agency) and will be remote-control upgrade-ready. The controller will be programmed to use water efficiently per horticultural BMPs during normal, non-storm event periods or when the stormwater pond levels are insufficient to enable use of stormwater for horticultural irrigation.

**EXPLANATION OF CALCULATIONS AND USE AND RUNTIME MODELS**  
 Referring to Sheet IR-2.1, the chart "WATERING SCHEDULE - NON-MAINTAINED AREA" illustrates gallons per minute per station (group) of sprinkler emission devices and application rates (in inches-per-hour) per station. There are eight stations of irrigation proposed upon the non-maintained area of the development. Also illustrated is total gallons of water to be distributed upon the non-maintained landscape. The totals of the eight stations of irrigation achieve the required minimum stormwater distribution for the development.

The right-hand chart on Sheet IR-2.1, depicts a Runtime Summary of all stations or irrigation further illustrates that the proposed stormwater management BMP exceeds the minimum requirement for the development.

Runtime Summaries include operation based on a scheduling method called "syringe cycling" or "cycle and soak". This approach is programming-based and adjustable. The intent is to create applications of water at a rate and duration to maximize the ability of the soil to absorb the water applied. From a stormwater perspective, syringe-cycle scheduling maximizes acceptance of stormwater onto and into the soil. From a horticultural perspective, syringe-cycle scheduling promotes stronger and more vigorous plant material. The graphs beneath each runtime summary illustrates the time required to apply water given a base-cycle-and-soak application approach.

SYMBOL	DESCRIPTION	TOTAL WATER DISCHARGED	AREA OF DISCHARGE
[Green Box]	NON MAINTAINED AREAS - 1.5-INCHES PER THE FIRST 48 HOURS	48,080 GALLONS 6,427 CF	63,979 SF 1.47 AC
[Blue Box]	BACKYARDS (ROTORS) - 0.5-INCHES PER THE FIRST 48 HOURS	17,806 GALLONS 2,380 CF	59,880 SF 1.37 AC
[Yellow Box]	FRONT & SIDE YARDS (SPRAYS) - 0.5-INCHES PER THE FIRST 48 HOURS	8,494 GALLONS 1,135 CF	28,072 SF 0.64 AC
	<b>TOTAL</b>	<b>74,380 GALLONS 9,942 CF</b>	<b>151,931 SF 3.49 AC</b>



STATE HWY. NO. 101

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**GENERAL NOTES**

1. THIS SYSTEM IS DESIGNED TO MEET SPECIFIC DESIGN CRITERIA PROVIDED BY THE CLIENT AND SHALL BE INSTALLED AS PER DESIGN AND PROJECT SPECIFICATION.
2. BIDDING CONTRACTORS SHALL THOROUGHLY READ AND BECOME FAMILIAR WITH ALL FACETS OF THE PROPOSED STORMWATER HARVEST/REUSE SYSTEM, INCLUDING DESIGN, SPECIFICATIONS, INSTALLATION DETAILS, AND RELATED SECTIONS.
3. CONFIRM LIMITS OF IRRIGATION, EXISTING AND FUTURE HARDSCAPE PRIOR TO CONSTRUCTION.
4. UNLESS OTHERWISE SPECIFIED, THE PLANS AND SPECIFICATIONS ARE INTENDED TO INCLUDE EVERYTHING OBVIOUSLY REQUISITE AND NECESSARY FOR THE PROPER INSTALLATION AND COMPLETION OF THE WORK. WHETHER EACH NECESSARY ITEM IS MENTIONED HEREIN OR NOT.
5. THE PLANS AND SPECIFICATIONS ARE INTENDED TO BE COOPERATIVE AND ANY ITEM CALLED FOR IN ONE AND NOT THE OTHER SHALL BE AS BINDING AS IF CALLED FOR IN BOTH. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER AND/OR IRRIGATION CONSULTANT.
6. VALUE ENGINEERING OF THE STORMWATER HARVEST/REUSE SYSTEM SHALL NOT BE ALLOWED.
7. SYSTEM IS DESIGNED TO OPERATE AT 90 GPM @ 65 PSI TO COMPLETE THE WATERING SCHEDULE WITHIN 48-HOURS MAXIMUM.
8. ALL LANDSCAPE AREAS WITHIN THE LIMITS OF IRRIGATION SHALL BE IRRIGATED INCLUDING THE OCCASIONAL NEED TO INSTALL ADDITIONAL SPRINKLERS NOT SHOWN ON THE IRRIGATION PLAN.
9. LOCATE ALL UNDERGROUND UTILITIES AND STRUCTURES PRIOR TO COMMENCING WORK ("CALL BEFORE YOU DIG").
10. NEW OR SUBSTANTIALLY CHANGED STATIONS OF IRRIGATION SHALL BE APPROVED IN WRITING BY RESIDENT ENGINEER AND/OR IRRIGATION CONSULTANT PRIOR TO INSTALLATION.
11. AVOID OVERSPRAY ON ROADS AND SIDEWALKS.
12. SPRINKLER LOCATIONS SHALL BE DETERMINED ON SITE BY THE IRRIGATION CONTRACTOR TO PROVIDE THE MAXIMUM COVERAGE POSSIBLE. CAREFULLY ADJUST THE ARC AND RADIUS OF EACH SPRINKLER TO PROVIDE HEAD-TO-HEAD COVERAGE.
13. IRRIGATION CONTRACTOR SHALL FURNISH SLEEVE MATERIAL FOR INSTALLATION BY OTHERS UNDER ALL ROADWAYS, WALKS AND DRIVEWAYS WHERE NECESSARY.
14. MAINLINE PIPING BENEATH TRAFFIC AREAS SHALL BE INSTALLED WITH A MINIMUM 4" COVER OF 36-INCHES FROM BOTTOM OF ROAD SUB-GRADE.
15. TOP OF MAINLINES SHALL BE AT LEAST 12-18 OR 18-24 INCHES BELOW GRADE IN TURF AREAS.
16. TOP OF LATERAL LINES SHALL BE AT LEAST 10-12 OR 12-18 INCHES BELOW GRADE.
17. IT MAY BE NECESSARY TO ADJUST MAINLINE, LATERAL PIPE, CONTROLS AND SPRINKLER LOCATIONS DUE TO TREES, PLANTINGS, GRADE DIFFERENCES, OR OTHER LANDSCAPE CONDITIONS.
18. PROPERLY THRUST BLOCK ALL FITTINGS, 3-INCH AND LARGER.
19. DO NOT TRENCH THROUGH THE ROOT BALLS OF NEW PLANTINGS.
20. PROVIDE A TWO-INCH SPACE (MINIMUM) BETWEEN THE TOP OF VALVE AND BOTTOM OF VALVE BOX COVER. PROVIDE BLOCK SUPPORT OF VALVE BOX IN GROUND AND PLUMB POSITION TO GRADE. WOOD SUPPORTS ARE NOT ACCEPTABLE.
21. WATER SUPPLY, BACKFLOW PREVENTION ASSEMBLY AND PLUMBING AS PER LOCAL CODE.
22. FINAL LOCATION OF WATER SOURCE TO BE APPROVED BY ENGINEER.
23. UTILITY CONTRACTOR IS RESPONSIBLE FOR WATER CONNECTION.
24. IRRIGATION INSTALLER IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE BACKFLOW PREVENTION ASSEMBLY.
25. IRRIGATION INSTALLER IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE IRRIGATION PIPING.
26. IRRIGATION CONTROL WIRE SHALL BE #18 GA. \*\*\*\*\*. IRRIGATION WIRE, UL LISTED FOR DIRECT BURIAL.
27. OWNER SHALL SUPPLY 110 VOLT ELECTRICAL POWER FOR CONTROLLER OPERATION.
28. CONNECT IRRIGATION ELECTRICAL WIRING IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL APPLICABLE LOCAL ELECTRIC UTILITY CODES, INCLUDING:
  - 28.1. ALL ELECTRICAL WIRE SHALL BE INSTALLED WITH THE MAINLINE PIPE WHERE POSSIBLE, SNAKE WIRE SIDE TO SIDE AT BOTTOM OF TRENCH BENEATH MAINLINE.
  - 28.2. PROVIDE 24-INCH LOOP OF CONTROL WIRE AT ALL CHANGES IN DIRECTION.
  - 28.3. PROVIDE 36-INCH OF SLACK WIRE AT EACH REMOTE CONTROL VALVE COILED INSIDE VALVE BOX.
  - 28.4. ALL WIRING BENEATH HARDSCAPES SHALL BE CONTAINED IN SLEEVING, SEPARATE FROM PIPING. ELECTRICAL SLEEVES ARE TO BE SIZED APPROPRIATELY FOR EASE OF INSTALLATION AND REPAIR.
  - 28.5. ALL WIRE SPLICES SHALL BE GREASE FILLED WATER TIGHT CONNECTORS CONTAINED IN VALVE BOX, SET TO GRADE AND SHALL NOT HAVE LESS THAN 24-INCH SLACK.
  - 28.6. ALL ELECTRICAL WIRE SHALL BE SLEEVED SEPARATE FROM WATERLINE.
  - 28.7. EACH VALVE MANIFOLD SHALL HAVE A SEPARATE SPARE CONTROL WIRE THAT RUNS FROM EACH VALVE BACK TO THE CONTROLLER (WITH MINIMAL WIRE SPACES).
29. WIRE RAIN SENSOR SHALL BE INSTALLED, ONE PER CONTROLLER. IRRIGATION CONTRACTOR SHALL ASSURE RAIN SENSOR INSTALLATION OCCURS IN A CLEAR LOCATION, WHERE RAIN FALL HITS THE DEVICE FROM ALL SIDES & IS NOT BLOCKED BY BUILDINGS, LANDSCAPE STRUCTURES OR PLANTS.
30. \*\*\*\*\* CONTRACTOR SHALL FURNISH AND INSTALL ALL ELECTRICAL EQUIPMENT FOR PUMPS.
31. \*\*\*\*\* CONTRACTOR SHALL INSTALL ALL LINE VOLTAGE EQUIPMENT FOR IRRIGATION CONTROLLERS.
32. \*\*\*\*\* CONTRACTOR SHALL FURNISH DATA CONNECTION FOR IRRIGATION CONTROLLERS.
33. IRRIGATION CONTRACTOR SHALL SCHEDULE AND PROGRAM CONTROLLER AND VALVES FOR APPROPRIATE LANDSCAPE REQUIREMENTS.
34. IRRIGATION CONTRACTOR SHALL MAKE PROVISION FOR NOT LESS THAN 8 HOURS OF TRAINING OF THE OWNER IN THE PROGRAMMING, OPERATION, ADJUSTMENT AND MAINTENANCE OF THE IRRIGATION SYSTEMS.
35. IRRIGATION CONTRACTOR IS RESPONSIBLE FOR CLEANING STREETS, SIDEWALKS AND DRIVEWAYS DURING AND UPON COMPLETION OF INSTALLATION.

DRAWN BY  
**CATY K. JOHNSON**  
 CLIA, EPA WaterSense Partner

CHECKED BY  
**TIM MALOOLY**  
 CID, CLIA, EPA WaterSense Partner

DATE: 5-19-2017

**ISSUED RECORD**

NO.	DESCRIPTION	DATE

ISSUE DATE  
**5-19-2017**

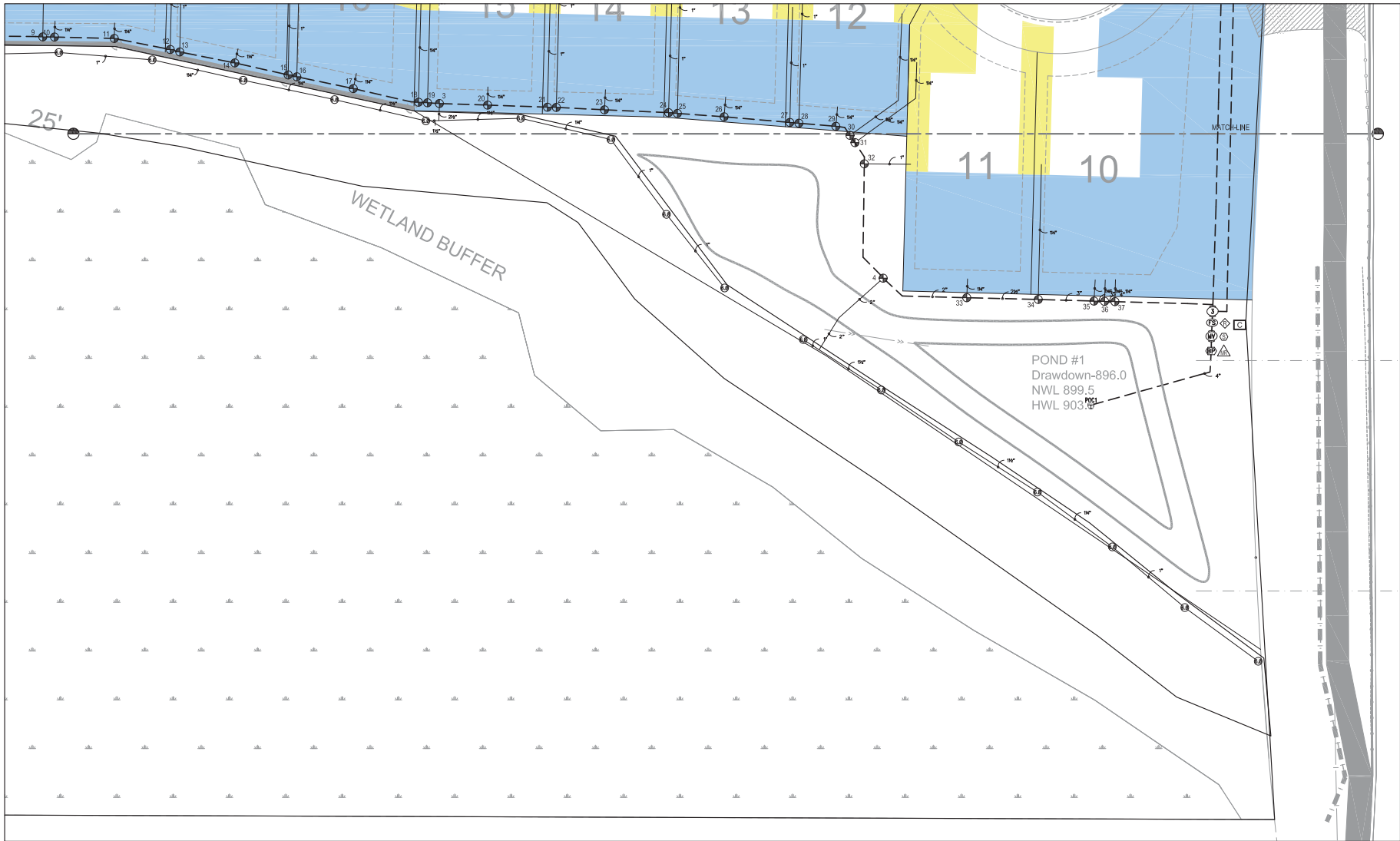
PROJECT NUMBER  
**D16-1173-02**

DRAWING SCALE  
**1"=40'-0"**

SHEET NAME  
**IRRIGATION OVERSTORY**

SHEET NUMBER  
**IR 1.0**





POND #1  
 Drawdown-896.0  
 NWL 899.5  
 HWL 903.0

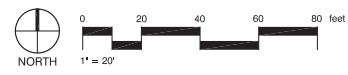
WETLAND BUFFER

MATCH-LINE

25'

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ARBOR GLEN, CHANHASSEN, MN  
 IRRIGATION DESIGN  
 FOR PERMIT

DRAWN BY  
**CATY K. JOHNSON**  
 CLIA, EPA WaterSense Partner

CHECKED BY  
**TIM MALOOLY**  
 CID, CLIA, EPA WaterSense Partner

I DECLARE THAT THE FINAL SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

ISSUED RECORD

NO.	DESCRIPTION	DATE

ISSUE DATE  
**5-19-2017**

PROJECT NUMBER  
**D16-1173-02**

DRAWING SCALE  
**1"=20'-0"**

SHEET NAME  
**IRRIGATION DESIGN**

SHEET NUMBER

**IR 1.1**

# C.S.A.H NO. 18 (LYMAN BLVD.)

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 CLIA, EPA WaterSense Partner  
 CHECKED BY  
**TIM MALOOLY**  
 CID, CIG, CLIA  
 EPA WaterSense Partner  
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 SPECIFIED THIS REPORT WAS  
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 SUPERVISION.



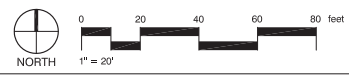
ISSUED RECORD

NO.	DESCRIPTION	DATE

ISSUE DATE  
**5-19-2017**  
 PROJECT NUMBER  
**D16-1173-02**  
 DRAWING SCALE  
**1"=20'-0"**

SHEET NAME  
**IRRIGATION  
 DESIGN**  
 SHEET NUMBER

**IR 1.2**



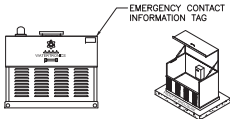
FIELD LOCATE 12" C900 WATERMAIN

S SIDEWALK

MATCH-LINE

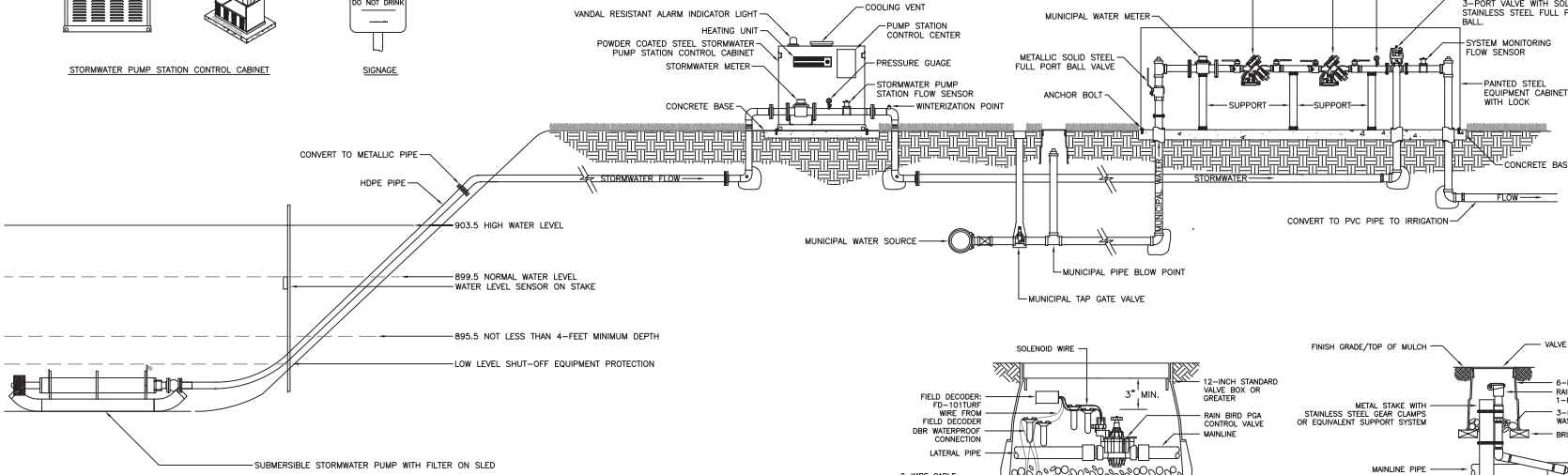


25'



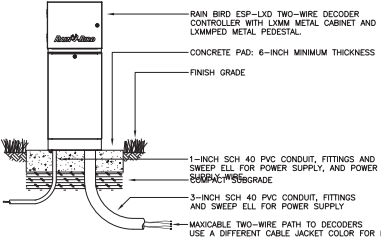
STORMWATER PUMP STATION CONTROL CABINET

STORMWATER REUSE SYSTEM DO NOT DRINK SIGNAGE



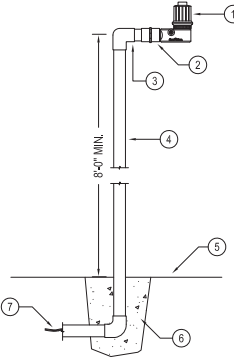
1 SCHEMATIC WATER SOURCE DEPICTION NOT TO SCALE

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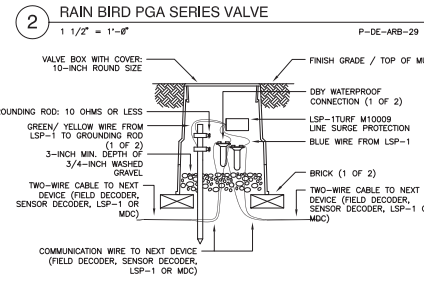
- NOTE:  
 1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND BEST PRACTICES.  
 2. ESP-LXD CONTROLLER COMES WITH 80 STATIONS AVAILABLE. TWO ADDITIONAL 75 STATION ESP-LXD-SUMTS MODULES MAY BE ADDED TO EXPAND THE CONTROLLER UP TO 200 TOTAL STATIONS.  
 3. PROVIDE PROPER GROUNDING COMPONENTS TO ACHIEVE GROUND RESISTANCE OF 10 OHMS OR LESS.

4 RAIN BIRD ESP-LXD CONTROLLER - PEDESTAL 3/4" = 1'-0" P-DE-ARB-27



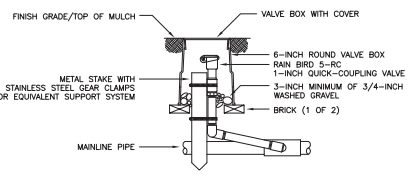
- 1 RAIN SENSOR: RAIN BIRD RSD-BEX  
 2 FEMALE ADAPTER (SLP-X FIP)  
 3 GALVANIZED 90 DEGREE EL (1 OF 2)  
 4 3/4-INCH GALVANIZED PIPE  
 5 FINISHED GRADE  
 6 CONCRETE BASE  
 7 WIRE TO IRRIGATION

5 RSD-BEX RAIN SENSOR - POLE MOUNT NTS P-DE-ARB-11



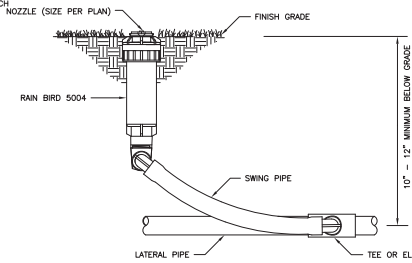
- NOTE:  
 1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND BEST PRACTICES.  
 2. LSP-1 SHOULD BE INSTALLED EVERY 500-FEET OR FOR EVERY EIGHT DECODERS ON TWO-WIRE PATH.  
 3. LSP-1 TO BE INSTALLED AT END OF WIRE RUN THAT TERMINATES IN THE FIELD (STAR CONFIGURATION).  
 4. RAIN BIRD FD-401 AND FD-601 FIELD DECODERS COME WITH LSP-1'S BUILT-IN. RAIN BIRD FD-401 AND FD-202 REQUIRE SEPARATE LSP-1 PROTECTION.

6 RAIN BIRD LSP-1 LINE SURGE PROTECTOR 1 1/2" = 1'-0" P-DE-ARB-15



- NOTE:  
 1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND BEST PRACTICES.  
 2. SET VALVE BOXES AT FINAL GRADE OR HIGHER AS LANDSCAPE INDICATES SO THAT THEY ARE VISIBLE BUT NOT A HAZARD.  
 3. VALVE BOX BOTTOMS ARE TO BE SUPPORTED ON BRICKS OR SUITABLE HARD MATERIAL TO PREVENT BOXES FROM BEING PUSHED BELOW GRADE.  
 4. INSTALL VALVE IN PROPER IRRIGATION BOX, AS PER INDUSTRY STANDARDS FOR EASE OF SERVICE AND MANUAL OPERATION. SEE IRRIGATION SPECIFICATION.  
 5. FURNISH FITTINGS AND PIPING NOMINALLY SIZED IDENTICAL TO NOMINAL QUICK COUPLING VALVE INLET SIZE.  
 6. ADD SIX-INCHES OF 3/4-INCH CRUSHED GRAVEL SUMP PER BOX.

3 RAIN BIRD 5-RC QUICK COUPLING VALVE 1 1/2" = 1'-0" P-DE-ARB-82



- NOTE:  
 1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND BEST PRACTICES.  
 2. SPRINKLER SHALL OPERATE CLOSE TO DESIGNER SPECIFIED PRESSURE RATING (SEE IRRIGATION SCHEDULE).  
 3. DO NOT MOUNT SPRINKLER DIRECTLY NEXT TO HARDSCAPES OR FENCES. PLACE 2" - 4" AWAY TO ALLOW FOR MAINTENANCE.  
 4. SPRINKLER SHALL BE PLACED PERPENDICULAR TO FINISHED GRADE FOR OPTIMUM PERFORMANCE.

6 RAIN BIRD 5000 SERIES ROTOR - 4" POP-UP 3" = 1'-0" 7

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 CLIA, EPA WaterSense Partner  
 CHECKED BY  
**TIM MALOOLY**  
 CID, CLIA, EPA WaterSense Partner  
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ISSUED RECORD  
 NO. DESCRIPTION DATE
























ISSUE DATE  
**5-19-2017**

PROJECT NUMBER  
**D16-117B-02**

DRAWING SCALE  
**NO SCALE**

SHEET NAME  
**IRRIGATION DETAILS**  
 SHEET NUMBER

IRRIGATION SCHEDULE

SYMBOL	DESCRIPTION	QTY	PSI	
	TURF ROTOR 25"-45" - TRIANGULAR SPACED. HEAD TO HEAD COVERAGE. MATCHED APPLICATION RATES. SPACE NO GREATER THAN 41".			
	TURF SPRAY IRRIGATION - 4'-15' RADIUS, SQUARE SPACED. HEAD TO HEAD COVERAGE. SPACE NO GREATER THAN 15".			
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	
	RAIN BIRD 1804-NP 10 SERIES MPR TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL, 1/2" NPT FEMALE THREADED INLET. WITH NON POTABLE PURPLE CAP.	19	30	
	RAIN BIRD 1804-NP 12 SERIES MPR TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL, 1/2" NPT FEMALE THREADED INLET. WITH NON POTABLE PURPLE CAP.	9	30	
	RAIN BIRD 1804-NP 15 SERIES MPR TURF SPRAY 4.0" POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL, 1/2" NPT FEMALE THREADED INLET. WITH NON POTABLE PURPLE CAP.	27	30	
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM
	RAIN BIRD 5004-PC, FC-NP TURF ROTOR, 4.0" POP-UP, PLASTIC RISER, ADJUSTABLE AND FULL CIRCLE. STANDARD ANGLE NOZZLE. WITH NON-POTABLE PURPLE COVER.	1	45	1.54
	RAIN BIRD 5004-PC, FC-NP TURF ROTOR, 4.0" POP-UP, PLASTIC RISER, ADJUSTABLE AND FULL CIRCLE. STANDARD ANGLE NOZZLE. WITH NON-POTABLE PURPLE COVER.	17	45	3.09
	RAIN BIRD 5004-PC, FC-NP TURF ROTOR, 4.0" POP-UP, PLASTIC RISER, ADJUSTABLE AND FULL CIRCLE. STANDARD ANGLE NOZZLE. WITH NON-POTABLE PURPLE COVER.	31	45	6.01
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY		
	RAIN BIRD PEB WITH FD101-TURF 1", 1-1/2", 2" PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY. GLOBE CONFIGURATION. WITH SCRUBBER TECHNOLOGY FOR RELIABLE PERFORMANCE IN DIRTY WATER IRRIGATION APPLICATIONS.	66		
	RAIN BIRD 5-NP 1" BRASS QUICK-COUPING VALVE, WITH CORROSION-RESISTANT STAINLESS STEEL SPRING, LOCKING NON-POTABLE PURPLE RUBBER COVER, AND 1-PIECE BODY.	3		
	3-PORT VALVE	1		
	RAIN BIRD 300-BPES GLOBE WITH FD102-TURF 3" 3" BRASS MASTER VALVE, WITH GLOBE CONFIGURATION. WITH A PATENTED NYLON SCRUBBER THAT SCRAPES A STAINLESS STEEL SCREEN TO PREVENT DEBRIS BUILD-UP AND CLOGGING.	1		
	ZURN 875 3" REDUCED PRESSURE BACKFLOW PREVENTER.	1		
	RAIN BIRD ESP-LXD-LXAMPED FLOW SENSING TWO-WIRE DECODER COMMERCIAL CONTROLLER - 50 STATIONS, UV-RESISTANT, OUTDOOR-RATED, POWDER-COATED METAL PEDESTAL CASE. AVAILABLE IN THE US MARKET, INTERNATIONAL, EUROPEAN, OR AUSTRALIAN MARKETS.	1		
	RAIN BIRD LSP-1TURF LINE SURGE PROTECTION DECODER DIRECTLY TO THE GROUND ROD OR GROUND PLATE	3		
	RAIN BIRD RSD-BEX RAIN SENSOR, WITH METAL LATCHING BRACKET, EXTENSION WIRE.	1		
	RAIN BIRD LIMRKT LANDSCAPE IRRIGATION AND MAINTENANCE REMOTE. MAINTAINS RAIN BIRD SYSTEM OPERATION AND HEAD ALIGNMENT. OPERATES WITH ALL ESP AND STP RAIN BIRD CONTROLLERS. KIT COMES WITH BATTERIES AND A DURABLE PLASTIC CARRYING CASE.	1		
	RAIN BIRD FS-150-P 1-1/2" FLOW SENSOR FOR USE WITH RAIN BIRD MAXCOM WITH FD102-TURF, SITE CONTROL, AND ESP-LXD CENTRAL CONTROL SYSTEMS. PLASTIC (PVC) MODEL. SUGGESTED OPERATING RANGE OF 5.0 GPM TO 100.0 GPM. SENSORS SHOULD BE SIZED FOR FLOW RATHER THAN PIPE SIZE.	150		
	BOOSTER PUMP			
	WATER METER 2" BACK-UP MUNICIPAL WATER	1		
	POINT OF CONNECTION 2-1/2" POND 1 STORMWATER	1		
	IRRIGATION LATERAL LINE, POLYETHYLENE AND PVC CLASS 200 POLYETHYLENE SDR-7 UP TO 1-1/4", THEN PVC CLASS 200 SDR 21 FOR 1-1/2" AND LARGER.	5,353 L.F.		
	IRRIGATION MANLINE, POLYETHYLENE AND PVC CLASS 200 PIPE SLEEVE, PVC SCHEDULE 40	57.3 L.F.		
	PIPE SLEEVE, PVC SCHEDULE 40			

WATERING SCHEDULE - ALL STATIONS (WATER USE FOR 48 HOURS AFTER QUALIFYING RAIN EVENT)

NUMBER	MODEL	TYPE	PRECIP	IN/48 HR	MIN/48 HR	VAL/48 HR
1	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY	0.86	in/h	1.50	105
2	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY	0.83	in/h	1.50	109
3	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR	0.79	in/h	1.50	114
4	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR	0.76	in/h	1.50	120
5	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR	0.49	in/h	1.50	186
6	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR	0.40	in/h	1.50	224
7	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR	0.40	in/h	1.50	223
8	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY	1.51	in/h	0.50	60
9	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
10	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
11	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
12	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
13	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
14	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
15	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
16	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
17	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
18	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
19	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
20	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
21	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
22	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
23	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
24	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
25	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
26	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
28	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
29	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
30	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
32	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
33	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
34	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
35	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
36	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
37	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
38	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
39	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
40	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
41	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
43	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
44	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
45	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
46	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
47	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
48	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
49	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
50	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
51	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
52	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
53	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
54	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
55	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
56	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
57	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
58	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
59	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
60	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
61	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
62	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
63	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
64	RAIN BIRD PEB WITH FD101-TURF	TURF ROTOR 25'-45'	0.60	in/h	0.50	741.8
65	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
66	RAIN BIRD PEB WITH FD101-TURF	TURF SPRAY IRRIGATION	1.60	in/h	0.50	19
TOTALS: (FOR 48 HOURS AFTER A QUALIFYING RAIN EVENT)						
				2.937	74,380	37,190

OPERATION AND MAINTENANCE

- IN-SEASON OPERATION AND MAINTENANCE**
1. SITE INSPECTION FREQUENCY GUIDELINE  
 1.1. NOT LESS THAN MONTHLY AND AFTER LARGE STORM EVENTS.  
 1.2. UPON ARRIVAL, PERFORM VISUAL SWEEP/TOUR OF THE ENTIRE PROPERTY TO IDENTIFY:  
 1.2.1. CONTRACTORS WORKING WITHIN IRRIGATED AREAS  
 1.2.2. ANY LANDSCAPING OR CONSTRUCTION THAT MAY HAVE AFFECTED THE STORMWATER HARVEST/REUSE EQUIPMENT  
 1.2.3. ANY AREAS THAT MAY REQUIRE IMMEDIATE ATTENTION (I.E. MANLINE BREAKS, STATIONS NOT OPERATING, ETC)  
 1.2.4. OWNER-IDENTIFIED ITEMS OF INTEREST  
 2. INSPECT STORMWATER HARVEST/REUSE POND(S)  
 2.1. INSPECT STORMWATER INLETS AND OUTLETS  
 2.1.1. CLEAR AS NECESSARY  
 2.1.2. RECORD AND REPORT DEGRADATION, TAKE ACTION AS NEEDED  
 2.2. CHECK FOR SEDIMENT ACCUMULATION  
 2.2.1. RECORD ACCUMULATION TOTALS AND TRANSFER TO RECORD DOCUMENTS  
 2.2.2. SEDIMENT IN BASIN SHALL BE REMOVED UPON REACHING ELEVATION \*\*\* OR UPON SIGNIFICANT INTERFERENCE WITH SYSTEM OPERATION OR PERFORMANCE REQUIREMENTS  
 3. PERFORM STORMWATER HARVEST/REUSE PUMP STATION INSPECTION  
 3.1. ASSURE PUMP STATION ELECTRICAL IS OPERATIONAL  
 3.2. CHECK AND ASSURE OPERATION OF PUMP LEVEL CONTROLS  
 3.3. INSPECT FOR EVIDENCE OF CLOGGING, REMEDY AS NEEDED  
 3.4. RECORD WATER USE TOTALS AND TRANSFER TO RECORD DOCUMENTS  
 3.5. TEST PUMP STATION OPERATION  
 3.5.1. ADJUST SETTINGS AS NECESSARY  
 4. PERFORM REUSE-SYSTEM INSPECTION  
 4.1. STATION-BY-STATION WALK-THROUGH, CHECK AND RECORD:  
 4.1.1. PROPER EMISSION DEVICE OPERATION  
 4.1.2. DAMAGED OR PLUGGED EMISSION DEVICES  
 4.1.3. MISALIGNED OR PITCHED EMISSION DEVICES  
 4.1.4. WET AREAS DUE TO LATERAL OR MANLINE BREAKS  
 4.1.5. PROBLEMS NOT RELATED TO IRRIGATION BUT POSSIBLY AFFECTING OPERATION  
 5. PERFORM REPAIRS AS RECORDED FROM WALK-THROUGH  
 6. ASSESS CONTROLLER PROGRAMS AND CONTROLS OPERATION:  
 6.1. CHECK, ADJUST AND REPAIR RAIN SENSOR AS NECESSARY  
 6.2. VERIFY ALL PROGRAMMING FOR PROJECT REQUIREMENTS  
 6.2.1. START TIMES  
 6.2.2. RUN TIMES  
 6.2.3. PROGRAM DAYS  
 6.2.4. DOCUMENT PROGRAMMING CHANGES, TRANSFER TO RECORD DOCUMENTS  
 6.3. VERIFY SYSTEM IS SET TO OPERATE  
 6.4. SECURE ENCLOSURES AND CABINETS TO PREVENT TAMPING OR DAMAGE FROM WEATHER  
 7. DOCUMENT SITE VISIT AND CONTACT \*\*\* WITH CONCERNS RELATED TO STORMWATER HARVEST/REUSE SYSTEM.

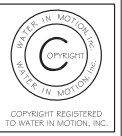
- SPRING START-UP**
1. COMMUNICATE WITH \*\*\* TO LEARN OF ANY CHANGES TO STORMWATER HARVEST/REUSE SYSTEM OPERATION REQUIREMENTS MANDATED BY GOVERNING AUTHORITY  
 2. PERFORM VISUAL SWEEP/TOUR OF THE ENTIRE PROPERTY TO IDENTIFY:  
 2.1. CONTRACTORS WORKING WITHIN IRRIGATED AREAS  
 2.2. ANY LANDSCAPING OR CONSTRUCTION THAT MAY HAVE AFFECTED THE STORMWATER HARVEST/REUSE EQUIPMENT  
 2.3. ANY AREAS THAT MAY REQUIRE IMMEDIATE ATTENTION (I.E. MANLINE BREAKS, STATIONS NOT OPERATING, ETC)  
 2.4. OWNER-IDENTIFIED ITEMS OF INTEREST  
 3. INSPECT STORMWATER HARVEST/REUSE POND(S)  
 3.2. INSPECT STORMWATER INLETS AND OUTLETS  
 3.2.1. CLEAR AS NECESSARY  
 3.2.2. RECORD AND REPORT DEGRADATION, TAKE ACTION AS NEEDED  
 3.3. CHECK FOR SEDIMENT ACCUMULATION  
 3.3.1. RECORD ACCUMULATION TOTALS AND TRANSFER TO RECORD DOCUMENTS  
 3.3.2. SEDIMENT IN BASIN SHALL BE REMOVED UPON REACHING ELEVATION \*\*\* OR UPON SIGNIFICANT INTERFERENCE WITH SYSTEM OPERATION OR PERFORMANCE REQUIREMENTS  
 4. TRANSPORT PUMP STATION SUBMERSIBLE ASSEMBLY FROM WARM STORAGE, PLACE INTO OUTLET \* STORMWATER POND AND CONNECT TO PUMP STATION CONTROL CENTER  
 4.1. ASSURE PUMP STATION ELECTRICAL IS OPERATIONAL  
 4.2. CHECK AND ASSURE OPERATION OF PUMP LEVEL CONTROLS  
 4.3. RECORD WATER USE TOTALS AND TRANSFER TO RECORD DOCUMENTS  
 4.4. TEST PUMP STATION OPERATION  
 4.4.1. ADJUST SETTINGS AS NECESSARY  
 5. COMPLETE ITEMS 4, 5, 6 & 7 FROM IN-SEASON OPERATION AND MAINTENANCE TASK LIST (ABOVE)

- AUTUMN SHUT-DOWN**
1. PERFORM VISUAL SWEEP/TOUR OF THE ENTIRE PROPERTY TO IDENTIFY:  
 1.1. CONTRACTORS WORKING WITHIN IRRIGATED AREAS  
 1.2. ANY LANDSCAPING OR CONSTRUCTION THAT MAY HAVE AFFECTED THE STORMWATER HARVEST/REUSE EQUIPMENT  
 1.3. ANY AREAS THAT MAY REQUIRE IMMEDIATE ATTENTION (I.E. MANLINE BREAKS, STATIONS NOT OPERATING, ETC)  
 1.4. OWNER-IDENTIFIED ITEMS OF INTEREST  
 2. DISENGAUGE PUMP STATION ELECTRICAL  
 3. RECORD WATER USE TOTALS AND TRANSFER TO RECORD DOCUMENTS  
 4. WINTERIZE PUMP STATION PER MANUFACTURER'S RECOMMENDATION  
 5. REMOVE PUMP STATION SUBMERSIBLE ASSEMBLY, SECURE RELATED ELEMENTS AND TRANSPORT PUMP STATION SUBMERSIBLE ASSEMBLY TO WARM STORAGE  
 6. CONNECT STORMWATER HARVEST/REUSE DISTRIBUTION SYSTEM TO AN INDUSTRIAL AIR COMPRESSOR AND PERFORM SYSTEM WINTERIZATION ACTIVITY PER BEST PRACTICES AND REGIONAL REQUIREMENTS  
 7. INSPECT STORMWATER HARVEST/REUSE POND(S)  
 7.1. INSPECT STORMWATER INLETS AND OUTLETS  
 7.1.1. CLEAR AS NECESSARY  
 7.1.2. RECORD AND REPORT DEGRADATION, TAKE ACTION AS NEEDED  
 7.2. CHECK FOR SEDIMENT ACCUMULATION  
 7.2.1. RECORD ACCUMULATION TOTALS AND TRANSFER TO RECORD DOCUMENTS  
 7.2.2. SEDIMENT IN BASIN SHALL BE REMOVED UPON REACHING ELEVATION \*\*\* OR UPON SIGNIFICANT INTERFERENCE WITH SYSTEM OPERATION OR PERFORMANCE REQUIREMENTS  
 8. FURNISH YEAR END REPORTING INFORMATION AS REQUIRED BY \*\*\* OR AS MANDATED BY GOVERNING AUTHORITY

NOT FOR CONSTRUCTION  
 THESE PLANS HAVE NOT BEEN APPROVED  
 AND ARE SUBJECT TO CHANGE.

CALL BEFORE YOU DIG!  
 MINNESOTA LAW REQUIRES OWNERS TO NOTIFY THE REGIONAL NOTIFICATION CENTER AT LEAST TWO (2) BUSINESS DAYS (NOT MORE THAN FOURTEEN (14) CALENDAR DAYS PRIOR TO EXCAVATION)  
 GOVERNOR STATE ONE CALL  
[www.gopherstatesonecall.org](http://www.gopherstatesonecall.org)  
 1-800-252-1166

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[www.waterinmotion.com](http://www.waterinmotion.com)



ARBOR GLEN, CHANHASSEN, MN  
 IRRIGATION DESIGN

DRAWN BY  
 CATHY K. JOHNSON  
 CIB, DCE  
 EPA WaterSense Partner  
 CHECKED BY  
 TIM MALOOLY  
 CIB, DCE  
 EPA WaterSense Partner

ISSUED RECORD  
 NO DISCRIMINATION  
 DATE

ISSUE DATE  
 5-14-2017  
 PROJECT NUMBER  
 D16-1173-02

DRAWING SCALE  
 NO SCALE  
 SHEET NAME  
 IRRIGATION DETAILS  
 SHEET NUMBER  
 IR 2.1

## Riley Purgatory Bluff Creek Watershed District Permit Application Review

**Permit No:** 2017-023

**Received complete:** May 17, 2017

**Applicant:** Eden Prairie Assembly of God, Jac Perrin

**Consultant:** Bed Ford, Rehder & Associates

**Project:** Eden Prairie Assembly of God – Construction of a 14,794 square foot addition, parking lot modifications, and an infiltration basin

**Location:** 16591 Duck Lake Trail, Eden Prairie, MN

**Reviewer:** Leslie DellAngelo and 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

### Rule Conformance Summary

Rule	Issue	Conforms to RBPCWD Rules?	Comments
C	Erosion Control Plan	No	See Rule Specific Permit Condition C1 and C2.
J	Stormwater Management	Rate	Yes
		Volume	Yes
		Water Quality	Yes
		Low Floor Elev.	Yes
		Maintenance	No
L	Permit Fee	Yes	\$1,500 was received on March 22, 2017.
M	Financial Assurance	See Comment	The financial assurance has been calculated at \$94,375.

## **Project Description**

The project proposes the construction of a 14,794 square foot building addition and parking lot modifications. The project includes an infiltration basin followed by a grassed swale to provide storm water quantity, volume and quality control. Pretreatment for the infiltration basin will be provided by a 3' sump manhole. The project site information is summarized below:

1. Total Site Area: 10.08 acres
2. Existing Site Total Impervious Area: 2.22 acres (96,699 square feet)
3. Post Construction Site Total Impervious Area: 2.4 acres (105,848 square feet)
4. New Impervious Area: 0.21 acres (9,148 square feet, 9.5% increase in site impervious area)
5. Disturbed impervious surface: 0.38 acres (16,553 square feet) (17.1% disturbance)
6. Total Disturbed Area: 1.5 acres

Exhibits:

1. Permit Application dated February 22, 2017.
2. Design Plan Sheets dated March 22 2017(revisions received May 12, 2017).
3. Stormwater Management Report dated March 16, 2017 (revised May 12, 2017).
4. HydroCAD models for existing and proposed conditions dated March 15, 2017 (revised May 10, 2017).
5. MIDS calculator water quality computations dated March 16, 2017 (revised May 8, 2017).

## **Rule Specific Permit Conditions**

### **Rule C: Erosion and Sediment Control**

Because the project will alter 1.5 acres (65,340 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 Rehder & Associates, Inc. includes installation of silt fence, inlet protection for storm sewer catch basins, a rock construction entrance, decompaction of areas compacted during construction, and retention of native topsoil onsite. Because the grading note on sheet C.4 indicates only four inches of topsoil will be used for site restoration the proposed project does not comply with Rule C, Subsection 3.1f, which requires six inches of topsoil. 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 control at the site. RPBCWD must be notified if the responsible individual changes during the permit term.

C2. The Applicant must revise the note under the Grading section III.B on Sheet C.4 from four inches of top soil to six inches of top soil.

**Rule J: Stormwater Management**

Because the project will alter 1.5 acres (65,340 square feet) of surface area, approval under the RPBCWD Stormwater Management Rule is required. The proposed land-disturbing activities will increase the imperviousness of the entire site by 9.5% (i.e., well less than the 50 percent increase threshold in section 2.3 for application of the stormwater criteria to all impervious area of the project site), and disturb 17.1% of the existing impervious area (i.e., less than 50 percent of the existing impervious area), therefore under the paragraph 2.3 redevelopment framework, the RPBCWD stormwater management criteria apply only to the new and disturbed impervious surface on the site.

The Applicant is proposing an infiltration basin followed by a grassed swale to provide the required rate control, volume abstraction and water quality management on the site. Pretreatment for the infiltration basin is provided by a sump manhole.

**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 site includes three discharge locations from the site. 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-Day Snowmelt (cfs)		10-Year Discharge (cfs)		100-Year Discharge (cfs)	
	Ex	Prop	Ex	Prop	Ex	Prop	Ex	Prop
West	7.9	7.9	5.3	5.3	15.8	15.8	32.4	32.4
Southeast	1.2	1.2	0.7	0.7	2.4	2.4	5.0	5.0
Northeast	11.2	7.5	5.2	5.2	18.2	14.5	34.4	29.3

**Volume Abstraction**

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from the fully reconstructed impervious surface of the parcel. An abstraction volume of 2,356 cubic feet is required from the 0.59 acres (25,700 square feet) total new and reconstructed impervious area on the project for

volume retention. The drawing show one infiltration basin with pretreatment of runoff provided by a sump manhole. The table below summarizes the volume abstraction on the site.

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Volume (cubic feet)
1.1	2,356	2,365

Soil borings performed by Braun show that soils in the project area are primarily clays; the MN Stormwater Manual indicates an infiltration rate of 0.06 inches per hour for such soils. The soil boring at the location of the proposed infiltration basin shows no groundwater was observed to a boring elevation of 923.3 feet. Groundwater is at least 3 feet below the bottom of the proposed infiltration basin (Rule J, Subsection 3.1.b.ii). The proposed project is in conformance with RPBCWD Rule J, Subsection 3.1.b.

**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 one infiltration basin with pretreatment provided by a sump manhole to achieve the required TP and TSS removals and submitted MIDS Calculator models to estimate the TP and TSS removals. The table below summarized the water quality treatment provided for the site. Based on information reviewed, the proposed project conforms to Rule J, Subsection 3.1.c.

Pollutant of Interest	Regulated Site Loading (lbs/yr)	Required Load Removal (lbs/yr) <sup>1</sup>	Provided Load Reduction (lbs/yr)
Total Suspended Solids (TSS)	188.2	169.4 (90%)	629.8 (>100%) <sup>2</sup>
Total Phosphorus (TP)	1.04	0.62 (60%)	2.36 (>100%) <sup>2</sup>

<sup>1</sup>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.

<sup>2</sup>The TSS and TP removal is higher than required removal because the infiltration system treats a larger, undisturbed area of the existing impervious area.

**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.



Stormwater Facility	Low Floor Elevation of Building (feet)	100-year Event Flood Elevation (feet)	Freeboard (feet)	Provided Distance Between Building and Adjacent Stormwater Feature (feet)	Required Separation to Groundwater based on Appendix J, Plot 2 (feet)	Provided Separation to Groundwater based on Soil Boring B-1 (feet)
Proposed Infiltration Basin	930.0	933.96	-3.96	50	~3	6.7

The low floor elevation of the building is less than the 100-year event flood elevation of the infiltration basin. The topography between the building and the proposed infiltration basin is sufficiently high to prevent the 100-year flood elevation from inundating the structure. An analysis in accordance with Appendix J1 was completed for the building. The horizontal distance between the building and the infiltration basin is 50 feet; therefore, the required separation to groundwater at the building is 3 feet in order to be in compliance with Plot 2 in Appendix J1. As shown in the above table the proposed structure provides adequate separation from groundwater 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/declaration. 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: 890 L.F. x \$2.50/L.F. = ..... \$2,225

Restoration: 1.5 acres x \$2,500/acre = ..... \$3,750

Rules J: Infiltration: 10,000 sq. ft. x \$6.00/sq. ft. = ..... \$60,000

Contingency (10%) ..... \$6,600

Administration (30%) ..... \$21,800

Total Financial Assurance..... \$94,375

**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:

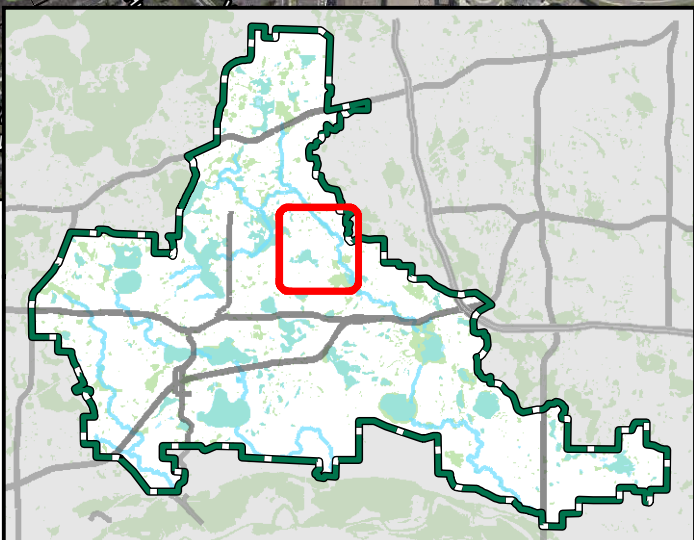
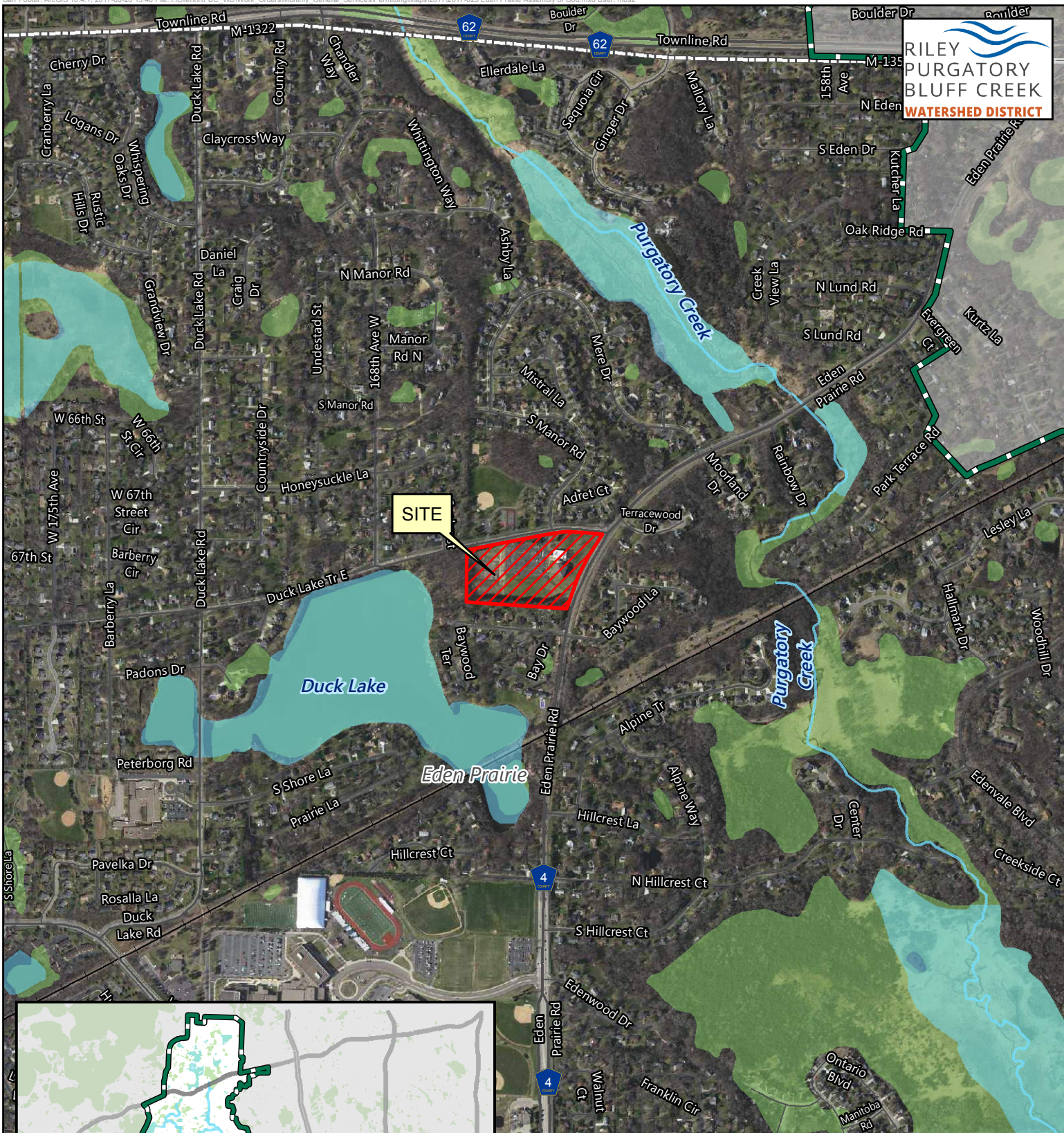
1. Continued compliance with General Requirements.
2. Financial Assurance in the amount of \$94,375.
3. Applicant providing the name and contact information of the individual responsible for erosion and sediment control for the project.
4. The Applicant must revise the note under the Grading section III.B on Sheet C.4 from four inches of top soil to six inches of top soil.
5. Submission of a receipt showing recordation of a maintenance declaration for the storm water management facilities. A draft of the declaration 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. 2017-023 with the conditions recommended by staff.



Feet

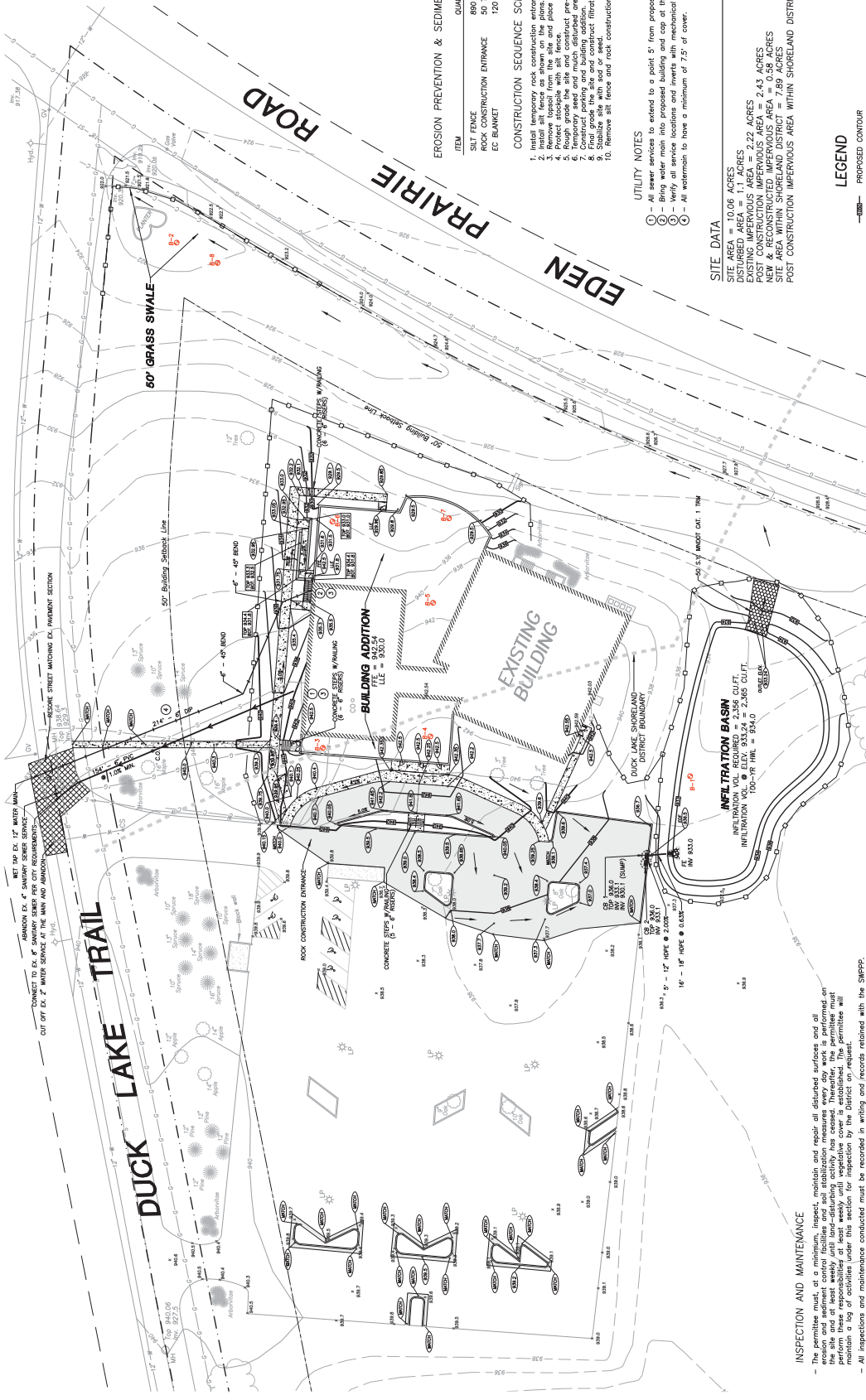


Permit Location Map

EDEN PRAIRIE  
ASSEMBLY OF GOD  
**Permit 2017-023**  
Riley Purgatory Bluff Creek  
Watershed District

PARTY RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL MEASURES

XXX  
XXX  
XXX  
XXX



**EROSION CONTROL NOTES**

- Contractor is responsible for all notifications and inspections required by General Storm Water Permit.
- All areas disturbed by construction shall be restored per the specifications within 14 days after construction.
- Erosion control measures shall be installed prior to grading operations and maintained until all areas disturbed have been restored.
- Sweep paved public streets as necessary where construction sediment has been deposited.
- Soil surfaces unprotected during construction and remaining for more than 14 days after construction must be decomposed through soil amendment and/or ripping to a depth of 18 inches to ensure proper soil aeration, tree roots and other existing vegetation prior to final revegetation or other stabilization.
- Temporary soil stockpiles must have silt fence around them and cannot be placed in surface waters.
- Temporary concrete forms, forms, and other equipment shall be cleaned, repaired, stored, and disposed. Excess concrete water from concrete trucks shall be disposed of in portable washout concrete basin or disposed of in a combined area.

**EROSION CONTROL NOTES**

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- Temporary concrete forms, forms, and other equipment shall be cleaned, repaired, stored, and disposed. Excess concrete water from concrete trucks shall be disposed of in portable washout concrete basin or disposed of in a combined area.

**INSPECTION AND MAINTENANCE**

- The permittee must, at a minimum, inspect, maintain and repair all disturbed surfaces and all erosion and sediment control facilities and soil stabilization measures every day work is performed on the site.
- All inspections and maintenance conducted must be recorded in writing and records retained with the SPPP.
- All areas that have undergone final stabilization, may have the inspection of these areas reduced to once per month.
- All silt fence must be repaired, replaced, or supplemented within 24 hours when they become nonfunctional or the sediment reaches 1/3 of the height of the fence.
- All silt fence must be inspected and the sediment removed when the depth of the sediment reaches 1/2 the storage volume. Removal must be completed within 72 hours of discovery.
- Surface waters and conveyance systems must be inspected for evidence of sediment being deposited. Removal and stabilization must take place within seven (7) days of discovery unless precluded by legal, regulatory, or construction site vehicle exit locations must have sediment removed from off-site paved surfaces within 24 hours of discovery.
- Project infiltration and runoff must be tracked in a field log which all contributing drainage areas have been stabilized.
- Project infiltration and runoff sediment and heavy equipment compaction during/after construction with silt fence.

**POLLUTION PREVENTION MANAGEMENT**

- All solid waste must be disposed of off-site per the MPCA disposal requirements.
- All hazardous waste must be properly stored with restricted access to storage areas to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA Regulations.
- All petroleum products, oils, greases, and other liquids shall be disposed of in portable washout concrete basin or disposed of in a combined area.

**EROSION PREVENTION & SEDIMENT CONTROL BMP'S**

ITEM	QUANTITY
SILT FENCE	800 FEET
ROCK CONSTRUCTION ENTRANCE	50 TONS 1"-2" WASHED ROCK
EC BLANKET	120 S.Y.

**CONSTRUCTION SEQUENCE SCHEDULE**

1. Install temporary rock construction entrance and continuously inspect.
2. Remove topsoil from the site and place in temporary stockpile location.
3. Protect stockpile with silt fence.
4. Install temporary erosion control measures.
5. Temporary seed and mulch disturbed areas on site.
6. Final construction of building addition.
7. Final grading, site and construct filtration basin.
8. Stabilize site with sod or seed.
9. Remove all fence and rock construction entrance.

**UTILITY NOTES**

- 1. All sewer services to extend to a point 5' from proposed building.
- 2. All utility lines to be installed prior to final grading.
- 3. All watermain to have a minimum of 7.5' of cover.

**SITE DATA**

SITE AREA = 0.06 ACRES  
 POST CONSTRUCTION IMPERVIOUS AREA = 2.22 ACRES  
 POST CONSTRUCTION IMPERVIOUS AREA = 2.43 ACRES  
 SITE AREA WITHIN SHORELAND DISTRICT = 7.8 ACRES  
 POST CONSTRUCTION IMPERVIOUS AREA WITHIN SHORELAND DISTRICT = 1.93 ACRES (24.5%)

**LEGEND**

- PROPOSED CONTOUR
- PROPOSED ELEVATION
- EXISTING CONTOUR
- EXISTING ELEVATION
- PROPOSED CONCRETE
- PROPOSED STD. DUTY BITUMINOUS
- BOUNDARY/ROW/ROCK LINE
- EASEMENT
- BUILDING/PARKING SETBACK LINE
- BUILDING WATERMAIN
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER

**GRADING NOTES**

- All elevations shown on final surfaces.

**CATCH BASIN/MANHOLE SCHEDULE**

STRUCTURE NO.    BARREL SIZE    INENH. CASTING NO.

CB 1                    R-3067Y                    R-3067Y

# STATION NINETEEN

**Architects - Incorporated**

2001 UNIVERSITY AVENUE SOUTH-EAST  
MINNEAPOLIS, MINNESOTA 55414  
PHONE (612) 623.1800  
FAX (612) 623.0012

I hereby certify that I am a duly licensed professional engineer in the State of Minnesota, and that I am duly licensed in the State of Minnesota, and that I am duly licensed in the State of Minnesota.

**SIGNATURE:** *[Signature]*

**ENGINEER:** Benson G. Ford, P.E.

**REGISTRATION NUMBER:** 24392

**DATE:** 09/12/2017

**DRAWN BY:** NPA

**CHECKED BY:** BDF

**PROJECT TITLE:** EDEN PRAIRIE ASSEMBLY OF GOD

**EDEN PRAIRIE, MINNESOTA**

**Project Number:** 4485

Note: State requires the engineer to disclose the electronic information to the public. The electronic information shall be made available to the public through the Minnesota State Library and Information Services (MSLIS) website. The electronic information shall be made available to the public through the Minnesota State Library and Information Services (MSLIS) website. The electronic information shall be made available to the public through the Minnesota State Library and Information Services (MSLIS) website.

# C3

Drawing No.

## Riley Purgatory Bluff Creek Watershed District Permit Application Review

**Permit No:** 2017-036

**Received complete:** May 23, 2017

**Applicant:** Paul Bourgeois, ISD #276

**Consultant:** Cliff Buhman, Inspec

**Project:** Minnetonka High School Upper Field Access Road – Construction of 480-foot impervious access road and 190 feet of retaining wall on the Minnetonka High School property. An existing underground detention system with underlying infiltration will provide the required storm water rate, volume and quality control.

**Location:** 18301 Highway 7, Minnetonka

**Reviewer:** Scott Sobiech, PE 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		Rule L: Permit Fees
	Rule G: Waterbody Crossings		Rule M: Financial Assurances

### Rule Conformance Summary

Rule	Issue	Conforms to RBPCWD Rules?	Comments
C	Erosion Control Plan	Yes	
J	Stormwater Management	Rate	Yes
		Volume	Yes
		Water Quality	Yes
		Low Floor Elev.	Yes
		Maintenance	See Comment
L	Permit Fee	NA	Governmental Agency
M	Financial Assurance	NA	Governmental Agency

## **Project Description**

The project proposes the Construction of 480-foot impervious access road and 190 feet of retaining wall on the Minnetonka High School property. An existing underground detention system with underlying infiltration will provide the required storm water rate, volume and quality control. The project site information is summarized below:

1. Total Site Area: 70.9 acres
2. Existing Site Impervious Area: 25.77 acres (1,122,541 square feet)
3. New (Increase) in Site Impervious Area: 0.15 acres (6,534 square feet)
4. Disturbed Site Impervious Area: 0.0 acres (0 square feet)
5. Total Disturbed Area: 0.3 acres

### Exhibits:

1. Permit Application dated May 12, 2017.
2. 2010 Detail Drawing of the Existing Underground chambers, sheet C7 dated June 10, 2010
3. Design Plan Sheets dated October 19, 2016
4. Demolition and Erosion Control plan dated May 26, 2017
5. Storm Drainage Plan dated May 16, 2017
6. Existing Drainage Plan dated May 15, 2017
7. Proposed Drainage Plan dated May 15, 2017
8. Minnetonka HS Added Impervious to Tennis Courts USCs summary dated May 22, 2017
9. MIDS calculator files dated May 22, 2017
10. HydroCAD model of proposed conditions received 5/24/2017
11. HydroCAD model of existing conditions received 5/26/2017
12. HydroCAD model summarized for existing and proposed conditions dated 5/22/2017
13. New Tennis Court and Relocated Field Events Grading and Drainage Plan dated July 1, 2010
14. Infiltrometer test results dated May 21, 2010
15. Abstraction calculations dated February 17, 2015
16. Soil boring information dated December 29, 2005

## **Rule Specific Permit Conditions**

### **Rule C: Erosion and Sediment Control**

Because the project will alter 0.3 acres (13,068 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 Inspec, Inc includes installation of silt fence and inlet protection for storm sewer catch basins, stabilized construction entrance, placement of a minimum of 6 inches of topsoil, decompaction of pervious areas compacted during construction, and retention of native topsoil onsite. Bryce Hotzel, Greystone Construction, will be responsible for erosion control at the site. The proposed project conforms to the erosion and sediment control requirements of Rule C.

### **Rule J: Stormwater Management**

Because the project will alter 0.3 acres (13,068 square feet) of surface area, approval under the RPBCWD Stormwater Management Rule is required (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 three projects have been permitted since the rules took effect (RPBCWD Permit 2015-048, 2016-010 and 2016-012), the current activities proposed must be considered in aggregate with the activities proposed under this application, Permit 2017-036. 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 the other permitted activities, only increases the impervious by 6.7 percent and only disturbs a combined 7.5 percent of the existing impervious surface on the parcel (Rule J, Subsection 2.3) – well under the 50 percent disturbed or expanded impervious area threshold for applicability of stormwater management requirements.

The developer is proposing to use an existing underground detention system with underlying infiltration to provide the rate control, volume abstraction, and water quality management on the site. Pretreatment for the modified underground detention system will be provided by an isolator row.

### ***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 HydroCAD models 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 site includes two discharge locations from the site. The existing and proposed 2-, 10-, and 100-year frequency discharges from the site are summarized in the table below. The project modeling confirms 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
Underground stormwater facility	4.2	4.2	6.3	6.3	9.6	9.6	4.2	4.2

**Volume Abstraction**

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from the new and disturbed impervious surface of the parcel (0.3 acres). An abstraction volume of 599 cubic feet is required from the 0.15 acres (6,534 square feet) of new or reconstructed impervious area on the project for volume retention. Soil borings performed by Braun Intertec show that soils in the project area are poorly graded sand with silt, peat, sand and sandy lean clay. Based on infiltrometer testing the infiltration rate was measured at 0.33 inches per hour for such soils. Soil borings performed by Braun Intertec show groundwater about 5.4 feet below the existing underground system. This indicates that groundwater is at least 3 feet below the bottom of the proposed underground infiltration system (Rule J, Subsection 3.1.b.ii). The existing system provides abstraction for 1” of runoff from 3.54 acres of existing impervious surface, utilizing 12,850 cubic feet of available abstraction capacity. The system retains available abstraction capacity of 3659 cubic feet – sufficient to treat the additional 599 cubic feet of runoff from the proposed access road and retaining wall. The Applicant proposes to use excess capacity in an existing underground detention system with underlying infiltration to provide the required abstraction. Pretreatment of runoff is provided by an isolator row installed with the existing system.

The table below summarizes the volume abstraction on the site. The proposed project is in conformance with Rule J, Subsection 3.1.b.

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Volume (cubic feet)
1.1	599	3,659



### **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 to use excess capacity in an existing underground detention system with underlying infiltration and pretreatment provided by an isolator row to achieve the required TP and TSS removals and submitted MIDS modeling to estimate the TP and TSS removals. The existing system provides water quality treatment of runoff from 3.54 acres of existing impervious surface, utilizing 3.66 lbs TP and 996 lbs TSS of available treatment capacity. The system retains available treatment capacity of 2.22 lbs TP and 71 lbs TSS – sufficient to remove the required 0.16 lbs TP and 42.2 lbs TSS from runoff off the proposed access road and retaining wall. The table below summarized the water quality treatment provided for the site. Based on information reviewed, the proposed project conforms to Rule J, Subsection 3.1.c.

<b>Pollutant of Interest</b>	<b>Regulated Site Loading (lbs/yr)</b>	<b>Required Load Removal (lbs/yr)<sup>1</sup></b>	<b>Provided Load Reduction (lbs/yr)</b>
Total Suspended Solids (TSS)	46.9	42.2 (90%)	1067 (>100%) <sup>2</sup>
Total Phosphorus (TP)	0.26	0.16 (60%)	5.88 (>100%) <sup>2</sup>

<sup>1</sup>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.

<sup>2</sup>The TSS and TP removal is higher than required removal because the system treats a larger, undisturbed area of the existing impervious area.

### **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. The RPBCWD Engineer concurs that the proposed project is in conformance with Rule J, Subsection 3.6.

Structure	Low Floor Elevation (feet)	100-year Event Flood Elevation (feet)	Freeboard (feet)
Track Building	926.77	916.99	9.78

**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. Once approved by RPBCWD, the plan must be documented in a written agreement with the 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.

**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. Permit applicant must provide a draft maintenance agreement and inspection plan for the management of stormwater BMPs, including exhibit clearly identifying stormwater BMPs location. Once approved by RPBCWD, the school district must enter an agreement with RPBCWD to maintain the project facilities in accordance with the plan.

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**

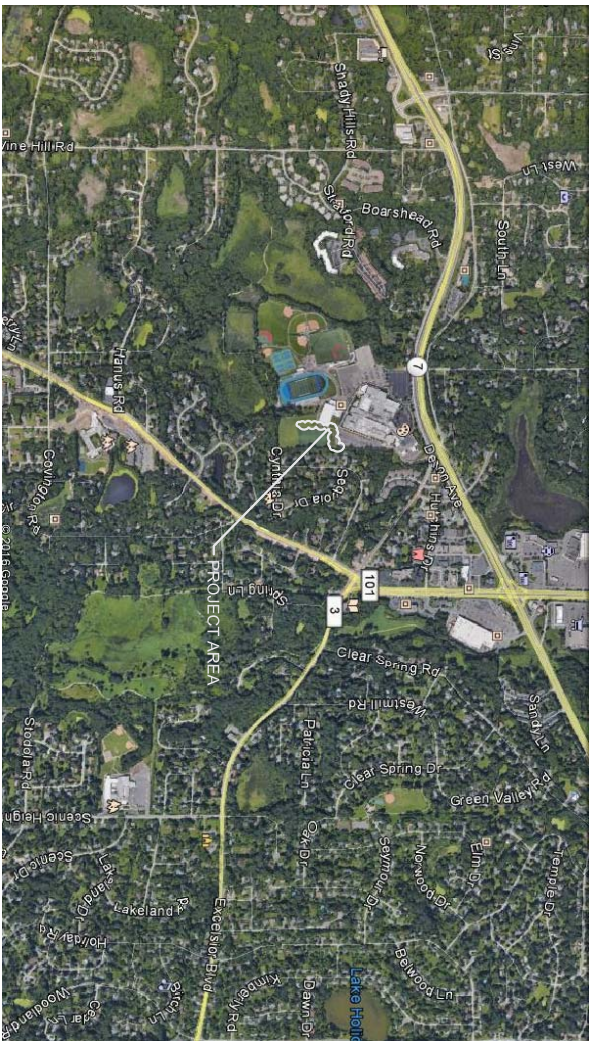
It was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_ to approve permit application No. 2017-036 with the conditions recommended by staff.

# MINNETONKA HIGH SCHOOL UPPER FIELDS ACCESS DRIVE MINNETONKA HIGH SCHOOL

**OWNER:**  
MINNETONKA PUBLIC SCHOOLS  
5621 COUNTY ROAD 101  
MINNETONKA, MINNESOTA 55345

**CIVIL ENGINEER:**  
INSPEC, INC.  
5801 DULUTH STREET  
MINNEAPOLIS, MINNESOTA 55422

**SURVEYOR:**  
CLARK ENGINEERING  
621 LILAC DRIVE NORTH  
MINNEAPOLIS, MINNESOTA 55422-4609



MINNETONKA HIGH SCHOOL  
18301 HIGHWAY 7  
MINNETONKA, MINNESOTA



DRAWING SCHEDULE	
SHEET NO.	DRAWING NAME
C1	COVER SHEET
C2	DEMOLITION AND EROSION CONTROL PLAN
C3	GRADING AND DRAINAGE PLAN
C4	LAYOUT PLAN
C5	LANDSCAPING PLAN
C6	DETAILS



Signature: *[Signature]*  
Date: 11/11/16  
Title: Project Engineer  
Project No.: 16-001-001

ISSUE LEVEL / REVISION:	DATE:	NAME:

**CLIENT:**  
MINNETONKA  
PUBLIC SCHOOLS  
I.S.D. 276

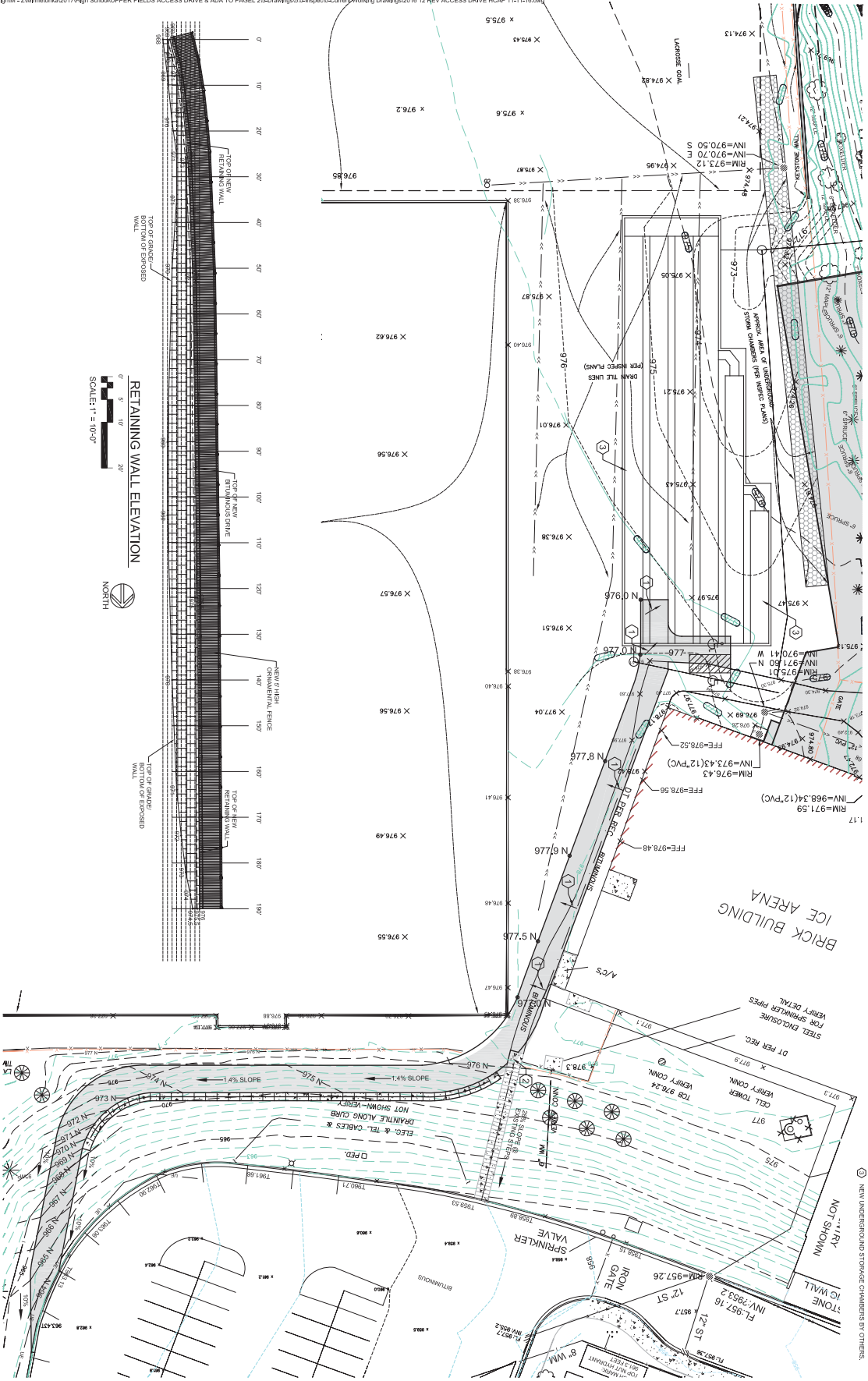
**PROJECT:**  
MINNETONKA  
HIGH SCHOOL  
UPPER FIELDS  
ACCESS DRIVE

**LOCATION:**  
18301 HIGHWAY 7  
MINNETONKA, MINNESOTA

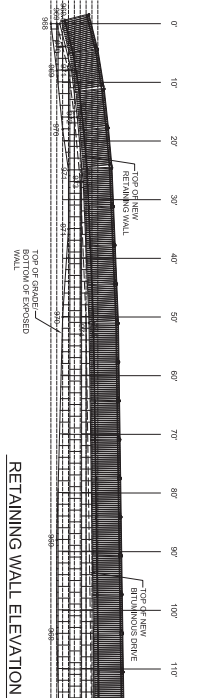
**DRAWING:**  
COVER SHEET

DATE:	10-13-16
CLIENT PROJECT NO.:	
INSPEC PROJECT NO.:	
PROJECT MGR.:	C8
DRAWN BY:	BT
CHECKED BY:	BB

**SHEET NO.:**  
C1



- KEYED NOTES:**
- ① SLOPE ARROWS.
  - ② PROJECT STAIRS.
  - ③ NEW UNDERGROUND STORAGE CHAMBERS BY OTHERS.



ISSUES AND REVISIONS:

NO.	DATE	BY	REVISION

MINNETONKA PUBLIC SCHOOLS  
 I.S.D. 276

MINNETONKA HIGH SCHOOL

18001 HIGHWAY 7  
 MINNETONKA, MINNESOTA

UPPER FIELDS ACCESS DRIVE

RETAINING WALL ELEVATION

DATE: 10-13-16

CLIENT PROJECT NO.: C8

INSPEC PROJECT NO.: 81

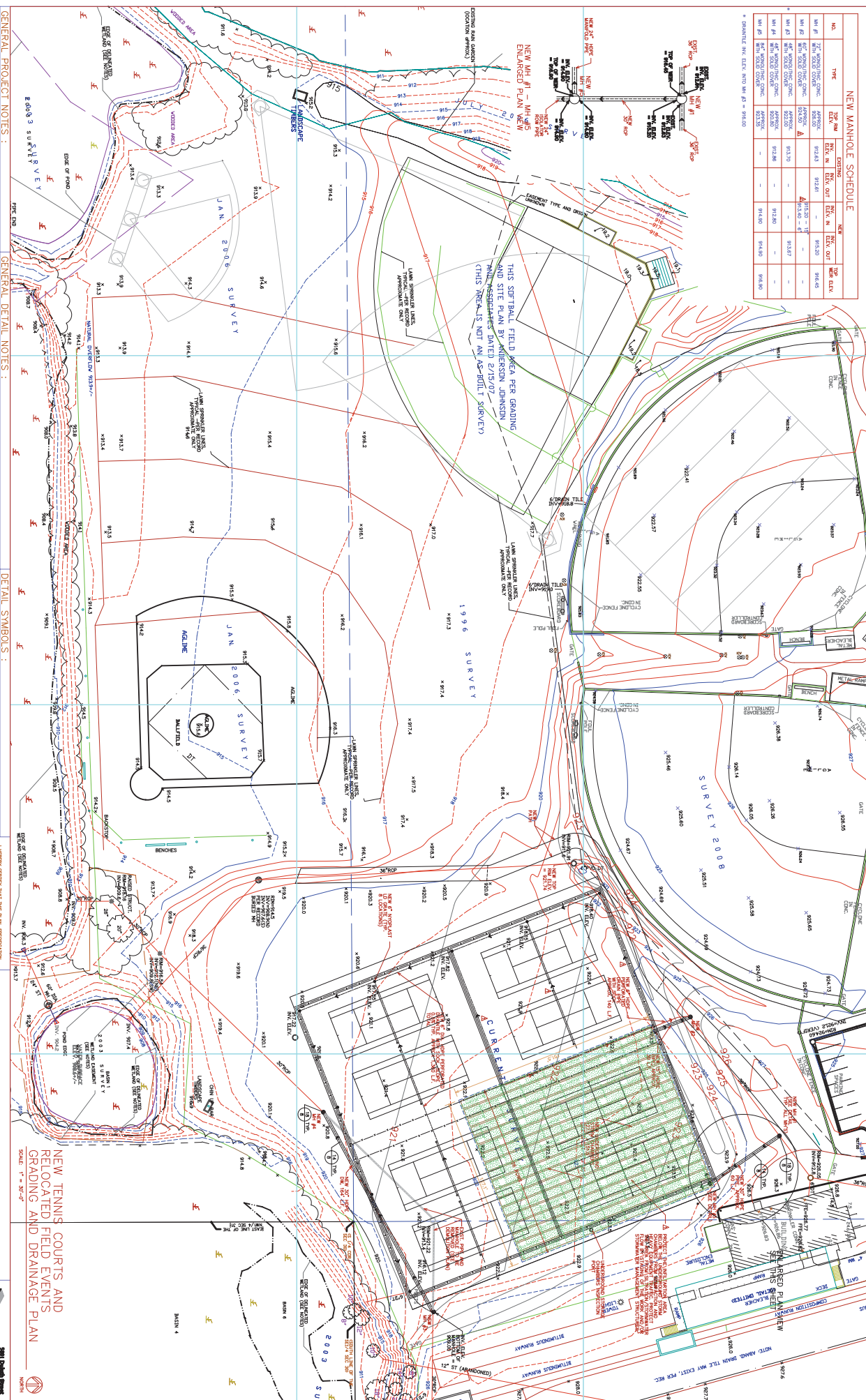
PROJECT MGR: 81

DRAWN BY: 88

CHECKED BY: 88

C3

NO.	TYPE	TOP FIN. ELEV.	EXISTING	NEW	TOP FIN. ELEV.
MAN #1	24" UNDEGROUND CONC. MANHOLE	912.80	912.80	912.80	912.80
MAN #2	30" UNDEGROUND CONC. MANHOLE	913.30	913.30	913.30	913.30
MAN #3	30" UNDEGROUND CONC. MANHOLE	913.30	913.30	913.30	913.30
MAN #4	30" UNDEGROUND CONC. MANHOLE	912.20	912.20	912.20	912.20
MAN #5	30" UNDEGROUND CONC. MANHOLE	914.00	914.00	914.00	914.00



**GENERAL PROJECT NOTES:**

- Verify measurements and conditions on the project conditions.
- Review specifications for materials and construction methods.
- Review specifications for construction methods.
- Review specifications for construction methods.
- Review specifications for construction methods.
- Review specifications for construction methods.
- Contractor shall be responsible for maintaining safe working conditions on areas for employees or other persons at the site.

**GENERAL DETAIL NOTES:**

- Shaded portion on key and site plan represent existing buildings.

**DETAIL SYMBOLS:**

- Existing/ New soil
- Existing/ New concrete
- Existing/ New stone aggregate
- Existing/ New drainage pavement

**LEGEND:**

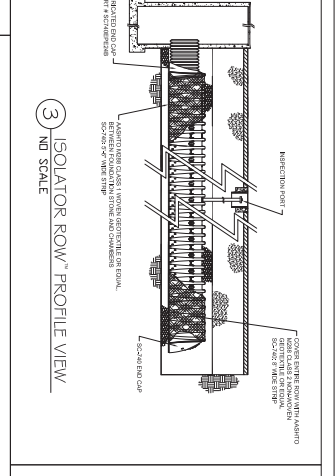
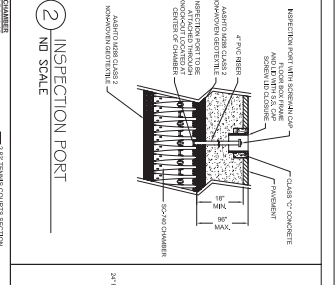
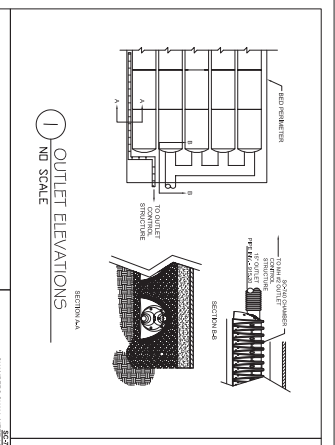
- EXISTING/ NEW SOIL
- EXISTING/ NEW CONCRETE
- EXISTING/ NEW STONE AGGREGATE
- EXISTING/ NEW DRAINAGE PAVEMENT

**PROJECT INFORMATION:**

2010 MINNETONKA HIGH SCHOOL  
SOUTH PARKING LOT ADDITION  
AND NEW TENNIS COURT CONSTRUCTION  
MINNETONKA, MINNESOTA

**SCALE:** 1" = 20'-0"

INSPEC  
PROJ. MGR. BR. DR. BT  
PROJ. NO. 21468 CK. MR.  
DATE: 07/07/10 SHIT. 5 OF 8

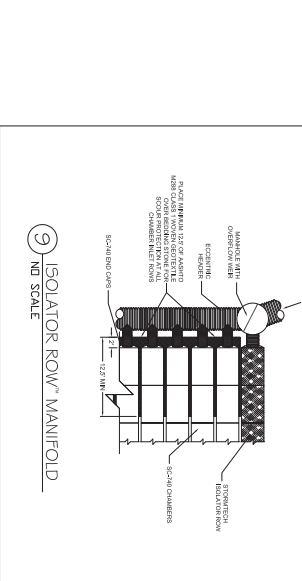
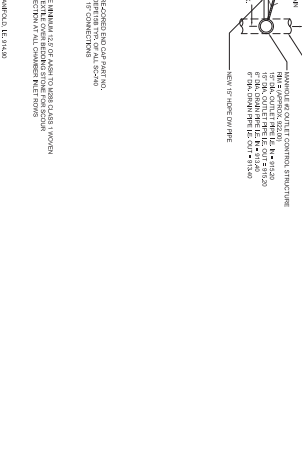
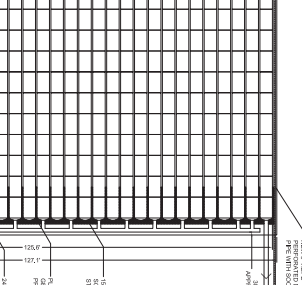
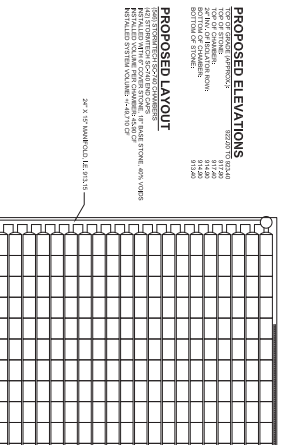
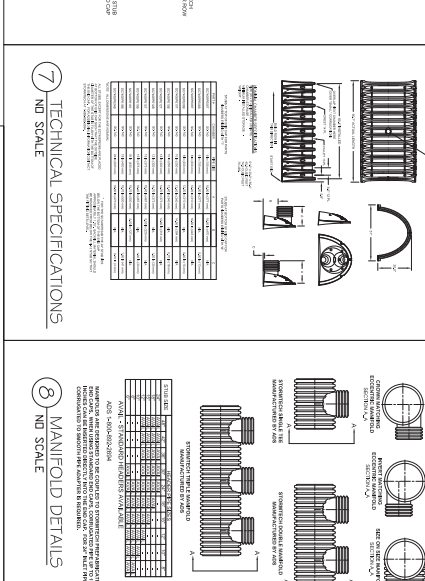
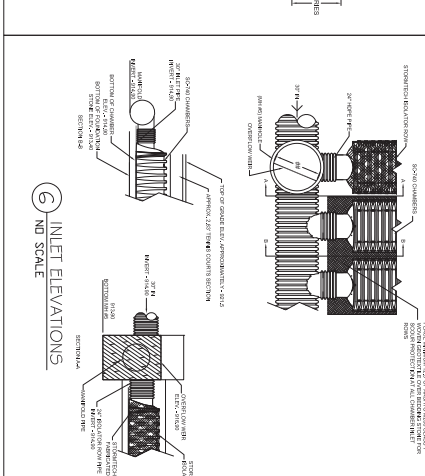
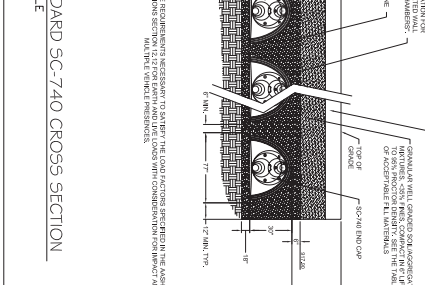
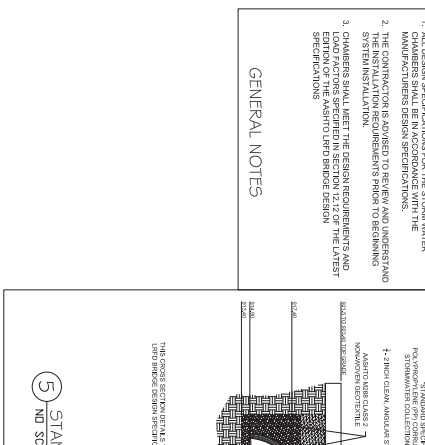


MATERIAL LOCATION	DESCRIPTION	ASHTO M43 DESIGNATION	ASHTO M143 DESIGNATION	COMPATIBILITY REQUIREMENT
CHAMBER FLOOR	CONCRETE	NA	NA	CONCRETE
CHAMBER WALLS	CONCRETE	NA	NA	CONCRETE
CHAMBER CURBS	CONCRETE	NA	NA	CONCRETE
CHAMBER GRATES	ASPHALT	NA	NA	ASPHALT
CHAMBER DRAINAGE	ASPHALT	NA	NA	ASPHALT

PLEASE NOTE: THE LATEST ASHTO SPECIFICATIONS ARE THE GOVERNING LAW. THE STONE MUST BE 4.75 IN. CLEAN, ANGULAR, AND FREE OF ORGANIC MATERIALS. THE STONE MUST BE SPECIFIED AS CLEAN, ANGULAR, AND FREE OF ORGANIC MATERIALS. THE STONE MUST BE SPECIFIED AS CLEAN, ANGULAR, AND FREE OF ORGANIC MATERIALS. THE STONE MUST BE SPECIFIED AS CLEAN, ANGULAR, AND FREE OF ORGANIC MATERIALS.

**GENERAL NOTES**

1. ALL DESIGN REQUIREMENTS FOR THE STORM WATER CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DESIGN SPECIFICATIONS.
2. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSULATION REQUIREMENTS PRIOR TO BEGINNING WORK.
3. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS, AND LOAD FACTORS SPECIFIED IN SECTION 12.2 OF THE LATEST EDITION OF THE ASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

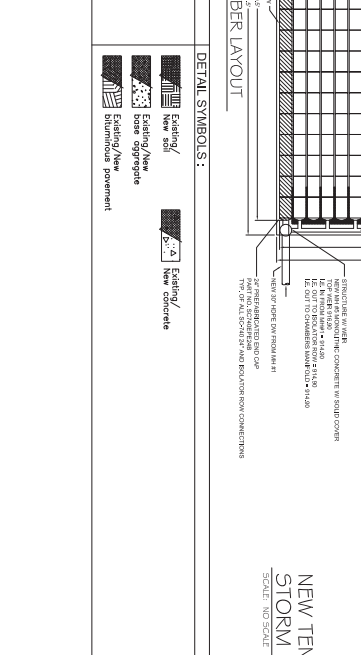


**PROPOSED ELEVATIONS**

PROPOSED CHAMBER ELEVATIONS:  
 TOP OF CHAMBER: 5110.00  
 TOP OF CHAMBER: 5110.00  
 BOTTOM OF CHAMBER: 5100.00  
 BOTTOM OF CHAMBER: 5100.00

**PROPOSED LAYOUT**

PROPOSED CHAMBER LAYOUT:  
 CHAMBER LENGTH: 12.00 FT  
 CHAMBER WIDTH: 8.00 FT  
 CHAMBER DEPTH: 10.00 FT



**GENERAL PROJECT NOTES:**

1. Verify measurements and conditions on the project.
2. Review specifications for instructions not shown on drawings.
3. Existing and new materials common to several details may be noted on only one.
4. Staked portions on details represent existing conditions.
5. Contractor shall be responsible for maintaining safe working conditions in areas for employees or other persons at the site.

2010 MINNETONKA HIGH SCHOOL SOUTH PARKING LOT ADDITION & NEW TENNIS COURTS  
 MINNETONKA PUBLIC SCHOOLS  
 MINNETONKA, MINNESOTA

INSPEC  
 PROJECT: CB DR. BU  
 PROJ. NO.: 21452 OK CB  
 DATE: 5/19/10 SHEET 7 OF 8

## Memorandum

**To:** Riley Purgatory Bluff Creek Watershed District Board of Managers  
**From:** Barr Engineering Company  
**Subject:** Permit Application 2017-024: Prairie Bluff Senior Living – Extension of Review Period  
**Date:** May 24, 2017  
**Project:** 23270053.14

## Project Description

**Permit No:** 2017-024

**Received complete:** May 1, 2017

**Applicant:** Prairie Bluffs Senior Living LLC

**Consultant:** Civil Site Group, Dave Knaeble

**Project:** Prairie Bluffs Senior Living – Construction of two new senior living buildings along with new parking lots, underground parking and landscaping. Two underground detention facilities with elevated drain tile to provide infiltration and one surface infiltration basin will provide stormwater quantity, volume and quality control.

**Location:** 10280 Hennepin Town Road, Eden Prairie

### Rules Implicated:

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	X	Rule L: Permit Fees
	Rule G: Waterbody Crossings	X	Rule M: Financial Assurances

## Recommendation

On May 1, 2017, Prairie Bluffs Senior Living LLC submitted a complete permit application for construction of a two new senior living buildings along with new parking lots, underground parking and landscaping. Two underground stormwater detention facilities with elevated drain tile to provide infiltration and one surface infiltration basin will provide stormwater quantity, volume and quality control.



**To:** Riley Purgatory Bluff Creek Watershed District Board of Managers  
**From:** Barr Engineering Company  
**Subject:** Permit Application 2017-024: Prairie Bluffs Senior Living – Extension of Review Period  
**Date:** May 24, 2017  
**Page:** 2

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Based on the Engineer's review of the submitted plans, the latest site designs and stormwater management approach do not provide the required rate control, volume abstraction, and water quality treatment.

The review period for Permit 2017-024 expires on June 30, 2017 which is before the Board's regular July meeting. Staff recommends that the Board extend, in accordance with Minnesota Statutes section 15.99, the review period by 60 days to August 29, 2017<sup>[SS1]</sup>, for permit 2017-024 Prairie Bluffs Senior Living to allow the Applicant time to supply revised submissions and give the Engineer time to complete a review.



Responsive partner.  
Exceptional outcomes.

May 15, 2017

**Dr. Claire Bleser**

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

RE: Cost estimate for Follow-up Monitoring to Lake Riley Alum Application

**Dear Claire:**

Thank you for the opportunity to continue to provide our services on internal nutrient management for 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 estimate to determine the extent of alum coverage in Lake Riley since the 2016 alum application. We appreciate the opportunity to provide you with this proposed scope of services and look forward to assisting you with this project.

This investigation is designed to examine the effectiveness of the aluminum sulfate (alum) treatment on reducing phosphorus release from anaerobic sediments and the binding of redox-sensitive P species by the aluminum floc in Lake Riley. The information from this study will be used to adjust the subsequent alum dose on Lake Riley, if necessary.

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

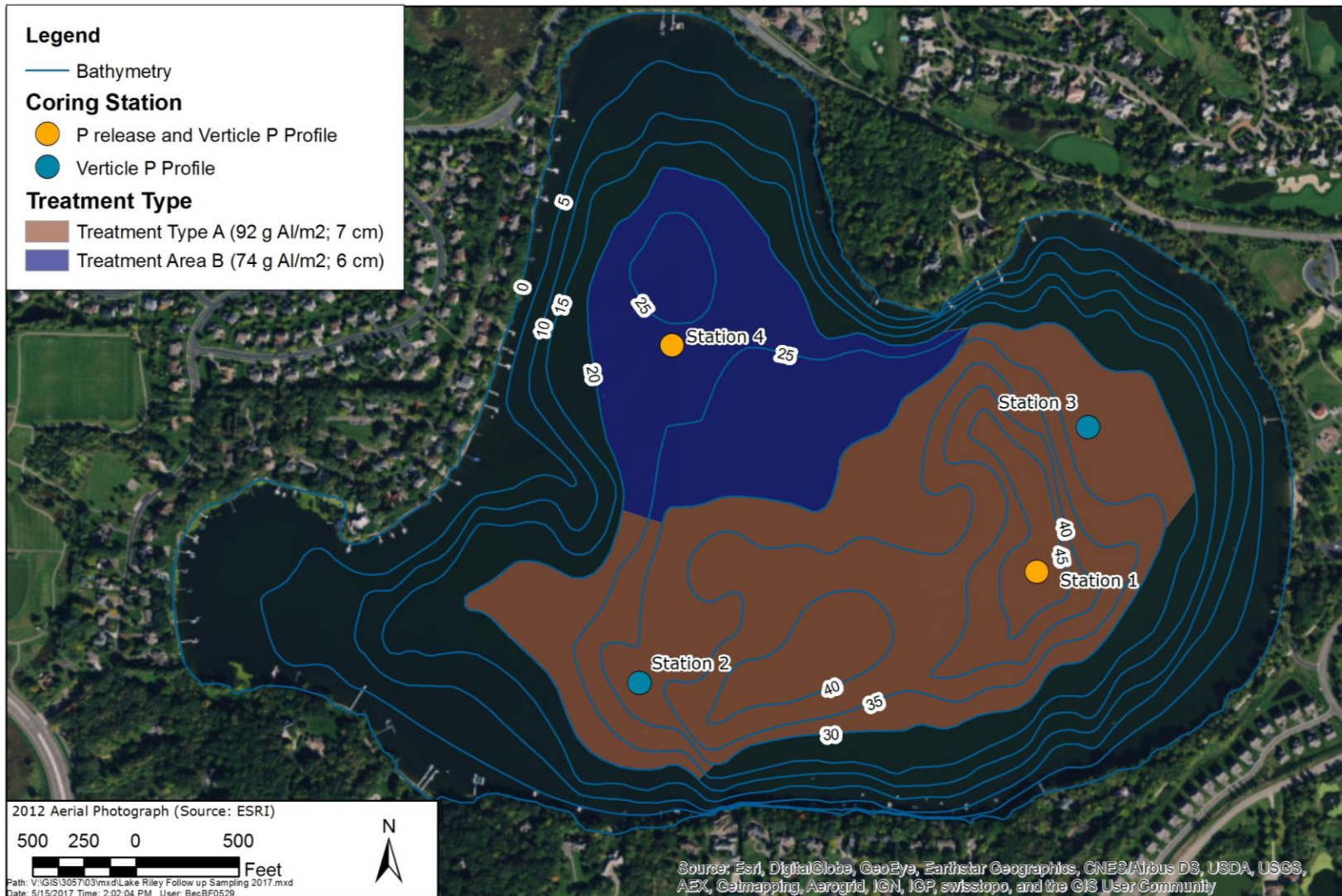
**Task 1. Collect sediment cores from Lake Riley**

Wenck will collect multiple intact sediment cores from Lake Riley to measure sediment chemistry to assess the effectiveness of the 2016 alum application (Figure 1). The intact cores will be collected using a gravity corer (Aquatic Research Inc., Hope ID). Cores will be transported to the University of Wisconsin-Stout for sediment chemistry analysis. We assume that core collection will occur with at least one District staff member's assistance.

**Task 2. Laboratory Sediment Analysis**

The intact sediment cores will be analyzed at the University of Wisconsin-Stout. Cores will be sectioned at 1-cm intervals over the first 6 cm, at 2-cm intervals between 6 and 10 cm, and at 2.5-cm intervals below the 10-cm depth. Each sediment section will be analyzed for iron bound phosphorus, loosely bound phosphorus, labile organic phosphorus, aluminum bound phosphorus, total aluminum, and bulk density. Additionally, cores will be collected from two sites (shallow and deep) for phosphorus release rate determination (Figure 1).

**Dr. Claire Bleser**  
 District Administrator  
 Riley Purgatory Bluff Creek  
 Watershed District  
 5/15/2017



**Figure 1. Sediment core locations for 2017 follow-up monitoring.**

**Dr. Claire Bleser**  
District Administrator  
Riley Purgatory Bluff Creek  
Watershed District  
5/15/2017

### Task 3. Reporting and Cost Estimate Analysis

The final step includes developing the laboratory report and summary memo of the analytical results. Wenck will also determine the effectiveness of the Lake Riley alum treatment and provide a comparison to the pre-alum sediment data. Results from the 2017 follow up monitoring will be used to refine the next alum dose on Lake Riley.

Tasks 1-3 will be completed by the end of September 2017 contingent upon the timely response from the District and ability to schedule core collection. Wenck will not exceed the authorized budget 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 Lake Riley**

Task		Wenck Associates	Laboratory Costs	Total Cost
1	Sediment Coring	\$1,069 <sup>a</sup>	\$0	\$1,069
2	Laboratory Sediment Analysis	\$0	\$14,347	\$14,347
3	Reporting	\$5,058	\$0	\$5,058
Cost Total		\$6,127	\$14,347	\$20,474

<sup>a</sup>This time includes equipment costs, which include mileage and coring equipment.

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.

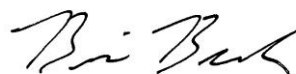
Sincerely,

**Wenck Associates, Inc.**



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

**Wenck Associates, Inc.**



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

## Minutes: Monday May 15, 2017

### RPBCWD Citizen's Advisory Committee Monthly Meeting

Location: RPBCWD new offices: 18681 Lake Street, Chanhassen

<b>CAC MEMBERS</b>		Peter Iverson	P	Joan Palmquist	P
Jim Boettcher	P	Matt Lindon	P	Dorothy Pedersen	P
Paul Bulger	P	Judy McClellan	U	Dennis Yockers	P
Anne Deuring	P	Sharon McCotter	P	David Ziegler	P

#### Others

Michelle Jordan	District Liaison	P
Manager Bisek	Board of Managers	P

#### Summary of key actions/motions for the Board of Managers: Please either take this as a vote, or respond in writing.

- CAC respectfully requests (per motions which carried) that the Board provides the following information so CAC members have time to adequately review the materials before input is needed, and to allow the CAC to consolidate their feedback to the board:
  - 1) By June 8: As many DRAFT chapters of the ten-year plan as possible
  - 2) By July 10: Materials for July workshop on ten-year plan

#### Meeting

- 1. Call to Order:** President Pedersen called the May 15 meeting of the CAC to order at 7:06 p.m. Attendance noted above.
- 2. Approval of the Agenda:** Agenda updated to add item a under New Business, "Rain Barrel Update" from Michelle Jordan. Motion was made (McCotter/Palmquist) and passed.
- 3. Approval of meeting minutes from April 2017:** Motion to approve minutes, as drafted without amendments, made by McCotter/Ziegler and passed unanimously.
- 4. Matters of general public interest:** None, no petitioners present.
- 5. March Board of Managers meeting, if any questions (Dorothy):**
  - Dorothy indicated that at the Managers meeting, the petitioners for Cedar Crest Stables development were not fully prepared (mostly relating to storm water runoff); the board recognized this and asked for more information, which they will bring to the next meeting.
  - Joan asked about AIS Decision Tree which was presented and whether we have a copy of it. We do not, yet, but expect that we will see it later, when it is further along or finalized.

- Dennis asked why there have been so many special meetings recently and why normal business (e.g. Treasurer's report) was conducted there. In this case it was because some bills were not in, so Treasurer's report was pulled from regular meeting. He pointed out that the general public is more likely to go to a regular meeting, so administrative issues should be dealt with there to maximize people's time at the regular meeting if possible.

#### **Old Business:**

##### **a. Update on 10-year plan process: Michelle filling in for Claire.**

- It has been a year since input was first solicited from citizens on the 10-year planning process and updates were promised. These just went out via mail chimp. Sharon commented that, as a participant, it was great to get this feedback, with an indication of where we are in the process. Michelle got permission to go in and enter all CAC members into the feedback system, so we regularly get the mail chimp updates.
- CAC and TAC workshops are planned for July; for CAC most likely preceding the start of the regular July 17 meeting.
- Tour with Watershed this year (end of July) will include focus on the 10-year plan; with visits to spots included in the plan and appropriate commentary.
- Michelle did not have chapters to distribute and believes that all the chapters will be distributed, in July. Per notes from last meeting we were expecting 3 chapters this month and the June meeting was designated to discuss the 10-year plan, so this was a bit of a surprise. Dennis reiterated importance of our having enough time to study them and be able to do a sufficient job in commenting.
- Several chapters (2, 4, 5 and Table of Contents) were distributed during the Board workshop on 3 May 2017 and some feedback was received. Apparently the Board did not want us to review the draft, but rather review the version the managers had reviewed and approved..
- Michelle explained that she believed the goal was to distribute at once, so as to be able to incorporate the whole board feedback before distribution and Matt added that versioning issues can be challenging in these situations.
- Several CAC members (Matt, Dennis, Dorothy) stated agreement they want adequate time to spend with the plan, as we have a responsibility to do this diligently and thoroughly.
- Pedersen indicated that she would like to see the watershed be even more aggressive in protecting resources, and put more "bite" into the plan.
- Motion was made (Lindon) seconded (Palmquist) and passed, asking the Board to provide the CAC with as many DRAFT chapters of the plan as possible on June 8 so that we can review them, to get the easier, boilerplate things out of the way, and so we can use our time wisely on the other sections. CAC agreed to consolidate our comments to the Board, and have our consolidated comments after the July meeting.
- Furthermore, the motion was made (Bugler) and seconded (Yockers) that the materials for the July workshop be distributed to at least one week prior to our CAC meeting, (by July 10), based on the current schedule.

**b. Education and outreach plan: Michelle:**

- Michelle thanked the CAC for their helpful feedback, which is now being incorporated so it can go to the Board of Managers and CAC at their June meetings, for comment. It is an appendix to the 10-year plan, and there is great variation in how it is done, from watershed district to district. Matt asked if there was anything in it about innovation, which he thought would be a good idea. Dennis said that currently E&O is about 3.5% to 4% of the total budget, reiterated the importance of alignment budget with priorities, and timing challenges of early budgeting. We need to make when the plan comes out we have the resources necessary to accomplish goals. Matt added that communication vehicles are always changing, so it seems like energy should be spent to see what new innovative tools allow us to reach out to our audiences (e.g. social media). Michelle reminded us that Education and Outreach is important and needs to be planned but we need to keep the % in mind as it compares to the rest of the watersheds charter.

**c. Website reno/feedback Round 2 (Michelle/All)** New pages were distributed and discussed.

Michelle can accept additional written comments until May 19, and will continue to bring updates to the group as they are available. The goal is to launch the new site in September, as part of the new plan. Other points made:

- CAC had asked where people go to and most used pages are Permits, About us, Board packets, and Resources.
- Matt requested that we also analyze where (what sites) people are coming from, so we can consider more links from other sites.
- Added a section on how you can get involved-- "How can you help"
- Looking for better language for the "Learn and participate" section
- Will be adding a "for decision makers" e.g. for council members, etc.
- If you link on something that doesn't work, let Michelle know.
- Suggestion: Add something about climate change; how it impacts the local water.
- Dennis: We have opportunity to, and should talk about wetlands, number of them, size, where they are, etc. Others suggested a map of wetlands, or parks and trails that go around these wetlands, as well.
- Matt: Incorporate Atlas 14 work on climate change and rising seas also good website resource.
- Sharon: Consider a page that would have a quarterly feature on some of the "big" topics like Climate Change, Groundwater, Wetlands, Matt indicated we need to be mindful of frequency of those the visit the site, quarterly may or may not be the right frequency. Any of the work needs to be sustainable by Michelle and the watershed, if it's not current it doesn't work.
- Sharon: Cost share - Consider examples of successes, before and after pictures, or updates at the one, three, five year anniversaries, quotes, lessons learned, staff picks.
- Dorothy: Also add a link, to indicate your permits also need to go to the city; to make it clear ours is not the only permit.

- Need to generate additional content on teacher and business.
- Paul also asked to add current projects, etc. alum etc. as people want to know what projects are going on. Michelle said there was a project page but it was maps and things and was cumbersome and hard to update and it died, so we need to figure out a better way to do this.
- Survey results are on the web; go in the library.

**d. Subcommittee organization/10-year plan review (All):**

- Dorothy hoped we would have first three chapters of the plan and subgroups could look at them from their perspectives. The first chapters, however, are more “boilerplate” background, rather than specifics, general information, but not a lot of detail so we decided to wait for major sub-committee actions until we get the full plan. However, if a sub-committee sees something that needs addressing, or wants to be on the agenda, please speak up.
- Joan was asked to create and distribute a spread sheet for sub-committee summary. A draft is included with these minutes. Please provide any feedback directly to Joan.
- Adopt a storm drain subcommittee (Sharon and Matt) update:
  - They broadened their remit to be storm drains in the watersheds, not just adopting drains. They blocked out a three-year plan with short term goals of connecting with each city to learn about their plans and programs, generating ideas for year round storm water drain protection, and recommending the most effective way to do marking (placards, stencils, etc.) and other program elements, so it can be consistent throughout the watershed.
  - Dennis asked how this relates to the E and O and would be embedded/operationalized in 2017. Matt said timing is challenging, but it is still worthwhile doing, even if it doesn’t get embedded in 2017 plan and that he hopes this might be a pilot to foster metro area programs down the road. Dennis reminded us that an E&O plan is done each year and this can/should be included. Joan added that the work of all sub-committees must be coordinated with marketing and communication as well as plans for operationalizing, and that this was not isolated to the storm drain group.
  - A fall cleanup event is being researched and planned; and that this year is a learn and test year. They hope to make calls to find out what cities are doing in May and June, with draft at July meeting if possible.
  - Dorothy agreed getting the lake associations involved would be a good idea
  - Matt wants to figure out how to share this program as we add this, proposing it to board for their approval.
  - Matt and Sharon will have a more fleshed out plan and timeline to present at the July CAC meeting. At this point, the CAC will determine what and when should be brought before the managers. We’re thinking an overview of the 3 year plan, status update and specifics around the proposed fall clean-up.



## **7. New Business:**

- a. **Rain Barrel update** (Michelle): Thanks to David for help with our first rain barrel sale, and to Sharon for help at EP fair (invertebrates with preschoolers!) A total of 71 rain barrels were sold and 25 compost bins. 50 coupons were distributed and 37 were used, plus 6 from Dakota County. After the event we continue to use social media, asking people to post a picture of them and their rain barrel (#rainbarrelsinaction). Ideas for next year: 1) Matt mentioned some people may be hesitant to get one, as they are not sure how they work/how to get them to work so education in advance could be helpful and 2) Sharon suggested that we make it clear they can also buy one on the day of the event (e.g. with signage that says "Rain Barrel Sale and Pickup").

Note: EP library is hosting a "do it fair" Saturday and Joan is co-hosting a joint booth with 9 Mile Creek educating people on cutting their grass longer, or using no-mow and low-mow alternatives as well as the importance of sweeping up grass clipping.

## **Topics for Next Month: Ten-year plan and cost share applications.**

**Adjournment:** The motion to adjourn was made by Boettcher, seconded by Ziegler, and passed unanimously. Meeting was adjourned at 9:07.

## **Upcoming Events**

- Preparing for our Changing Climate, May 31<sup>st</sup>. Nine Mile Creek Watershed District Office, 12800 Gerard Drive, Eden Prairie, 6:30 – 8:00 pm
- Board Workshop, Wednesday, June 7, 5:30 pm District Office
- Regular Board Meeting, Wednesday, June 7, 7:00 pm, District Office
- Next CAC meeting: June 19, 2017, District Office, 6:30 pm

Respectfully submitted by Joan Palmquist, recorder

# RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

## Treasurers Report

April 30, 2017

### REPORT INDEX

<b>page #</b>	<b>Report Name</b>
1	Cash Disbursements
2	Fund Performance Analysis - Table 1
4	Multi- Year Project Performance Analysis - Table 2
4	Grant and Other Income Performance Analysis - Table 3
5	Balance Sheet
6	Klein Bank Visa Activity
7	Opinion Report

**RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT**

**Cash Disbursements**

**April 30, 2017**

<b>Accounts Payable</b>	<b>Amount</b>
Amy Herbert LLC	\$ 857.94
Barr Engineering Company	48,033.70
CenterPoint Energy	436.21
CenturyLink	475.84
City of Chanhassen	11.82
Claire Bleser	188.14
Dell Five Business Park G-I	7,347.31
Delta Dental	360.75
Dunn and Semington Printing	171.65
ECM Publishers, Inc.	637.85
Erdahl Aerial Photos	2,681.88
Freshwater Scientific Services, LLC	950.00
Freshwater Society	10,500.00
HDR Engineering, Inc.	1,123.11
HealthPartners	3,215.00
JMSC Futurity, PLLC	1,395.00
Josh Maxwell	58.12
JR Copier of Minnesota, LLC	185.00
Klein Bank Visa	5,973.05
PLM Lake & Land Management	7,949.98
RMB Environmental Laboratories, Inc.	4,393.00
Smith Partners PLLP	15,102.05
SouthWest Metro - Chamber of Commerce	200.00
Southwest Newspapers	592.36
Spee-Dee Delivery Service Inc.	130.85
Spotless Cleaning Service LLC	534.37
SRF Consulting Group	4,994.95
Wenck Associates Inc	189.00
Xcel Energy	31.67
Xcel Energy	769.99
Xcel Energy	46.86
Zachary Dickhausen	110.09
<b>Total Accounts Payable</b>	<b>\$ 119,647.54</b>
<b>Payroll Disbursements</b>	<b>Amount</b>
Payroll Processing Fee	\$ 145.00
Employee Salaries	18,682.42
Employee Payroll Taxes	1,370.18
PERA Match	1,401.18
<b>Total Payroll Disbursements</b>	<b>\$ 21,598.78</b>
<b>Total Disbursements</b>	<b>\$ 141,246.32</b>

**Memos**

The 2016 mileage rate is 0.54¢ per mile. The 2017 mileage rate is 53.5¢. Klein Bank Visa will be paid online.

**RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT**  
**Fund Performance Analysis - Table 1**  
**April 30, 2017**

	<u>2017 Budget</u>	<u>Month Ended Apr. 30, 2017</u>	<u>Year to Date Apr. 30, 2017</u>
<b>REVENUES</b>			
Other Income - Refunds	0.00	0.00	1,875.00
Other Income - District Floodplain	0.00	0.00	22,080.00
Plan Implementation Levy	2,859,000.00	0.00	9,476.83
Permit Income	15,000.00	2,100.00	12,800.00
<b>TOTAL REVENUES</b>	<b><u>\$ 2,874,000.00</u></b>	<b><u>\$ 2,100.00</u></b>	<b><u>\$ 46,231.83</u></b>

**EXPENDITURES**

**Administration**

Accounting/Audit	\$ 39,500.00	\$ 1,540.00	\$ 6,460.00
Advisory Committee	4,000.00	0.00	3,408.83
Engineering Services	103,000.00	5,298.00	29,204.00
Insurance and Bonds	12,000.00	783.58	3,134.33
Legal Services	75,000.00	7,613.81	34,045.91
Manager Expenses	18,500.00	157.14	3,201.34
Dues and Memberships	8,000.00	0.00	4,000.00
Office Costs	95,000.00	8,507.62	60,134.10
Permit Review and Inspection	90,000.00	13,291.09	53,492.33
Recording Services	15,000.00	857.94	4,617.61
Employee Cost	450,000.00	25,660.52	102,710.29
<b>Total Administration Costs</b>	<b><u>\$ 910,000.00</u></b>	<b><u>\$ 63,709.70</u></b>	<b><u>\$ 304,408.74</u></b>

**Programs and Projects**

**District Wide**

‡ Education & Outreach	\$ 114,000.00	16,015.18	19,251.50
AIS Inspection and Early Response	75,000.00	0.00	0.00
Cost Share Program	200,000.00	0.00	3,214.88
District Wide Floodplain Eval- Atlas 14	30,000.00	0.00	0.00
Data Collection	180,000.00	12,019.02	31,751.78
U of M Plant Restoration	75,000.00	0.00	0.00
TMDL	10,000.00	0.00	1,028.00
District Floodplain Vulnerability	0.00	1,305.94	1,305.94
Watershed - 10 Year Plan	75,000.00	2,211.50	22,594.44
○ Repair and Maintenance	100,000.00	0.00	0.00
○ ◆ Community Resilience MPCA	0.00	360.00	24,386.55
Creek Restoration Action Strategies Phase 2	20,000.00	2,712.00	10,094.50
District Groundwater Assessment	30,000.00	3,047.00	11,684.00
<b>Total District Wide Costs</b>	<b><u>\$ 909,000.00</u></b>	<b><u>\$ 37,670.64</u></b>	<b><u>\$ 125,311.59</u></b>

**Bluff Creek One Water**

○ ◆ Fish Passage Bluff Creek	\$ 0.00	1,072.00	5,445.01
○ Bluff Creek Tributary	0.00	1,157.22	16,866.27
○ ◆ Chanhassen HS reuse	50,000.00	12,260.80	87,278.40
<b>Total District Wide Costs</b>	<b><u>\$ 50,000.00</u></b>	<b><u>\$ 14,490.02</u></b>	<b><u>\$ 109,589.68</u></b>

**Riley Creek One Water**

- Denotes Multi-Year Project - See Table 2 for details
- ◆ Grants are supplementing the projects - See table 3 for further details
- \* Denotes the project will be overlapping by one year as it was not fully complete by year end.
- ‡ Includes the Master Design Items - See Table 2 to details

See Accountants Compilation Report

**RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT**  
**Fund Performance Analysis - Table 1**  
**April 30, 2017**

	<u>2017 Budget</u>	<u>Month Ended Apr. 30, 2017</u>	<u>Year to Date Apr. 30, 2017</u>
Lake Riley EWM Treatment	\$ 25,000.00	0.00	0.00
○ Lake Riley Alum Treatment	0.00	0.00	491.95
○ ♦ Lake Susan Improvement Phase 2	0.00	0.00	13,391.08
○ ♦ Chanhassen Town Center	0.00	1,961.06	12,605.56
Rice Marsh Lake Aeration	0.00	31.67	298.90
Lake Riley - CLP Treatment	10,000.00	0.00	0.00
Lake Susan - CLP Treatment	10,000.00	0.00	0.00
Rice Marsh Lake WQ Improvement - Phase 1	20,000.00	0.00	0.00
Rice Marsh Lake Winter Fish Kill Prevention	10,000.00	0.00	83.79
Riley Creek Restoration	600,000.00	3,473.00	12,714.10
<b>Total Riley Creek One Water Costs</b>	<b>\$ 675,000.00</b>	<b>\$ 5,465.73</b>	<b>\$ 39,585.38</b>
<b>Purgatory Creek One Water</b>			
○ Purgatory Creek Restoration	\$ 0.00	516.00	1,744.00
Mitchell Lake Plant Management	15,000.00	0.00	0.00
Red Rock Lake Plant Management	15,000.00	950.00	950.00
Starring Lake Plant Management	20,000.00	7,949.98	7,949.98
♦ Fire Station 2 Water Reuse	20,000.00	4,994.95	5,650.86
Purgatory Creek Rec Area	50,000.00	0.00	0.00
Hyland Lake UAA	20,000.00	0.00	14.00
Lotus Lake - Phase 1	20,000.00	0.00	0.00
Silver Lake Restoration - Phase 1	20,000.00	0.00	0.00
○ ♦ Scenic Heights	0.00	1,289.50	3,510.60
<b>Total Purgatory Creek One Water Costs</b>	<b>\$ 180,000.00</b>	<b>\$ 15,700.43</b>	<b>\$ 19,819.44</b>
<b>Contingency Reserve</b>			
Contingency Reserve	\$ 135,000.00	\$ 0.00	\$ 0.00
<b>Total Contingency Reserve Costs</b>	<b>\$ 135,000.00</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>
<b>TOTAL EXPENDITURES</b>	<b>\$ 2,859,000.00</b>	<b>\$ 137,036.52</b>	<b>\$ 598,714.83</b>
<b>Excess (Deficiency)</b>	<b>\$ 15,000.00</b>	<b>\$ (134,936.52)</b>	<b>\$ (552,483.00)</b>

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

♦ Grants are supplementing the projects - See table 3 for further details

\* Denotes the project will be overlapping by one year as it was not fully complete by year end.

‡ Includes the Master Design items - See Table 2 to details

See Accountants Compilation Report

**RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT**  
**Multi-Year Project Performance Analysis - Table 2**  
**April 30, 2017**

	<u>Total Available for Project</u>	<u>2017 Budget</u>	<u>Month Ended Apr. 30, 2017</u>	<u>Year to Date Apr. 30, 2017</u>	<u>Lifetime Costs</u>	<u>Remaining Budget Funds</u>
<b>Projects</b>						
○ ♦ Chanhassen Town Center	63,000.00	0.00	1,961.06	12,605.56	35,196.56	27,803.44
○ ♦ Fish Passage Bluff Creek	415,000.00	0.00	1,072.00	5,445.01	30,238.40	384,761.60
○ Lake Lucy Iron Enhanced	85,000.00	0.00	0.00	0.00	62.32	84,937.68
○ Lake Riley Alum Treatment	260,000.00	0.00	0.00	491.95	235,469.51	24,530.49
○ Lake Susan Improvements	275,000.00	0.00	0.00	0.00	272,134.10	2,865.90
○ ♦ Lake Susan Improvement Ph 2	383,400.00	0.00	0.00	13,391.08	30,132.86	353,267.14
○ Purgatory Creek Restoration	661,094.00	0.00	516.00	1,744.00	332,969.56	328,124.44
○ ♦ Chanhassen HS Reuse	250,000.00	50,000.00	12,260.80	87,278.40	98,415.50	151,584.50
○ ♦ Community Resilience MPCA	47,000.00	0.00	360.00	24,386.55	42,561.68	4,438.32
○ ♦ Scenic Heights	260,000.00	0.00	1,289.50	3,510.60	3,510.60	256,489.40
○ Bluff Creek Tributary	200,000.00	0.00	1,157.22	16,866.27	16,866.27	183,133.73
<b>Total Multi-Year Project Costs</b>	<b>\$ 2,899,494.00</b>	<b>\$ 50,000.00</b>	<b>\$ 18,616.58</b>	<b>\$ 165,719.42</b>	<b>\$ 1,097,557.36</b>	<b>\$ 1,801,936.64</b>
<b>Programs</b>						
○ Repair and Maintenance	\$102,005.00	100,000.00	0.00	0.00	0.00	102,005.00
○ Survey and Analysis	37,257.00	0.00	0.00	0.00	24,165.26	13,091.74
<b>Total Program Costs</b>	<b>\$ 139,262.00</b>	<b>\$ 100,000.00</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 24,165.26</b>	<b>\$ 115,096.74</b>
<b>Other</b>						
<b>Total Other</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>
<b>Total Multi-Year Project Costs</b>	<b>\$ 3,038,756.00</b>	<b>\$ 150,000.00</b>	<b>\$ 18,616.58</b>	<b>\$ 165,719.42</b>	<b>\$ 1,121,722.62</b>	<b>\$ 1,917,033.38</b>

**Grant and Other Income Performance Analysis - Table 3**  
**April 30, 2017**

	<u>Total Available for Project</u>	<u>Total Grant Amount</u>	<u>Required District Match</u>	<u>Additional District Funds</u>	<u>Partner Funds</u>
○ ♦ Chanhassen Town Center	\$ 63,000.00	\$ 48,000.00	\$ 12,000.00	\$ 3,000.00	\$ 0.00
○ ♦ Fish Passage Bluff Creek	415,000.00	150,000.00	37,500.00	77,500.00	150,000.00
○ ♦ Lake Susan Improvement Ph 2	383,400.00	233,400.00	58,350.00	91,650.00	0.00
♦ Metropolitan Council - WOMP	5,000.00	5,000.00	0.00	0.00	0.00
○ ♦ Chanhassen HS Reuse	250,000.00	200,000.00	50,000.00	0.00	0.00
♦ Fire Station 2 Water Reuse	98,287.00	73,715.00	24,572.00	0.00	0.00
○ ♦ Community Resilience MPCA	47,000.00	27,000.00	10,000.00	0.00	10,000.00
○ ♦ Scenic Heights	260,000.00	50,000.00	0.00	165,000.00	45,000.00
<b>Total Grants and Other Income</b>	<b>\$ 1,521,687.00</b>	<b>\$ 787,115.00</b>	<b>\$ 192,422.00</b>	<b>\$ 337,150.00</b>	<b>\$ 205,000.00</b>

- Denotes Multi-Year Project - See Table 2 for details
- ♦ Grants are supplementing the projects - See table 3 for further details
- \* Denotes the project will be overlapping by one year as it was not fully complete by year end.
- ‡ Includes the Master Design Items - See Table 2 to details

See Accountants Compilation Report

# RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

## Balance Sheet

As of April 30, 2017

### ASSETS

#### Current Assets

Checking	\$	3,552,040.47
Money Market Savings		75,520.41
Investments		0.00
<b>Total Current Assets</b>	<b>\$</b>	<b><u>3,627,560.88</u></b>

#### Other Assets

Security Deposit		9,744.00
Prepaid Expenses		17,828.82
Delinquent Property Taxes		17,622.16
<b>Total Other Assets</b>	<b>\$</b>	<b><u>45,194.98</u></b>

**Total Assets** **\$** **3,672,755.86**

### LIABILITIES AND NET ASSETS

#### Liabilities

##### Current Liabilities

Accounts Payable	\$	337,227.83
Payroll Withholding		275.42
Accrued Payroll		10,816.15
PERA Withholding		2,615.53
<b>Total Current Liabilities</b>	<b>\$</b>	<b><u>350,934.93</u></b>

##### Other Current Liabilities

Retainages Payable		23,786.93
<b>Total Other Current Liabilities</b>	<b>\$</b>	<b><u>23,786.93</u></b>

##### Long-Term Liabilities

Deferred Revenues	\$	17,622.16
Unearned Revenue		132,396.16
Permit Escrows		631,500.00
<b>Total Long-Term Liabilities</b>	<b>\$</b>	<b><u>781,518.32</u></b>

**Total Liabilities** **\$** **1,156,240.18**

#### Net Assets

Cumulative Fund Balance	\$	3,068,998.68
Excess (Deficiency) Current		<u>(552,483.00)</u>

**Total Net Assets** **\$** **2,516,515.68**

**Total Liabilities and Net Assets** **\$** **3,672,755.86**

**RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT**  
**Klein Bank Visa Activity**  
**April 30, 2017**

DATE	PURCHASE FROM	AMT	DESCRIPTION	ACCT #	Total
5-Apr	Buca di Beppo	\$ 72.93	Manager General Expenses	70402	
4-Apr	Kowalski's	\$ 54.38	Manager General Expenses	70402	
5-Apr	Lunds&Byerlys	\$ 29.83	Manager General Expenses	70402	\$ 157.14
7-Apr	EcoAdapt	\$ 525.00	Conferences and Training - S	71002	
11-Apr	EcoAdapt	\$ 525.00	Conferences and Training - S	71002	\$ 1,050.00
3-Apr	Home Depot	\$ 133.89	Education and Outreach	93002	
21-Mar	Lakewinds Coop	\$ 12.06	Education and Outreach	93002	
23-Mar	Lunds&Byerlys	\$ 13.98	Education and Outreach	93002	
29-Mar	USPS	\$ 22.26	Education and Outreach	93002	\$ 182.19
20-Mar	Holiday Station	\$ 57.74	Data Collection	100802	
14-Apr	Holiday Station	\$ 51.04	Data Collection	100802	
3-Apr	Home Depot	\$ 34.86	Data Collection	100802	
12-Apr	SuperAmerica	\$ 59.33	Data Collection	100802	\$ 202.97
22-Mar	Best Buy	\$ 162.76	Office Cost	170402	
29-Mar	Best Buy	\$ (162.76)	Office Cost	170402	
29-Mar	Best Buy	\$ 141.31	Office Cost	170402	
3-Apr	Best Buy	\$ 50.41	Office Cost	170402	
22-Mar	Dunn & Semington	\$ 65.70	Office Cost	170402	
6-Apr	Fully Inc	\$ 935.00	Office Cost	170402	
24-Mar	General Delivery	\$ 18.25	Office Cost	170402	
18-Apr	JR Copier	\$ 500.00	Office Cost	170402	
1-Apr	Microsoft	\$ 53.64	Office Cost	170402	
24-Mar	Randy's Sanitation	\$ 132.78	Office Cost	170402	
5-Apr	Target	\$ 21.36	Office Cost	170402	
19-Apr	U of M Bookstores	\$ (151.53)	Office Cost - sales tax refund	170402	
19-Apr	U of M Bookstores	\$ 2,100.53	Office Cost	170402	
31-Mar	USPS	\$ 43.20	Office Cost	170402	
4-Apr	Garden by the Woods	\$ 8.28	Office Cost	930002	
23-Mar	Gina Maria's Pizza	\$ 326.92	Office Cost	930002	
22-Mar	Kowalski's	\$ 134.90	Office Cost	930002	\$ 4,380.75
<b>TOTAL PURCHASES</b>		<b>\$ 5,973.05</b>			<b>\$ 5,973.05</b>
<b>Total Credits</b>					-
<b>TOTAL DUE</b>		<b>\$ 5,973.05</b>			<b>\$ 5,973.05</b>





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Riley Purgatory Bluff Creek  
Watershed District  
Eden Prairie, MN

To the Board of Managers:

**Accountant’s Opinion**

The Riley Purgatory Bluff Creek Watershed District is responsible for the accompanying April 30, 2017 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 the 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 outside 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.

*JMSC, PLLC*

JMSC, PLLC  
St. Louis Park, MN  
May 31, 2017

Buffalo: 215 Hwy 55 East, #306 Buffalo, MN 55313 p: 763.682.6458 f: 763-682-1880

Minneapolis: 5000 West 36th Street, #240 St. Louis Park, MN 55416 p: 952-540-4340 f: 952-540-4345

May 30, 2017

RPBCWD Board of Managers  
Riley-Purgatory-Bluff Creek Watershed District  
18681 Lake Drive East  
Chanhassen, MN 55317  
**Re: Lake Susan Park Pond Implementation Schedule**

Dear Managers:

This letter is in response to the Manager's May 3<sup>rd</sup> request for a tentative implementation schedule for the potential Lake Susan Park Pond Pump/Treat/Reuse Project should the Managers decide to Order the project. It puts forth a tentative schedule and work plan to implement the project within the timeline of the awarded Clean Water Fund (CWF) grant to the Riley-Purgatory-Bluff Creek Watershed District (RPBCWD). The RPBCWD received a CWF grant in the amount of \$233,400 (excluding the required 25% match) for the installation of an iron enhanced sand filter bench (IESF) and reuse system at Lake Susan Park Pond in Chanhassen. The CWF grant is set to expire on 12/31/2018 so the funds must be expended prior to that date. The tentative implementation schedule and associated work plan include development of a cooperative agreement with Chanhassen (and other partners if applicable), final design and permitting, and bidding and construction support (Tasks 1, 2, 3, and 4).

## Project Goals

The goals of the Project are to:

1. Decrease the phosphorus loading to Lake Susan, which is on the MPCA's impaired water list for excess nutrients
2. Remove soluble phosphorus from surface water entering Lake Susan
3. Decrease groundwater use
4. Help protect water resources located downstream, including Rice Marsh Lake, Lake Riley, and Riley Creek.

This proposed project is in line with the goals and policies established in RPBCWD's Watershed Management Plan and Chanhassen's Local Surface Water Management Plan as well as the MCES 2040 Water Resources Policy Plan policies and strategies to preserve the quality and quantity of groundwater and surface water.

## Project Summary

The March 2017 Engineer's Report- Lake Susan Park Pond Watershed Treatment and Stormwater Reuse Enhancements Project evaluated several alternatives to reduce sediment and phosphorus load to Lake Susan and reuse water from Lake Susan Park Pond.

Based on the results of the engineering assessment, potential site impacts, water conservation potential and cost per pound of phosphorous removed, Conceptual Design 4a — pump and treat using an iron

enhanced sand bench, stormwater reuse for the Lake Susan Park ballfield and pond outlet retrofit, was recommended as the most feasible and cost-effective BMP that aligns with the goals presented in the awarded Clean Water Legacy grant and provides multiple environmental benefits. While Concept Design 4a is not the lowest cost per pound of phosphorus removed, it provides the added benefit of eliminating the use of more than 610,000 gallons of drinking water annually to irrigate the ballfields. The phosphorus reduction estimated for the reuse concepts, including 4a, could potentially be further enhanced by using the pond water instead of the city drinking water supply because the city water is treated with polyphosphate for pipe corrosion protection and possibly results in higher phosphorus concentrations in the applied water than occurs in the pond, thus increasing the phosphorus load applied to the ballfield. The engineering assessment was based on information collected during a review of available data and preliminary site characterization. Collection of more data and additional site-specific information (e.g., soil borings) that become available if the Board orders the project may result in modifications to the proposed configuration, cost, and function of the iron enhanced sand filtration system to maximize the volume of water treated while minimizing site impacts. The engineer's opinion of probable cost for the design, permitting, and construction of Conceptual Design 4a is estimated at \$480,000, with a probable range from \$384,000 to \$672,000.

If only the cost per pound of phosphorus reduction is considered, Conceptual Design 1—an iron enhanced sand bench and pond outlet retrofit should be considered for implementation. This option fits within the original budget that was set aside for this project but does not include the reuse component submitted in the approved CWF grant. This could impact the grant dollars available and would need to be discussed with the Board of Water and Soil Resources (BWSR).

## **Tentative Implementation Schedule:**

Because the CWF grant is set to expire at the end of 2018, we have developed the attached tentative timeline to highlight the various major tasks and durations to implement the project. The timeline assumes the project is ordered at the June 7<sup>th</sup> regular meeting. The timeline was also developed with an effort toward being able to combine the bidding of the Lake Susan Park Pond Project with the rebidding of the Chanhassen High School Reuse system to increase bidding efficiency and potentially interest more contractors. In addition, the timeline attempts to bid the project early in 2018 to allow contractors additional time to procure specialty products and take advantage of bidding when bidders are not already booked with projects, thus leading to increased bid competition.

## **Work Plan**

The work plan below was developed to support the timeline and provide additional information for the Managers to consider when deciding whether or not to move forward with the proposed project. Below are several proposed tasks including project cooperative agreement development and coordination, design and permitting, bidding, and construction administration and observation.

### **Phase 1 - Cooperative Agreement Development**

#### **Task 1.1: Develop Stakeholder Agreement**

RPBCWD staff will coordinate with the city of Chanhassen to assist RPBCWD legal counsel in developing a draft term sheet between all stakeholders regarding the Lake Susan Park Pond Project design, construction and maintenance. This task will be led by RPBCWD staff and counsel. After meeting with the City to discuss comments on the draft cooperative agreement term sheet, a draft agreement will be

developed for City and Board consideration. If feedback is received the agreement will be finalized. The agreement should specify the responsibilities of each organization throughout Tasks 2, 3, and 4 of the project as described below, as well as the long term-term inspection and maintenance of the reuse system and IESF. The agreement should also specify the financial responsibilities of each organization as it relates to the project.

## **Phase 2 - Final Design and Permitting**

### **Task 2.1: Data collection and review**

A design kickoff meeting will be held at the District office with RPBCWD and Chanhassen staff. The intent of this meeting is to work with stakeholders to review the design standards as it relates to the proposed IESF, pond outlet modifications, and stormwater reuse and irrigation system. This will also include a site visit to see the existing irrigation, storm water retention pond, and outlet infrastructure.

A topographic and utility survey of the current irrigation system (irrigation box/connections/valves), stormwater management system as it relates to the existing stormwater pond proposed for reuse, the stormwater pond area and outlet structure, the location of the potable water supply system to the site, and the location of other utilities on the site will need to be performed. A soil boring will also need to be collected to support the design.

### **Task 2.2: Permitting Assistance**

A MnDNR water appropriation permit will be required based on the estimated annual withdrawal volume; however, since the pond is a constructed stormwater pond enlarged during the construction of Power's Boulevard we are assuming that a MnDNR public waters work permit is not required.

Depending on the amount of disturbance, a city of Chanhassen permits for excavation/grading will likely be needed along with a permit for the installation of utilities/underground construction permit for any work on City property. Additionally, RPBCWD erosion and sediment control, buffer, and stormwater management permits may also be needed, depending on the amount of disturbance.

### **Task 2.3: Preparation of Construction Plans and Specifications**

After the site visit, review of the existing system information, and collection of survey data, preparation of design drawings and specifications for construction and bidding would begin. It is anticipated that there will be design review meetings between RPBCWD and city of Chanhassen staff at approximately 30, 60 and 90% design steps. It is estimated that the plan set will be 12 sheets and these drawings will be provided electronically (PDF format) approximately one (1) week prior to the scheduled design review meeting.

Nearly complete plans and specs (90%) could be compiled by the for Board review discussion at the December 2017 regular meeting. Complete (100%) design plans and specifications could be available at the January 2018 meeting, where the Board could authorize the solicitation of bids. There might be some flexibility in the schedule to allow these to shift one month later.

## **Phase 3: Bidding /Bid Opening/Recommendation to Board**

The bidding and procurement process would occur after the authorization to solicit bids at the January 2018 meeting. This includes preparing the bid list and bidding documents for distribution, the pre-bid

meeting, responding to comments during the bid period and issuing addendums as necessary, holding the bid opening, and reviewing and compiling the bid results. The required bidding period is 21 days and the project would be advertised in the District's legal papers.

The bid process is anticipated from early January 2018 through February 2018, with the approval of the recommended bidder possibly at the February RPBCWD board meeting. Notice of Award would follow the RPBCWD meeting with a Notice to Proceed anticipated by late February 2018.

#### **Phase 4: Construction Administration and Observation**

Construction administration and observation of the stormwater improvements include the following items:

- Review shop drawings, fabrication drawings, and product data submittals with RPBCWD
- Review requests for information (RFIs) and issue design bulletins and addendums, as needed by RPBCWD
- Complete a punch list walk-through with RPBCWD and the contractor
- Submit record drawings to RPBCWD upon project completion
- Assistance to RPBCWD with final paperwork and reporting to BWSR

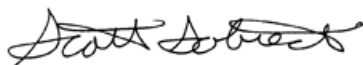
The notice to proceed is expected in late-February with construction beginning in early June. The timeframe prior to construction is to allow for materials procurement. Specifics related to construction schedule will need to be coordinated with the city of Chanhassen. The timeline allows for a 7 month construction window to provide adequate time to procure the required equipment, contractor scheduling flexibility, and site restoration in the fall during cooler weather conditions. These should help increase the competitiveness of contractor bids. While the timeline allows for a 7 month construction, the actual work should be coordinated with the successful contractor to minimize the actual duration of site disruption.

RPBCWD and the city of Chanhassen will need to work closely during the entire process to achieve a successful project. Following completion of construction, a construction documentation report should be developed to document construction activities, RFIs, any change orders, as-built drawings and operations & maintenance procedure.

The attached tentative schedule illustrates the activities need to complete the project prior to the CWF grant expiration. It does have some windows of flexibility built into it to allow for unforeseen challenges such as permitting, inclement weather, etc.

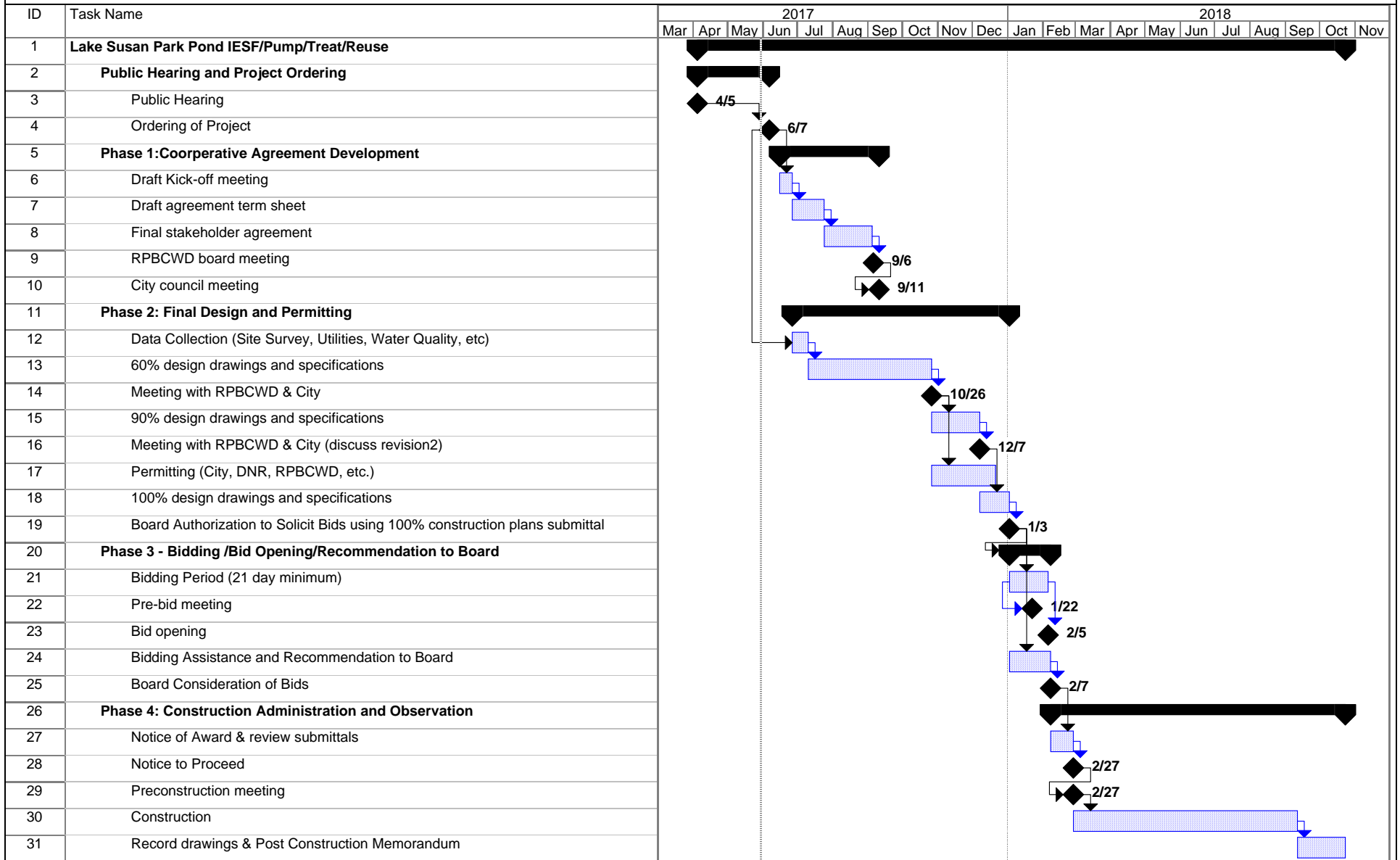
Please let me know if there are any questions.

Thank You,



Scott Sobiech, PE  
Vice President

Lake Susan Park Pond  
Tentative Implementation Schedule



Project: LakeSusanParkPond Date: Tue 5/30/17	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

## Riley Purgatory Bluff Creek Watershed District Permit Application Review

**Permit No:** 2017-007

**Received complete:** February 10, 2017 (Review period extended 60 days by Board on 4/5/17)

**Applicant:** Pemtom Land Company

**Consultant:** John Bender, Westwood Professional Services

**Project:** Cedarcrest Stables – Construction of a 17-lot single family home subdivision and associated site infrastructure. Four infiltration basins and a wet sedimentation basin will provide storm water quantity, volume and quality control.

**Location:** 16870 Cedarcrest Drive, Eden Prairie, MN

**Reviewer:** Candice Kantor and 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	X	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
<b>C</b>	<b>Erosion Control Plan</b>	See Comment	See Rule Specific Permit Conditions C1
<b>J</b>	<b>Stormwater Management</b>	Rate	See Comment
		Volume	See Comment
		Water Quality	Yes
		Low Floor Elev.	Yes
		Maintenance	See Comment
<b>K</b>	<b>Variances and Exceptions</b>	Yes	
<b>L</b>	<b>Permit Fee</b>	See Comment	\$3,000 was received on February 10, 2017. Additional \$4,417.30 for excess cost recovery
<b>M</b>	<b>Financial Assurance</b>	See Comment	The financial assurance has been calculated at \$102,500.

## **Project Description**

The project proposes the construction of a 17-lot single family home subdivision, 600 feet of new roadway, conversion of 300 feet of 12-foot wide private road to a 28-foot wide public roadway, and associated site infrastructure on a site that currently includes one single-family home and commercial business. The existing open space is a combination of open grassland and wooded areas. The project includes four infiltration basins and a wet sedimentation basin to provide storm water quantity, volume and quality control. The project site information is summarized below:

1. Total Site Area: 10.7 acres
2. Existing Site Impervious Area: 1.4 acres (60,984 square feet)
3. New (Increase) in Site Impervious Area: 1.2 acres (52,272 square feet) (86% increase in site impervious area)
4. Disturbed impervious surface: 1.4 acres
5. Total Disturbed Area: 6.5 acres

### Exhibits:

1. Permit Application dated February 7, 2017.
2. Design Plan Sheets (Sheets 1-11) dated February 6, 2017 (revised May 17, 2017).
3. Stormwater Management Plan dated February 3, 2017 (revised April 18, 2017).
4. P8 Model received February 10, 2017 (revised April 18, 2017).
5. HydroCAD Model received February 10, 2017 (revised May 23, 2017).
6. Geotechnical Evaluation Report by Braun Intertec dated October 28, 2014.
7. DWSMA Analysis dated January 9, 2017.
8. Green Infrastructure Narrative dated December 9, 2016.
9. Legal Description for Property dated February 8, 2017.
10. Stormwater Pollution Prevention Plan dated March 8, 2017.
11. Response to Comments Letter dated March 21, 2017.
12. Response to Comments Letter dated April 3, 2017.
13. Response to Comments Letter dated April 19, 2017.
14. Variance Request Narrative dated April 3, 2017 (revised April 19, 2017).
15. Stormwater Supplemental Memorandum Dated May 22, 2017



## **Rule Specific Permit Conditions**

### **Rule C: Erosion and Sediment Control**

Because the project will alter 6.5 acres (283,140 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 Westwood Professional Services includes installation of silt fence, inlet protection for storm sewer catch basins, a 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 control at the site. RPBCWD must be notified if the responsible individual changes during the permit term.

### **Rule J: Stormwater Management**

Because the project will alter 6.5 acres (283,140 square feet) of surface area, approval under the RPBCWD Stormwater Management Rule is required. The proposed land-disturbing activities will increase the imperviousness of the entire site by 86% (i.e., an increase of more than 50 percent), and disturb 100% of the existing impervious area (i.e., more than 50 percent of the existing impervious area), therefore under the paragraph 2.3 redevelopment framework, the RPBCWD stormwater management criteria apply to the entire project parcel.

The developer is proposing four infiltration basins and a wet sedimentation basin to provide the required rate control, volume abstraction and water quality management on the site. Pretreatment for the infiltration basin 1PIP is provided by sump manholes and pretreatment for infiltration basins 3PP, 7PP and 5PP is provided by vegetated filter strips.

### ***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.

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
1EP/1PSP	9.6	2.7	19.1	7.2	38.7	24.2	3.4	3.0
3EP/3PP	0.0	0.0	0.3	0.3	10.3	9.0	0.8	0.8
4ES/4PP	0.1	0.3	0.3	0.6	0.9	1.2	0.4	0.4
5ES/5PP	3.1	1.6	6.3	3.2	13.0	11.7	0.3	0.3
6ES/6PP	1.1	1.5	2.3	2.7	4.7	5.1	0.1	0.1

The proposed stormwater management plan will provide rate control in compliance with the RPBCWD requirements for the 2-, 10-, and 100-year events at the southern discharge points along Cedarcrest Drive (4ES/4PP, 5ES/5PP in the table above). The conversion of Cedarcrest Drive from a private road approximately 12 feet wide to a 28-foot wide public roadway and the construction of additional driveways causes an increase to the discharge to the east and west at the southern parcel boundary by between 0.2 to 0.4 cubic feet per second. The overall site discharge in proposed conditions is lower than that in existing conditions. Because the Applicant cannot meet rate control requirements at the southern discharge points, approval of a variance is requested. Otherwise, the proposed project meets the rate control requirements in Rule J, Subsection 3.1a.

**Volume Abstraction**

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from all impervious surface of the parcel. An abstraction volume of 10,382 cubic feet is required from the 2.6 acres (113,256 square feet) of impervious area on the project for volume retention. The Applicant proposes four infiltration basins with pretreatment for the infiltration basin 1PIP provided by sump manholes and pretreatment for infiltration basins 5PP, 7PP, and 8PP provided by vegetated filter strips.

Soil borings performed by Braun Intertec show that soils in the project area are clayey sand with underlying poorly graded sand; the MN Stormwater Manual indicates an infiltration rate of 0.45 inches per hour for the poorly graded sand is appropriate. The proposed BMPs will include over-excavation to reach the poorly graded sand layer. Soil borings performed by Braun Intertec show no groundwater to a boring elevation of 833.9 feet. This indicates that groundwater is at least 3 feet below grade at the proposed infiltration basins (Rule J, Subsection 3.1.b.ii). An abstraction volume of 13,070 cubic feet is provided by the proposed infiltration basins. The table below summarizes the volume abstraction on the site. The proposed design does not provide abstraction of runoff from about 10% of the proposed

impervious area of the parcel. The applicant proposes to compensate for the shortfall by enlarging the proposed infiltration basins to abstract runoff from some of the offsite impervious areas that flow to the site from the surrounding developed residential neighborhood. The applicant has requested a variance from the abstraction criterion, seeking to have treatment of runoff from offsite offset the shortfall from the abstraction standard (see variance discussion below).

Site Location	Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Volume (cubic feet)
Main Infiltration Basin and Back-yard Raingardens	1.1	9,343	13,070
Custom Lot Drives & Cedarcrest Drive	1.1	1,039	0
Total Site	1.1	10,382	13,070

**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 four infiltration basins and a wet sedimentation basin to achieve the required TP and TSS removals and submitted a P8 model to estimate the TP and TSS removals. The engineer concurs with the modeling, and finds that the proposed project is in conformance with Rule J, Subsection 3.1.c.

Pollutant of Interest	Required Removal (%)	Estimated Removal (%)
Total Suspended Solids (TSS)	90	96.8
Total Phosphorus (TP)	60	67.2

**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 structure 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)	Provided Distance Between Building and Adjacent Stormwater Feature (feet)	Required Separation to Groundwater based on Appendix J, Plot 1 (feet)	Provided Separation to Groundwater based on Appendix J, Plot 1 (feet)
Lot 1	853.4	849.01 (Wet Sedimentation Basin)	4.39			
Lot 2	852.2	849.01 (Wet Sedimentation Basin)	3.19			
Lot 3	852.1	849.01 (Wet Sedimentation Basin)	3.09			
Lot 4	855.9	849.01 (North Infiltration Basin-1P1S)	6.89			
Lot 5	857.2	849.01 (North Infiltration Basin-1P1S)	8.19			
Lot 6	855.5	849.01 (Wet Sedimentation Basin)	6.49			
Lot 7	855.0	849.01 (Wet Sedimentation Basin)	5.99			
Lot 8	855.3	841.71 (East Infiltration Basin-5PP)	13.59			
Lot 9	855.3	842.61 (West Infiltration Basin-7PP)	12.69			
Lot 10	857.1	842.61 (West Infiltration Basin-7PP)	14.49			
Lot 11	850.0	843.87 (West Infiltration Basin-8PP)	6.13			

Location Riparian to Stormwater Facility	Low Floor Elevation of Building (feet)	100-year Event Flood Elevation of Adjacent Stormwater Facility (feet)	Freeboard (feet)	Provided Distance Between Building and Adjacent Stormwater Feature (feet)	Required Separation to Groundwater based on Appendix J, Plot 1 (feet)	Provided Separation to Groundwater based on Appendix J, Plot 1 (feet)
Lot 12	849.0	843.87 (West Infiltration Basin-8PP)	5.13			
Lot 13	848.0	841.71 (East Infiltration Basin-5PP)	6.29			
RCR Lot 1	855.9	849.01 (Wet Sedimentation Basin)	6.89			
RCR Lot 6	851.7	849.01 (Wet Sedimentation Basin)	2.69			
9360 Shetland Rd.	845.2	841.54 (East Existing Low Area)	3.66			
9374 Shetland Rd.	839.08	841.54 (East Existing Low Area)	-2.46	66	5.25	7.1
9388 Shetland Rd.	845.0	841.54 (East Existing Low Area)	3.46			
16974 Cedarcrest Dr.	838.9	843.87 (West Infiltration Basin-8PP)	-4.97	137	1.25	6.9
16922 Cedarcrest Dr.	838.6	843.87 (West Infiltration Basin-8PP)	-5.27	130	1.5	6.6

An analysis in accordance with Appendix J1 was completed for the proposed homes and adjacent stormwater feature when the low floor elevation of the proposed home was less than the required 2 feet above the 100-year event flood elevation of the adjacent stormwater feature. There are two borings in the area of the proposed basins and houses in question. Neither of the borings showed water

in the first 19.5 feet (817.6 and 835.6), so the applicant assumed the groundwater level was at elevation 832 based on the normal water level in a nearby downstream wet pond.

The low floor elevations of the existing off-site homes at 9374 Shetland Rd., 16974 Cedarcrest Dr., and 16922 Cedarcrest Dr. are less than the required 2 feet above 100-year event flood elevation of west infiltration basin and east existing low area. The applicant completed an analysis in accordance with Appendix J1 for these homes as summarized in the above table. Based on the analysis provided the engineer concurs that the low floors of the existing structures will be in compliance with Plot 1 in Appendix J1.

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 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 for maintenance and inspection of the stormwater facilities in perpetuity. The City of Eden Prairie has agreed to assume maintenance and inspection responsibilities for the detention and infiltration basins on the north side of the road between Valley Road and Stirrup Lane on behalf of the Applicant. For RPBCWD to approve the permit with this arrangement, the applicant must provide for review and approval documentation showing:
- a. a binding commitment from the city to RPBCWD and the applicant, by which the city assumes the maintenance responsibility on behalf of the applicant;
  - b. a commitment from the applicant as property owner to the city providing the necessary property rights to enter the property/ies on which the facility/ies are located and conduct the necessary maintenance activities.

On approval of RPBCWD, the documentation must be recorded in the county property records for the relevant property/ies. Permit applicant must also provide a draft maintenance and inspection plan for the rainwater garden features on the southern portion of the property. Once approved by RPBCWD, the plan must be recorded in the county property records in a form acceptable to the District.

### ***Rule K: Variances and Exceptions***

The Applicant has requested two variances from the RPBCWD stormwater management rule requirements as follows:

1. The first variance request is from the requirements of Rule J, Subsection 3.1a of the stormwater management rule which states that peak runoff flow rates for proposed condition must be limited to that from existing conditions for the two-, 10- and 100-year frequency storm events using a nested 24-hour rainfall distribution, and a 100-year frequency, 10-day snowmelt event,

for all points where stormwater discharge leaves the site (Rule J, subsection 3.1a). The applicant is proposing to increase the discharge to the east and west at the southern parcel boundary along the proposed Cedarcrest Drive by between 0.2 to 0.4 cubic feet per second for the southeast and southwest areas respectively.

2. The second variance request is from the requirement of Rule J, Subsection 3.1b of the stormwater management rule which states the proposed project must provide for the abstraction onsite of 1.1 inches of runoff from impervious surface of the parcel. The proposed design does not provide abstraction of runoff from roughly 8.8% of the proposed impervious area on the parcel. The applicant proposes to compensate for the shortfall by enlarging the proposed infiltration basin to abstract runoff from some of the offsite impervious areas that flow to the site from the surrounding developed residential neighborhood.

The attached variance request letter submitted on behalf of the applicant cites several facts related to the development in support of the request. Rule K requires the Board of Managers to find that because of unique conditions inherent to the subject property the application of rule provisions will impose a practical difficulty on the Applicant. Assessment of practical difficulty is conducted against the following criteria:

1. how substantial the variation is from the rule provision;
2. the effect of the variance on government services;
3. whether the variance will substantially change the character of or cause material adverse effect to water resources, flood levels, drainage or the general welfare in the District, or be a substantial detriment to neighboring properties;
4. whether the practical difficulty can be alleviated by a technically and economically feasible method other than a variance. Economic hardship alone may not serve as grounds for issuing a variance if any reasonable use of the property exists under the terms of the District rules;
5. how the practical difficulty occurred, including whether the landowner, the landowner's agent or representative, or a contractor, created the need for the variance; and
6. in light of all of the above factors, whether allowing the variance will serve the interests of justice.

While the applicant must address these criteria to support a variance request, the following is the RPBCWD engineer's assessment of information from the request relevant to the applicant's request for a variance from the rate control criterion:

- Related to variance criterion 1 – the increased rates from both the southeast area (approximately 0.3 cfs for the 100-year storm) and the southwest (approximately 0.4 cfs for the 100-year storm) are relatively modest.
- More important and related to variance criterion 3 – In the southeast area the proposed 8-foot trail (0.02 acres) will be treated by the 4-foot vegetated boulevard between the trail and Cedarcrest Drive, and the remaining 0.04 acres of impervious will either overland flow through woods or be conveyed to existing storm sewer system via street curb and gutter to an existing stormwater basin for treatment before entering Riley Creek. In the southwest area, the proposed trail (0.04 acres) will also be treated by the boulevard between the trail and

Cedarcrest Drive, and the remaining 0.17 acres of impervious will either overland flow through woods or be conveyed to the existing storm sewer system via street curb and gutter to an existing stormwater basin for treatment before entering Riley Creek. Also, the overall site discharge in proposed conditions is lower than that in existing conditions.

The applicant provided a supplemental stormwater analysis on May 22, 2017 to assess the capacity of two downstream stormwater ponds owned by the city that receive runoff from the site. The discharge from each of these ponds is directly tributary to Riley Creek. The tables below compare the flood elevations, peak discharge rate, and discharge volume for the existing ponds. The results of the modeling provided by the applicant are summarized in the below table and demonstrate that the post project discharge from both ponds reaching Riley Creek will be less than existing 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 applicant enlarged one of the proposed rear-yard rainwater gardens discussed at May 3<sup>rd</sup> Board meeting in order to demonstrate that the proposed variance would not increase flood elevations or discharges rates leaving the Southwest pond.. Also, the 100-year flood elevation for the Southwest Pond under proposed conditions results in a 0.45 cfs reduction in the discharge rate overtopping Cedarcrest Drive compared to existing conditions

Paramter	Design Event	Southwest Pond		Southeast Pond	
		Existing	Proposed	Existing	Proposed
Discharge Rate (cfs)	2-year	12.3	12.1	20.0	14.5
	10-year	16.9	16.7	41.1	30.4
	100-year	120.6	120.1	100.3	77.7
	100-year Snowmelt	5.0	5.0	8.6	7.9
Flood Elevation (feet)	2-year	834.98	834.92	776.44	776.29
	10-year	836.86	836.77	776.90	776.68
	100-year	837.93	837.93	777.95	777.58
	100-year Snowmelt	833.26	833.26	776.11	776.09
Discharge volume (acre-feet)	2-year	5.7	2.6	4.0	2.7
	10-year	4.8	4.7	7.4	6.2
	100-year	10.3	10.3	17.3	15.6
	100-year Snowmelt	15.5	15.4	26.3	24.4



- Technical measures incorporated into the project plan to alleviate the practical difficulty (variance criterion 4) include directing downspouts to rear yard infiltration/treatment areas rather than toward the street, and a vegetated boulevard between the road and proposed trail to reduce the runoff rates leaving the site. The applicant also considered using pervious pavement for the street section but the city would not allow the material for a public roadway. The applicant indicated that given the close proximity of the two existing ends of Cedarcrest Drive that the project connects to (300' apart), it isn't feasible to neck the road down to a reduced width to less than 28 feet.
- With regard to variance criterion 5, the existing steep topography, existing woods and heritage trees, and the existing gas pipeline easement restrictions – site conditions that the applicant did not create or exacerbate – cause to a substantial degree the need for the variance.
- In summary, the increase in peak runoff rate from the southeast and southwest portion of the site does not present a material risk to downstream properties or Riley Creek.

While the applicant must address these criteria to support a variance request, the following is the RPBCWD engineer's assessment of information from the request relevant to the applicant's request for a variance from the abstraction standard:

- Related to variance criterion 1 – the proposed design does not provide abstraction of runoff from roughly 10% of the proposed disturbed impervious area on the parcel.
- The applicant has taken measures relevant to variance criterion 4 to offset the shortfall from the abstraction requirement: The proposed site requires an abstraction volume of 10,382 cubic feet and the proposed basins have an abstraction volume of 13,070 cubic feet. Runoff from offsite impervious areas from the surrounding developed residential neighborhood will flow to the site and the basins, and runoff from the impervious areas of the site that do not run to onsite treatment facility will enter downstream treatment basins maintained by the city of Eden Prairie before entering Riley Creek. The applicant has also directed downspouts to rear yard infiltration/treatment areas rather than toward the street, and included a vegetated buffer strip between the road and proposed trail to improve treatment of the trail runoff.
- With regard to variance criterion 5, the existing steep topography, existing woods and heritage trees, and the existing gas pipeline easement restrictions – site conditions that the applicant did not create or exacerbate – cause to a substantial degree the need for the variance.
- To help demonstrate that the project will not substantially change the character of or cause material adverse effect to water resources, flood levels, drainage or the general welfare in the District, or be a substantial detriment to neighboring properties (variance criterion 3), the applicant provided computations showing a net reduction of 0.69 acre-feet in runoff volume between proposed and existing conditions for the 100-year, 24-hour event.
- In summary, although the proposed design does not provide a way for all the regulated impervious surface runoff to get to the proposed treatment areas it does provide enough capacity to abstract 13,070 cubic feet of impervious surface runoff from the site and

surrounding neighborhood which currently receives no abstraction, thus not presenting a material risk to downstream properties or infrastructure.

**Rule L: Permit Fee:**

Fees for the project are:

Rule C & J ..... \$3,000

The RPBCWD permit fee schedule adopted in December 2015 indicates that costs of site inspections, analysis of the proposed activities, services of consultants and compliance assurance in excess of \$5,000 for properties greater the 10 acres will be charged to the permit applicant. The review of this permit application has resulted in \$9,417.30 of consultant time.

- L1. In accordance with the adopted RPBCWD permit-fee schedule, because the engineer and legal time to review this permit exceeded \$5,000 the applicant must submit an additional permit fee of \$4,417.30 for excess cost recovery.

**Rule M: Financial Assurance:**

Rules C: Silt fence: 4,641 L.F. x \$2.50/L.F. = ..... \$11,700

Restoration: 6.5 acres x \$2,500/acre = ..... \$16,300

Rules J: Infiltration: 7,261 sq. ft. x \$6.00/sq. ft. = ..... \$43,600

Contingency (10%) ..... \$7,200

Administration (30%) ..... \$23,700

Total Financial Assurance..... \$102,500

**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 Applicant has requested a variance from compliance with the Rule J criteria related to not increasing the discharge rate at all points where stormwater runoff leaves the site.
3. The Applicant has requested a variance from compliance with the Rule J criteria related to providing 1.1 inches of volume abstraction from all impervious areas on the parcel.
4. The proposed project will conform to Rule C if the Rule Specific Permit Conditions listed above are met; the applicant is requesting a variance from the rate-control and abstraction requirements of Rule J.
5. The applicant indicated on the application form the estimated completion date for the project to be November 30, 2018.

**Recommendation:**

1. On confirmation from the applicant that the November 30, 2018, completion data represents a request for the permit to extend through that time, a two-year permit term is recommended.
2. Approval of the permit contingent upon:
  - a. Continued compliance with General Requirements.
  - b. Financial Assurance in the amount of \$102,500.
  - c. Applicant providing the name and contact information of the individual responsible for erosion and sediment control at the site.
  - d. Permit Applicant must provide for maintenance and inspection of the stormwater facilities in perpetuity. The City of Eden Prairie has agreed to assume maintenance and inspection responsibilities for the detention and infiltration basins on the north side of the road between Valley Road and Stirrup Lane on behalf of the Applicant. For RPBCWD to approve the permit with this arrangement, the applicant must provide for review and approval documentation showing:
    - i. a binding commitment from the city to RPBCWD and the applicant, by which the city assumes the maintenance responsibility on behalf of the applicant;
    - ii. commitment from the applicant as property owner to the city providing the necessary property rights to enter the property/ies on which the facility/ies are located and conduct the necessary maintenance activities.

On approval of RPBCWD, the documentation must be recorded in the county property records for the relevant property/ies. Permit applicant must also provide a draft maintenance and inspection plan for the rainwater garden features on the southern portion of the property. Once approved by RPBCWD, the plan must be recorded in the county property records in a form acceptable to the District.

- e. Submission of a receipt showing recordation of a maintenance declaration for the rainwater garden features on the southern portion of the property. A draft of the declaration must be approved by the District prior to recordation.
- f. Indemnification of RPBCWD against any claims related to offsite stormwater flow.

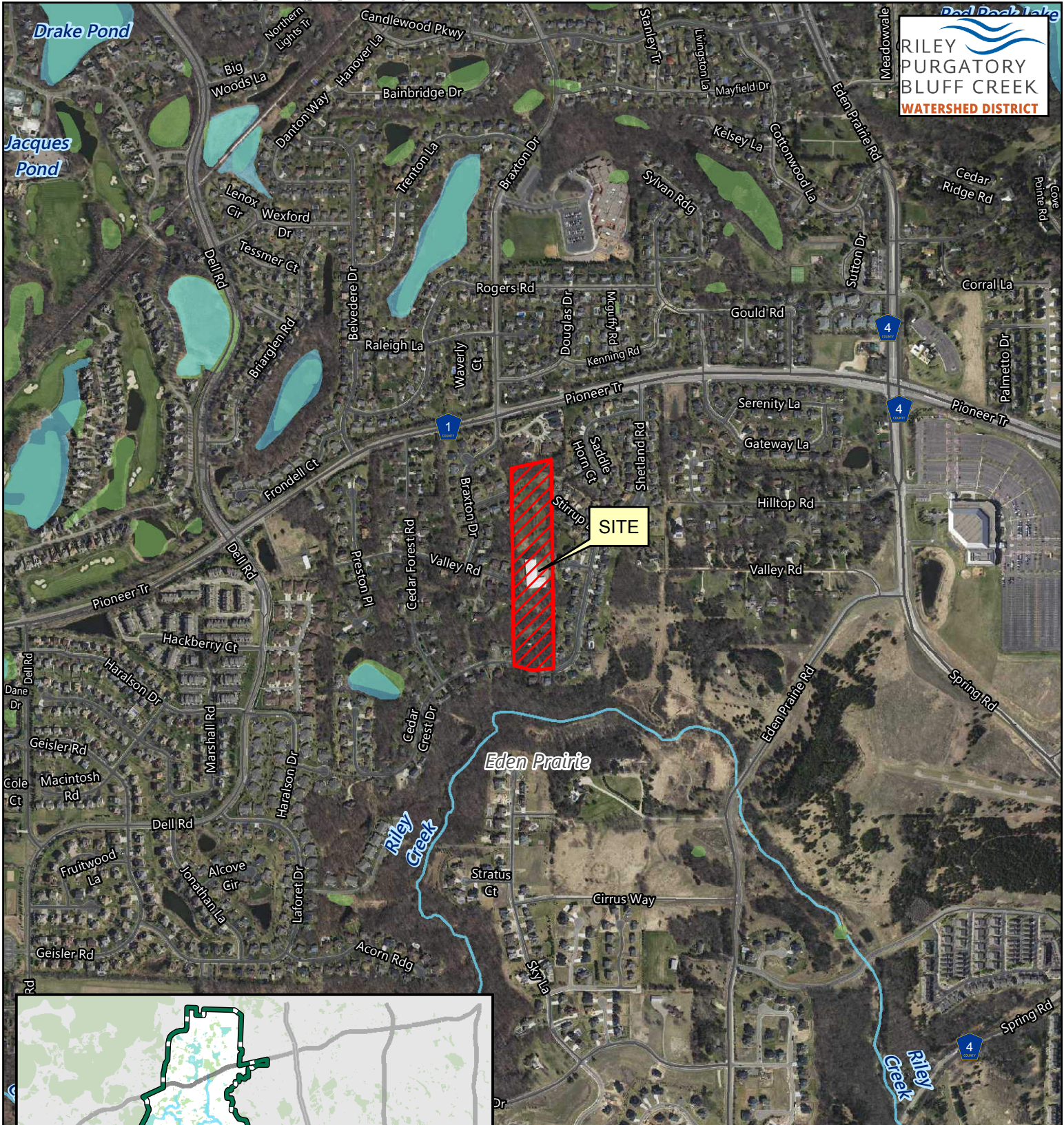
- g. Receipt of an additional permit fee of \$4,417.30 for excess cost recovery.

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

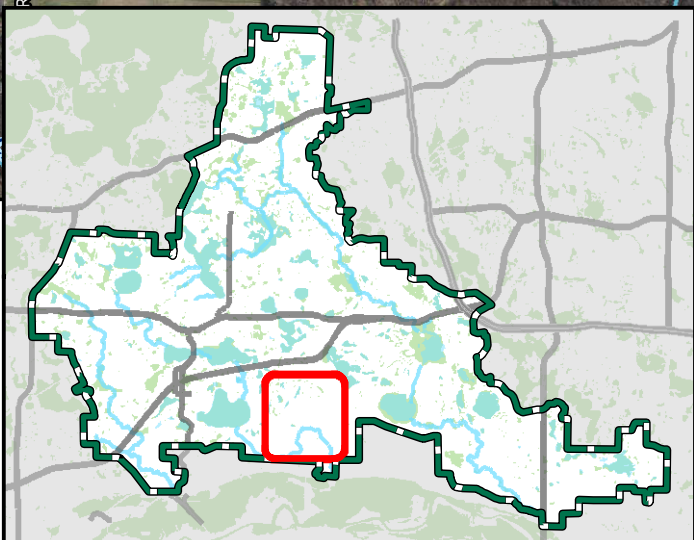
1. Per Rule J Subsection 4.5, upon completion of the site work, the permittee must submit as-built drawings demonstrating that at the time of final stabilization, stormwater facilities conform to design specifications as approved by the District.
2. Single-family homes to be constructed on lots in the subdivision created under the terms of permit 2017-007, if issued, must have an impervious surface area and configuration materially consistent with the approved plans to be exempt from additional stormwater permitting requirements. Home design proposed that differs materially from the approved plans will be subject to re-review for compliance with all applicable stormwater-management (and other regulatory) requirements.
3. The downspouts for custom lots 11 – 13 must be directed to the north to the infiltration BMPs consistent with the approved plans.

**Board Action**

It was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_ to approve permit application No. 2017-007 with the conditions recommended by staff.



SITE



Feet

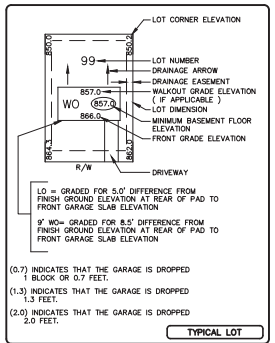
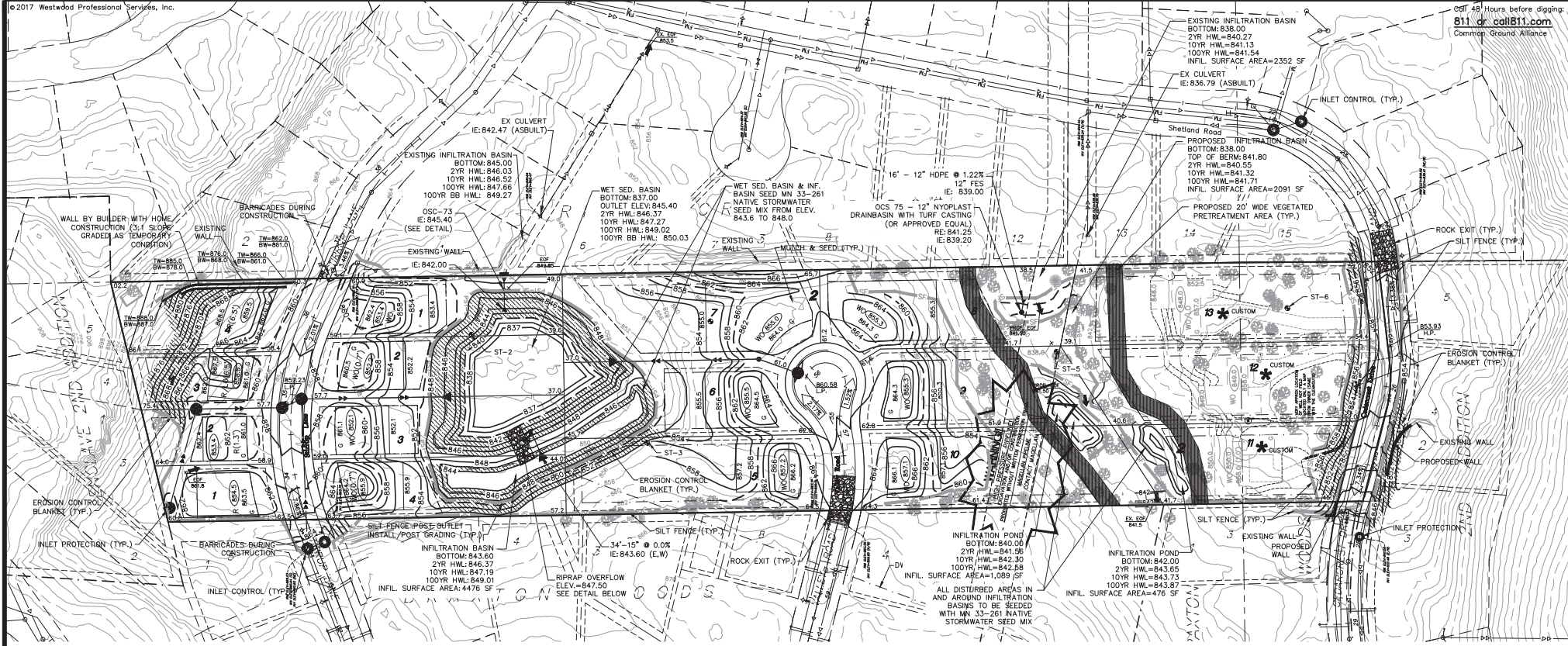


Permit Location Map

CEDARCREST STABLES  
EDEN PRAIRIE

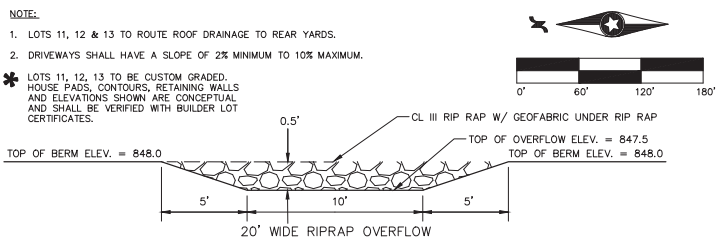
**Permit 2017-007**

Riley Purgatory Bluff Creek  
Watershed District



- LEGEND:**
- DENOTES SOIL BORING
  - DENOTES SILT FENCE
  - DENOTES HEAVY DUTY SILT FENCE
  - DENOTES POST GRADING SILT FENCE
  - DENOTES EXISTING CONTOURS
  - DENOTES PROPOSED CONTOURS
  - DENOTES EXISTING STORM SEWER
  - DENOTES PROPOSED STORM SEWER
  - DENOTES EXISTING TREE LINE
  - DENOTES APPROXIMATE TREE REMOVAL LIMITS
  - DENOTES EXISTING SPOT ELEVATION
  - DENOTES PROPOSED SPOT ELEVATION
  - DENOTES FIBER LOGS
  - DENOTES EMERGENCY OVERFLOW ELEVATION
  - DENOTES BOULDER RETAINING WALL
  - DENOTES EROSION CONTROL BLANKET
  - DENOTES INLET CONTROL DEVICE
  - DENOTES AREAS NOT TO BE DISTURBED

- NOTE:**
- NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
  - FINAL SITE STABILIZATION MEASURES MUST INCLUDE PERMANENT STABILIZATION OF ALL AREAS SUBJECT TO DISTURBANCE, SPECIFYING THAT AT LEAST SIX INCHES OF TOPSOIL OR ORGANIC MATTER BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE TREATMENT WHEREVER TOPSOIL HAS BEEN REMOVED. NOTE 15 ON SHEET 8 MUST BE REVISED.
  - CONSTRUCTION SITE WASTE MUST BE PROPERLY MANAGED, SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE AT THE CONSTRUCTION SITE.
  - ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPs MUST BE REMOVED UPON FINAL STABILIZATION.
  - SOIL SURFACES COMPACTED DURING CONSTRUCTION AND REMAINING PERVIOUS UPON COMPLETION OF CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR RIPPING TO A DEPTH OF 18 INCHES TAKING CARE TO AVOID UTILITIES, TREE ROOTS AND OTHER EXISTING VEGETATION PRIOR TO FINAL VEGETATION OR OTHER STABILIZATION.
  - ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
  - THE PERMITTEE MUST, AT A MINIMUM, INSPECT, MAINTAIN AND REPAIR ALL DISTURBED SURFACES AND ALL EROSION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES EVERY DAY WORK IS PERFORMED ON THE SITE AND AT LEAST WEEKLY UNTIL LAND-DISTURBING ACTIVITY HAS CEASED. THEREAFTER, THE PERMITTEE MUST PERFORM THESE RESPONSIBILITIES AT LEAST WEEKLY UNTIL VEGETATIVE COVER IS ESTABLISHED. THE PERMITTEE WILL MAINTAIN A LOG OF ACTIVITIES UNDER THIS SECTION FOR INSPECTION BY THE DISTRICT ON REQUEST.
  - ALL STREET ACCESS POINTS WITHOUT ROCK CONSTRUCTION ENTRANCES SHALL BE BARRICADED DURING CONSTRUCTION TO PREVENT UNAUTHORIZED ACCESS.
  - ALL DISTURBED AREAS TO BE SEEDED UNLESS NOTED OTHERWISE. LOTS TO BE SEEDED WITH MN STATE SEED MIX 25-141 MESIC GENERAL ROADSIDE. ALL STORMWATER AREAS TO BE SEEDED WITH MN STATE NATIVE SEED MIX 33-261 STORMWATER SOUTH AND WEST. SEE PLANS FOR SPECIFIC AREAS TO BE SEEDED. (SEE SHEET 4) FOR EXACT SEED MIX AND SEEDING RATES.
  - TWO ROWS OF SOD TO BE PLACED ALONG BACK OF CURB. SOD TO BE STANDARD MINNESOTA GROWN AND HARDY BLUEGRASS MIX, FREE OF LAWN WEEDS. ALL TOPSOIL AREAS TO BE RAKED TO REMOVE DEBRIS AND ENSURE DRAINAGE.



- STORMWATER BASIN CONSTRUCTION SEQUENCING:**
- GRADE WET BASIN AND INFILTRATION BASIN WITH MASS GRADING, SEED AND MULCH AS DIRECTED.
  - INFILTRATION BASIN TO REMAIN OFF-LINE THROUGHOUT CONSTRUCTION UNTIL VEGETATION IS ESTABLISHED. THIS IS ACHIEVED BY PLUGGING THE EQUALIZATION PIPE BETWEEN THE WET BASIN AND THE INFILTRATION BASIN.
  - ONCE SITE IS STABILIZED WITH VEGETATION, INFORM THE ENGINEER. ENGINEER WILL DO SITE INSPECTION AND IF SITE IS ADEQUATELY VEGETATED, PROVIDE WRITTEN APPROVAL TO BRING THE INFILTRATION BASIN ON-LINE AT WHICH TIME THE PIPE PLUG CAN BE REMOVED.

**Westwood**  
 Phone: (852) 937-5150 7699 Anagram Drive  
 Fax: (852) 937-5621 Eden Prairie, MN 55344  
 Toll Free: (888) 937-5150 www.westwood.com  
 Westwood Professional Services, Inc.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
  
 John Decker, PE  
 Date: 05/17/17 License No. 43398

**Revisions:**

04/19/17	REVISED FOR WATER-SHED
04/20/17	REVISED FOR COMMENTS
05/17/17	REVISED FOR COMMENTS

**Checked:** JSD  
**Drawn:** JSD  
**Design:** JSD  
 Based Drawing by/for:

Prepared for:  
**The Pentom Land Company**  
 7699 Anagram Drive  
 Eden Prairie, MN 55344

**Cedarcrest Stables**  
 Edan Prairie, Minnesota  
**Grading & Erosion Control Plan**

April 19, 2017

Board Members  
Riley Purgatory Bluff Creek Watershed District  
14500 Martin Drive, Suite 1500  
Eden Prairie, MN 55344

Re: Variance Request for the Proposed Cedarcrest Stables Development  
RPBCWD Permit #2017-007  
File 0010705.00

Dear Members of the Board:

The proposed Cedarcrest Stables development in Eden Prairie has unique site constraints that will require variances from the Riley Purgatory Bluff Creek Watershed District (RPBCWD) standard rules. This narrative will summarize the variance requests being made by the Applicant that are explored in detail in the stormwater runoff report and construction plans submitted to RPBCWD for review. We appreciate the Board's consideration of our variance requests when reviewing our application.

The proposed development will subdivide approximately 10.65 acres into 17 single-family lots. The existing drainage for the north and east central areas flows to landlocked low areas with culvert outlets. The west central area discharges overland to the west and the south portion of the site discharges both to the east and west down the existing Cedarcrest Drive, splitting in the middle of the property.

The proposed stormwater management was designed to meet the rate control, volume abstraction and high water level structure protection of requirements of the city and watershed. This management will include the construction of stormwater basins within the north and central portions of the site. The only areas where these requirements are not met are the south drainages of the site, which drains directly to Cedarcrest Drive which do not meet district requirements for rate control or volume abstraction from new impervious surfaces. These are small areas of the overall development.

Under existing conditions, the southwest area contains 0.10 acres of impervious surface with 4.68 cfs leaving the site. The proposed area is 0.54 acres with 0.21 acres of impervious surface with 5.08 cfs leaving the site. The proposed impervious surface consists of Cedarcrest Drive, a proposed trail, and the residential driveway. The proposed condition increases the impervious area by 0.11 acres and runoff rate by 0.4 cfs. The proposed trail (0.04 acres) will be treated by a swale between the trail and Cedarcrest Drive. The remaining 0.17 acres of impervious will either overland flow through woods or enter the existing storm sewer system and drain to an existing stormwater basin for treatment before entering Riley Creek.

Under existing conditions, the southeast area contains 0.02 acres of impervious surface with 0.87 cfs leaving the site. The proposed area is 0.18 acres with 0.06 acres of impervious surface and 1.18 cfs leaving the site. The proposed impervious surface consists of Cedarcrest Drive, a proposed trail, and the residential driveway. The proposed condition increases the impervious area by 0.04 acres and runoff rate by 0.31 cfs. The proposed trail (0.02 acres) will be treated by a swale between the trail and Cedarcrest Drive. The remaining 0.04 acres of impervious will either overland flow through woods or enter the existing storm sewer system and drain to an existing stormwater basin for treatment before entering Riley Creek.

Variance Requests

A rate control and volume abstraction variance is requested for both the southeast and southwest drainage areas of the site. These areas make up a small portion of the total proposed site area, see table below.

Total Site Area (Ac)	Southwest Area (Ac)	Southeast Area (Ac)
10.65	0.54	0.19

The requested areas have the following increase in runoff rate values over existing conditions.

Storm Event	SW Increase in Peak Runoff (cfs)	SE Increase in Peak Runoff (cfs)
2 year	0.40	0.20
10 year	0.44	0.27
100 year	0.40	0.31
10 day SM	0.00	0.00

The whole site has a total runoff rate of 33.96 cfs with 6.26 cfs leaving from the south two basins in the 100-year storm event.

The proposed site requires an abstraction volume of 10,327 cf and the proposed basins have an abstraction volume of 13,070 cf, treating some of the offsite impervious areas that flow to the site. The proposed impervious area that will not have abstraction provided for is 0.2 acres of impervious surface with an abstraction volume of 799 cf for the southwest and 0.06 acres of impervious with an abstraction volume of 240 cf for the southeast. The volume not being treated from these areas is less than the existing impervious that is getting treated by the various basins on site.

During the design the following items were found to limit the effectiveness of the stormwater management bmps in these areas:

- Tree protection of City significant trees and other wooded areas
- City Green Infrastructure Ordinance
- Grade difference between available area for treatment and the proposed road
- Steep grades
- Existing gas pipeline easement



- The property is a small elongated parcel that was previously developed on all sides. This shape, the existing drainage characteristics and proximity to neighboring properties left limited options to stormwater management for the site.

The following design considerations were evaluated and found to be infeasible:

- A underground infiltration trench in southwest was reviewed. This option was found to be infeasible because the slopes would cause the removal of many large trees. In addition it would involve difficult long term maintenance, and the city is reluctant to allow small treatment bmps within the city right of way.
- Proposed vegetated swale/depressions and small infiltration basins for both the southeast and southwest were reviewed. With the reluctance of the city to have small treatment bmps within the city right of way, the bmps were pushed north where slopes would cause excessive grading that would disturb existing large trees.

To minimize these areas and their impacts the following additional measures were taken during the design:

- The use of downspouts to redirect the runoff from the roofs to rear yard treatment areas.
- The inclusion of a vegetated buffer strip between the road and proposed trail to provide treatment of the trail.
- Oversizing of infiltration areas to provided additional volume abstraction potential
- Overall the site provides rate control for all events over existing conditions

The proposed design was reviewed and it was determined to cause minimal effects on the following:

- Water Resources – the requested variance will discharge to existing infrastructure designed to convey, control and treat the stormwater.
- Flood levels – the variance follows existing drainage patterns with minimal impacts that do not effect flood levels
- Drainage and general welfare – the proposed design follows existing drainage patterns and maintains the existing flood levels
- Substantial detriment to neighboring properties – the majority of the variance flows will be directed to existing or proposed public infrastructure designed to convey the runoff.

### Conclusion

We believe the proposed stormwater management for the Cedarcrest Stables development is the most effective option available. By utilizing the proposed basins and maintaining existing drainage patterns for the site, we are able to protect many of the existing trees. Even though the design does not provide rate control for each discharge point it does reduce the overall runoff rate for the entire site by 18.62 cfs over the existing conditions for a 100 year storm event. In addition, although the proposed design does not provide a way for all the impervious surface runoff to get to the proposed treatment areas it does provide enough abstraction for 2.9 acres of impervious while the proposed site is only adding 2.6 acres of impervious surface. The proposed basins will also provide treatment for existing impervious areas that are not currently being treated.

April 17, 2017  
Page 4

It is our opinion that our variance requests are in the best interests of RPBCWD, the City of Eden Prairie, the neighboring properties, and the Applicant.

Please contact me if you have any questions.

Sincerely,

WESTWOOD PROFESSIONAL SERVICES

Andrew Nelson, P.E.  
Senior Water Resources Engineer

## SUPPLEMENTAL MEMORANDUM

As directed by the Managing Board of the Riley Purgatory Bluff Creek Watershed District (RPBCWD) at the May 3, 2017 Board Meeting, Westwood has prepared this supplement to the Stormwater Runoff Narrative dated April 25, 2017. The purpose of this report is to analyze the capacity of the existing stormwater ponds that are downstream of the proposed Cedarcrest Stables development in Eden Prairie, MN.

There are two existing ponds, one to the southwest and one to the southeast of the development. Both ponds drain directly to Riley Creek. These ponds have been modeled in HydroCAD for both the existing and proposed conditions and the results are summarized in the following tables. Please refer to the drainage maps and HydroCAD output in the Appendix for more information.

### Southwest Pond Conditions

Pond HWLs (MSL)		
	Existing Condition	Proposed Condition
2-Year	834.98	834.92
10-Year	836.86	836.77
100-Year	837.93	837.93
Pond Peak Discharge (CFS)		
	Existing Condition	Proposed Condition
2-Year	12.28	12.10
10-Year	16.94	16.74
100-Year	120.55	120.08
Pond Discharge Volume (AF)		
	Existing Condition	Proposed Condition
2-Year	2.67	2.60
10-Year	4.76	4.66
100-Year	10.30	10.28

### Southeast Pond Conditions

Pond HWLs (MSL)		
	Existing Condition	Proposed Condition
2-Year	776.44	776.29
10-Year	776.90	776.68
100-Year	777.95	777.58
Pond Peak Discharge (CFS)		
	Existing Condition	Proposed Condition
2-Year	20.02	14.53
10-Year	41.11	30.35
100-Year	100.26	77.73
Pond Discharge Volume (AF)		
	Existing Condition	Proposed Condition
2-Year	4.03	2.67
10-Year	7.42	6.15
100-Year	17.25	15.57

### Southwest Pond 100-yr 10-day Snow Melt Conditions

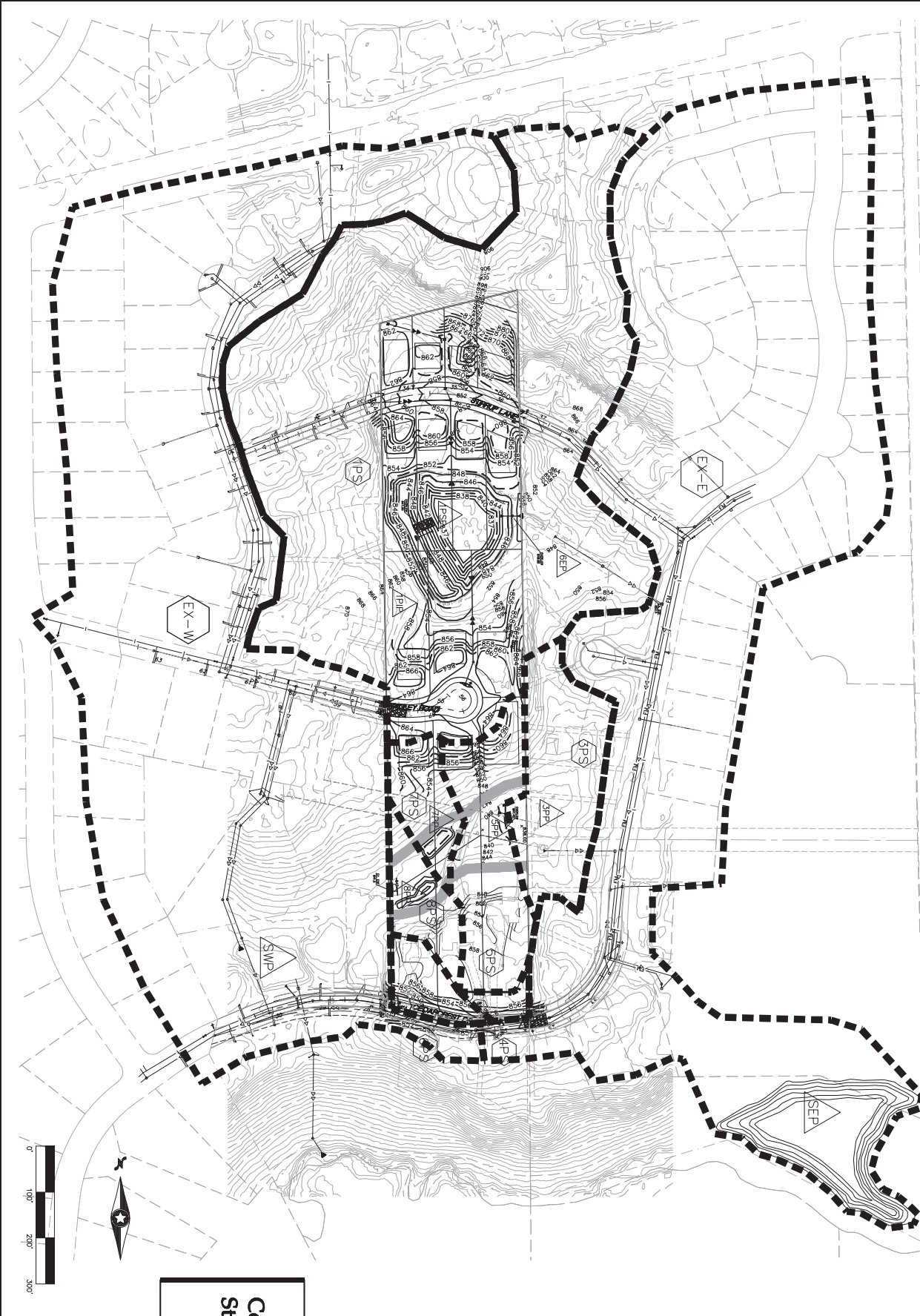
	Existing Condition	Proposed Condition
HWL (MSL)	833.26	833.26
Peak Flow (CFS)	5.01	5.01
Volume (AF)	15.48	15.39

### Southeast Pond 100-yr 10-day Snow Melt Conditions

	Existing Condition	Proposed Condition
HWL (MSL)	776.11	776.09
Peak Flow (CFS)	8.57	7.87
Volume (AF)	26.27	24.43

To achieve reductions of runoff rates and runoff volumes for all critical rain events, the proposed rear yard rain garden 7PP was enlarged slightly. This change is included with the revised Construction Plans submitted with this memorandum.

As shown in the tables above and the appendices, the high water levels, peak discharge rates and discharge volumes for both ponds for all of the critical rain events do not increase in the proposed condition. Therefore, the proposed Cedarcrest Stables development will not adversely affect the existing ponds downstream of the site.



**Cedarcrest  
 Stables**

**Proposed Drainage  
 Map**

Date: **5/18/2017**  
 Sheet: **2 OF 2**  
 0607032001-MW-Est-Exhibit-Drainage-Proposals

Prepared for:  
**The Pentom  
 Land Company**  
 7697 Aragon Drive  
 Eden Prairie, MN

Project No. \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Designer: \_\_\_\_\_  
 Checker: \_\_\_\_\_  
 Drafter: \_\_\_\_\_  
 Plotter: \_\_\_\_\_  
 Scale: \_\_\_\_\_  
 Date: \_\_\_\_\_

**Westwood**  
 Westwood Professional Services, Inc.  
 2701 130th Avenue NW, Suite 200  
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 westwoodps.com

## Riley Purgatory Bluff Creek Watershed District Permit Application Review

**Permit No:** 2017-031

**Received complete:** April 27, 2017

**Applicant:** Bert Notermann

**Consultant:** Roger Humphrey, Stantec

**Project:** Lion's Tap Site Improvements – Lion's Tap, in conjunction with the realignment of Spring Road in Eden Prairie, will be altering their site access and expanding their parking lot. The proposed improvements will disturb more than 50% of their site and will require lot line adjustments. This is not a subdivision. A proprietary underground infiltration system will provide storm water quality, volume and rate control.

**Location:** 16180 Flying Cloud Drive, Eden Prairie, MN

**Reviewer:** Terry Jeffery, Project Manager and 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	X	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
K	Variance	Yes	The applicant is requesting a variance from rate control for the 100-year, 10-day snowmelt out of proposed BMP.
L	Permit Fee	Yes	\$1,500 was received on April 27, 2017
M	Financial Assurance	See Comment	The financial assurance has been calculated at \$57,257.

## **Project Description**

The project is being performed in conjunction with the city's realignment of Spring Road to the east. Because of the proposed realignment, some public right-of-way will be turned back to the Lion's Tap property. To accommodate the proposed improvements, land area will be exchanged between two properties, both owned by Mr. Notermann. (See figure C0.03)

The access from Spring Road will be modified and the access from Flying Cloud Drive will be eliminated. The project is intended to improve traffic circulation within the parking lot, provide A.D.A. parking stalls, and provide other improvements intended to accommodate bicycle and pedestrian traffic. The building will remain unchanged. The project will disturb 2.28 acres and result in a net increase in impervious surface of 6,230 square feet. The project includes the construction of an underground infiltration stormwater best management practice. The project site information is summarized below:

1. Total Site Area: 9.42 acres
2. Existing Site Impervious Area: 51,780 square feet
3. New (Increase) in Site Impervious Area: 6,230 square feet (12% increase in site impervious area)
4. Total Disturbed Impervious 46,940 square feet (1.08 acres)
5. Total Disturbed Area: 2.28 acres

Submitted materials:

1. Permit Application date signed April 26, 2017.
2. Design Plan Sheets (22 Sheets 1-12) dated January 10, 2017 (received April 20, 2017).
3. Stormwater Management Design Memo dated April 26, 2017 (revised May 24, 2017).
4. Subsurface boring logs performed by American Engineering Testing, Inc. on January 24, 2017.
5. MIDS Calculator Output dated April 26, 2017 updated in Minnesota MIDS Calculator Worksheet dated May 24, 2017.

## **Rule Specific Permit Conditions**

### **Rule C: Erosion and Sediment Control**

Because the project will alter 2.28 acres (99,430 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 Stantec includes installation of silt fence, inlet protection for storm sewer catch basins, a 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 2.28 acres (99,430 square feet) of land-surface area the project must meet the criteria of RPBCWD’s Stormwater Management rule (Rule J, Subsection 2.1). Because the project will disturb more than 50% of the existing impervious area of the site, the criteria listed in Subsection 3.1 apply to the entire project parcel.

The applicant is proposing construction of an underground infiltration system to provide the rate control, volume abstraction and water quality management on the site. A sump manhole will provide pretreatment for the system.

**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, including the 100-year, 10-day event are summarized in table 1 below. The proposed project is not in conformance with RPBCWD Rule J, Subsection 3.1.a as post-development rates exceed pre-development rates for the 100-year, 10-day snowmelt event discharging from the underground infiltration system. The applicant is requesting a variance for this occurrence.

**Table 1. Review of Rule J, §3.1a: Discharge rate analysis pre- and post-development**

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
Outfall 1 (CSAH 61)	2.1	0.1	4.0	0.3	8.3	0.5	0.3	0.01
Outfall 2 (UG System)	3.6	1.2	6.3	4.9	12.4	12.3	<b>0.6</b>	<b>1.0</b>

**Volume Abstraction**

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from all impervious surface of the parcel. An abstraction volume of 5,610 cubic feet is required from the 1.33 acres (58,010

square feet) of impervious area on the project for volume retention. The Applicant proposed an underground infiltration system. The table below summarizes the volume abstraction on the site.

Soil borings performed by American Engineering Testing, Inc. show that soils in the project area are primarily silty sands which, according to the MN Stormwater Manual, have an infiltration rate of 0.45 inches/hour. The table below summarizes the volume abstraction provided under the submitted stormwater-management plan. Based on information reviewed, the proposed project conforms to Rule J, Subsection 3.1.1.b.

**Table 2. Review of Rule J, §3.1b: Required and proposed abstraction quantities.**

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Depth (inches)	Provided Abstraction Volume (cubic feet)
1.10	5,318	1.16	5,597

**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 to use a proprietary underground infiltration system to achieve the required TP and TSS removals and submitted the MIDS worksheet calculations to estimate the TP and TSS removals. Staff concurs that these results are consistent with the design and literature values.

**Table 3. Review of Rule J, §3.1c: Required and estimated pollutant removals.**

Pollutant of Interest	Required Removal (%)	Estimated Removal (%)
Total Suspended Solids (TSS)	90	93
Total Phosphorus (TP)	60	93

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 existing restaurant and the proposed adjacent stormwater management feature are summarized in the following table.

**Table 4. Review Rule J, §3.6 freeboard in feet to low floor**

Location Riparian to Stormwater Facility	Low Floor Elevation of Building (feet)	100-year Event Flood Elevation of Adjacent Stormwater Facility (feet)	Freeboard (feet)
Restaurant	733.29	723.89	9.4

Based upon the information provided by the consulting engineer, the proposed project complies 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 has provided 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 K: Variances and Exceptions**

The applicant is requesting a variance from Rule J, subsection 3.1a. The discharge rate for the 100-year frequency, 10-day snowmelt event leaving the underground infiltration system and entering the existing stormsewer for Hennepin County State Aid Highway (CSAH) 61 increases from 0.6 cfs to 1.0 cfs. As can be seen in the table below, the site is able to meet the discharge rate requirement at all other points under all other events.

**Table 5. Review of Rule J, § 3.1a as pertains to variance request**

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
Outfall 1 (SW corner)	2.1	0.1	4.0	0.3	8.3	0.5	0.3	0.01
Outfall 2 (CSAH 61)	3.6	1.2	6.3	4.9	12.4	12.3	<b>0.6</b>	<b>1.0</b>

The attached variance request letter submitted on behalf of the applicant cites several facts related to the development in support of the request. Rule K requires the Board of Managers to find that because of unique conditions, inherent to the subject property the application of rule provisions will impose a practical difficulty on the Applicant. Assessment of practical difficulty is conducted against the following criteria:

1. how substantial the variation is from the rule provision;
2. the effect of the variance on government services;
3. whether the variance will substantially change the character of or cause material adverse effect
4. to water resources, flood levels, drainage or the general welfare in the District, or be a substantial detriment to neighboring properties;
5. whether the practical difficulty can be alleviated by a technically and economically feasible method other than a variance. Economic hardship alone may not serve as grounds for issuing a variance if any reasonable use of the property exists under the terms of the District rules;
6. how the practical difficulty occurred, including whether the landowner, the landowner's agent or representative, or a contractor, created the need for the variance; and
7. in light of all of the above factors, whether allowing the variance will serve the interests of justice.

It is incumbent upon the applicant to address the above criteria in submitting a variance request to the managers. To support the managers' assessment of the request, though, staff offers the following:

- Regarding criterion 1, the increase is nominal, and under all other events and at all other discharge points they reduce rates from existing conditions.
- Regarding criterion 3, the receiving infrastructure and runoff-management features downgradient from the discharge have capacity to effectively manage the proposed increase from the underground infiltration chamber. The water is discharged into a reinforced concrete pipe before flowing into a storm water basin and then into Riley Creek. Staff does not find that granting the variance will present a material risk to downstream properties or infrastructure.
- Regarding criterion 4, the engineer evaluated three other designs looking to eliminate the need for a variance. These are summarized here but are discussed in more detail in the attached memorandum from the applicant's engineer.
  - The first scenario involved constricting the outflow by using a 6-inch orifice. This resulted in a small (0.1 cfs) decrease for the 100-year, 10-day snowmelt event but did not get the rates down to the 0.6 cfs necessary to comply with Rule J, §3.1a. More important, it resulted in a 0.3 cfs increase for the 100-year rainfall event.
  - The second scenario was to increase the size of the underground infiltration system. To achieve the necessary decrease in rates, the system would need to be increased in size 2.6 times. Given the presence of a shallow water table elsewhere on the site, this is not a practical solution.

- The last analysis looked at some combination of the first two scenarios. Even with a constricted outlet, the system would still require increasing the footprint 2.4 times from the proposed system. This again runs into the water table constraint of scenario #2.
- In addition, the engineer reviewed the likelihood of constructing a BMP south of the building, thereby eliminating the need to divert this watershed to the proposed underground system. The proximity to the right-of-way for C.S.A.H. 61 and the need for adequate separation between the high-water level for the BMP and the low floor elevation precluded this approach.
- Regarding criterion 5, it appears that by accommodating runoff from the hillside above the site and from the area immediately surrounding the existing building so that all impervious surface on the site would be treated, the drainage boundaries were changed and this resulted in the increase under the 100-year, 10-day snowmelt condition.

**Rule L: Permit Fee:**

Fees for the project are:

Rule C & J .....\$1,500

**Rule M: Financial Assurance:**

Rules C: Silt fence: 2,000 L.F. x \$2.50/L.F. = .....\$5,000

Restoration: 0.95 acre x \$2,500/acre = .....\$2,375

Rules J: Underground:1.33AC treated x \$980/AC treated = .....\$1,303

Rules J: Infiltration: 5,227 S.F. x \$6/S.F. = .....\$31,362

Contingency (10%) .....\$4004

Administration (30%) .....\$13,213

Total Financial Assurance.....\$57,257

**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 project conforms to Rule B requirements.
3. The proposed project will conform to Rules C and J (except subsection 3.1a) if the Rule Specific Permit Conditions listed above are met. The applicant has submitted a request for a variance from subsection J3.1a.

## **Recommendation:**

Approval, contingent upon:

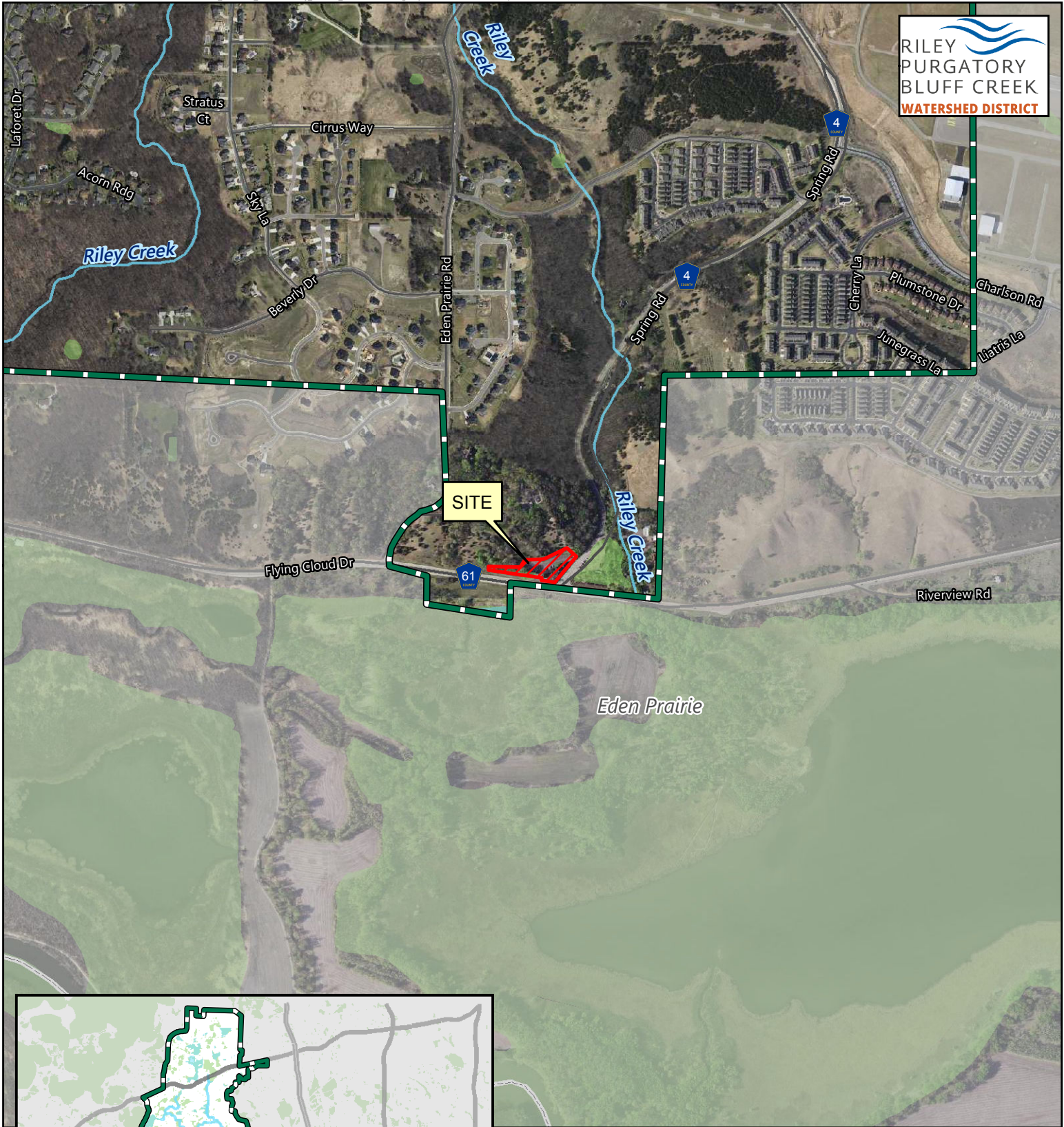
1. Continued compliance with General Requirements.
2. Financial Assurance in the amount of \$57,257.
3. Submission of the name and contact information of the individual responsible for erosion and sediment control for the site.
4. Recordation of a maintenance declaration for the stormwater management facilities and wetland buffer. 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.

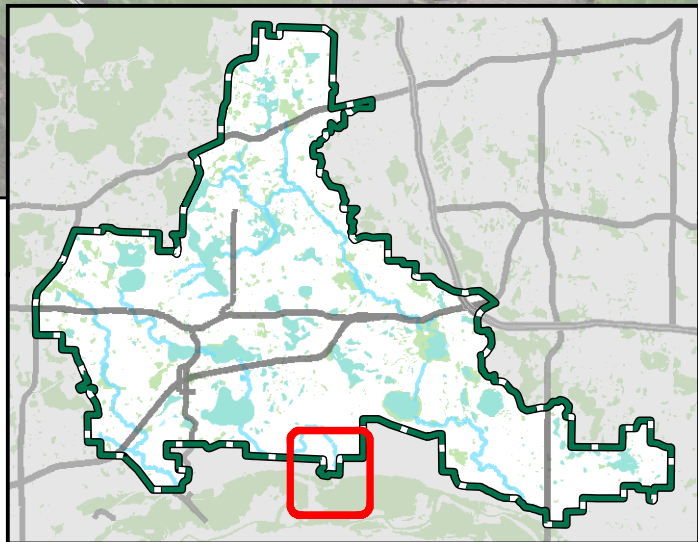
## **Board Action**

It was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_ to approve permit application No. 2017-001 with the conditions recommended by staff.



**RILEY  
PURGATORY  
BLUFF CREEK  
WATERSHED DISTRICT**

**SITE**



Feet



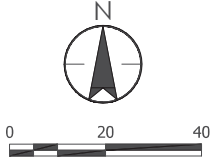
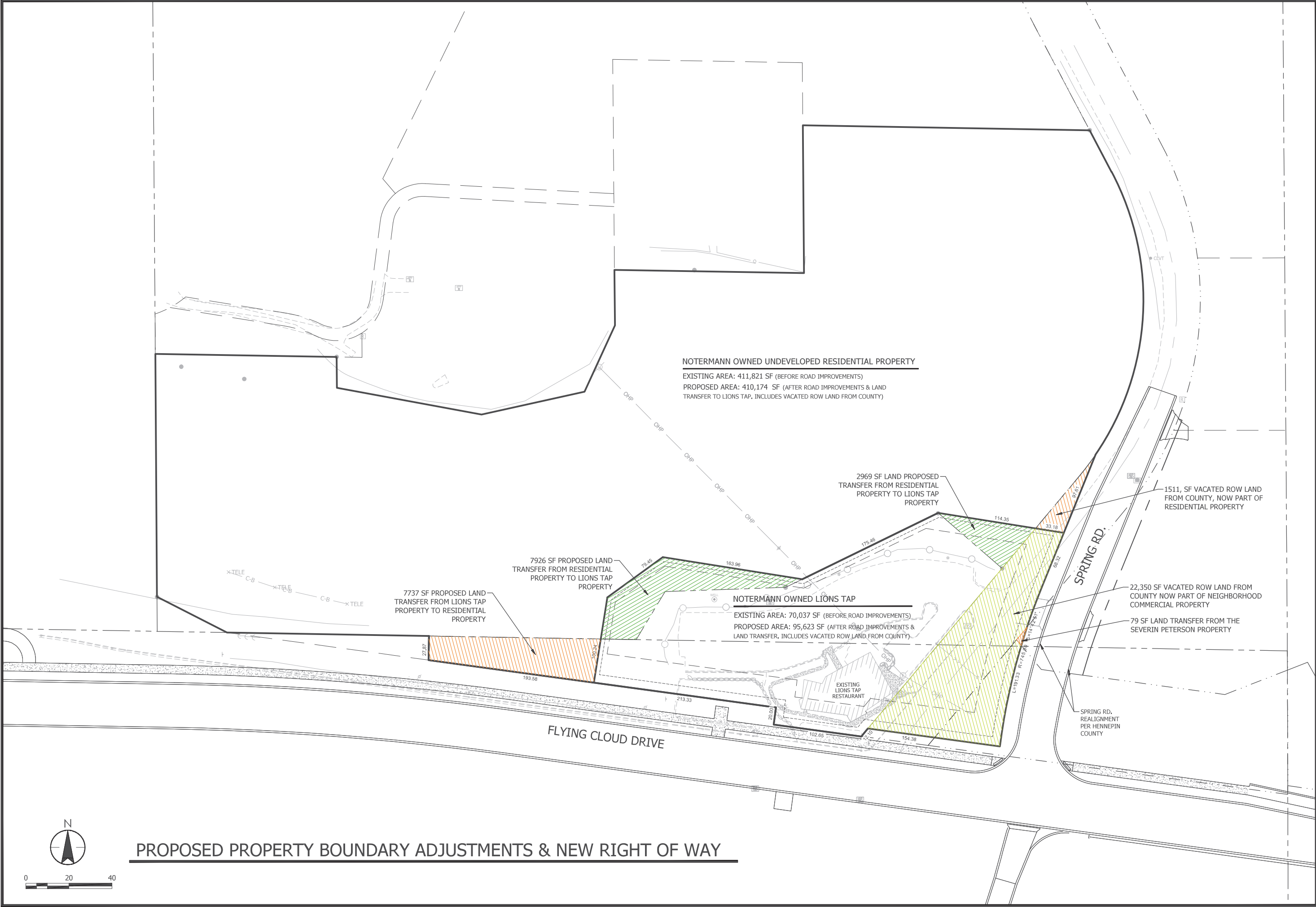
Permit Location Map

LION'S TAP  
EDEN PRAIRIE  
**Permit 2017-031**  
Riley Purgatory Bluff Creek  
Watershed District



THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. THIS DRAWING IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC & FORBIDDEN.

Plot Date: 05/24/2017 - 2:01pm  
 Drawing Name: \\193803789\CAD\DWG\HEETS\LIONS TAP\193803789 C003-Ltop.dwg  
 Xrefs: 193803789.XSV, 0904.dwg, 193803789 BRD-Ltop, 193803789.XST, EPI136552.UIT, 193803789.XSV, 0904.dwg, 193803789 BRD-Ltop, 193803789.XST, EPI136552.UIT



**PROPOSED PROPERTY BOUNDARY ADJUSTMENTS & NEW RIGHT OF WAY**

**Stantec**

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.  
 PRINT NAME: RODGER L HUMPHREY SIGNATURE: \_\_\_\_\_ UC. NO.: 25017  
 DATE: \_\_\_\_\_

**LIONS TAP**  
 EDEN PRAIRIE, MN

PROPERTY BOUNDARY ADJUSTMENT & NEW ROW

NO.	REVISION	DATE
1	WATERSHED SUBMITTAL	4-26-17
2	WATERSHED SUBMITTAL	5-24-17

SURVEY	STANTEC
DRAWN	RTM
DESIGNED	
CHECKED	RLH
APPROVED	RLH

PROJ. NO. 193803789

SHEET NUMBER  
**C0.03**





THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. STANTEC SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS OTHER THAN THOSE AUTHORIZED BY STANTEC. FOR MORE INFORMATION, CONTACT THE PROJECT MANAGER AT (952) 835-1100.

### ESTIMATED BMP QUANTITIES:

ITEM	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY
1	ROCK CONSTRUCTION ENTRANCE	EA	3
2	ROCK CONSTRUCTION MAINTENANCE	EA	3
3	PERIMETER SILT FENCE	LF	2,000
4	MAINTENANCE OF PERIMETER SILT FENCE	YR	4
5	STREET SWEEPING AND VACUUMING	YR	1
6	STORM DRAIN INLET PROTECTION W/MAINTENANCE	EA	19
7	TEMPORARY SEED AND MULCH	AC	1
8	MAINTAIN SEED AND MULCH	AC	1
9	PERMANENT SOD	AC	0.3
10	LOT CONSTRUCTION EROSION CONTROL	EA	3
11	VEHICLE AND EQUIPMENT CLEANING	LS	1
12	VEHICLE AND EQUIPMENT FUELING	LS	1
13	VEHICLE AND EQUIPMENT MAINTENANCE	LS	1
14	SPILL PREVENTION AND CONTROL	LS	1
15	6-INCH BIOROLLS	LF	1,700

### EROSION AND SEDIMENT CONTROL NOTES:

- ALL PERMITTEES, CONTRACTORS, AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PLAN AND THE STATE OF MINNESOTA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES PHASE II PERMIT) AND BECOME FAMILIAR WITH THEIR CONTENTS AND IS RESPONSIBLE TO COMPLY WITH ALL REQUIREMENTS STATED WITHIN.
- THE BMP'S SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS FOR THE ANTICIPATED SITE CONDITIONS. AS CONSTRUCTION PROGRESSES, THE PERMITTEE/CONTRACTOR SHALL ANTICIPATE THAT ADDITIONAL BMP'S MAY BE REQUIRED AS SITE CONDITIONS CHANGE AND SHALL PROVIDE ADDITIONAL BMP'S TO MEET APPLICABLE REQUIREMENTS.
- ALL WORK AND MATERIALS SHALL BE CONSTRUCTED ACCORDING TO THE APPROVED PLANS AND SWPPP. ANY DEVIATION FROM THE APPROVED PLANS SHALL REQUIRE WRITTEN APPROVAL FROM THE OWNER. REFER TO SHEET L1.01 FOR FINAL STABILIZATION MEASURES.
- ALL CONCRETE DELIVERY VEHICLES SHALL BE EQUIPPED WITH SELF-CONTAINED WASHOUT SYSTEMS.
- TOTAL AREA OF DISTURBANCE = 99,430 SF
- CONTRACTOR TO INSPECT AND REMOVE SEDIMENT IN UNDERGROUND STORMWATER SYSTEM DURING CONSTRUCTION UP TO FINAL ACCEPTANCE.

### RPBCWD STANDARD EROSION CONTROL NOTES:

- NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE
- ADDITIONAL MEASURES, SUCH AS HYDRAULIC MULCHING AND OTHER PRACTICES AS SPECIFIED BY THE DISTRICT MUST BE USED ON SLOPES OF 3:1 (H:V) OR STEEPER TO PROVIDE ADEQUATE STABILIZATION
- FINAL SITE STABILIZATION MEASURES MUST SPECIFY THAT AT LEAST SIX INCHES OF TOPSOIL OR ORGANIC MATTER BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE TREATMENT WHEREVER TOPSOIL HAS BEEN REMOVED
- CONSTRUCTION SITE WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE MUST BE PROPERLY MANAGED.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE, AS

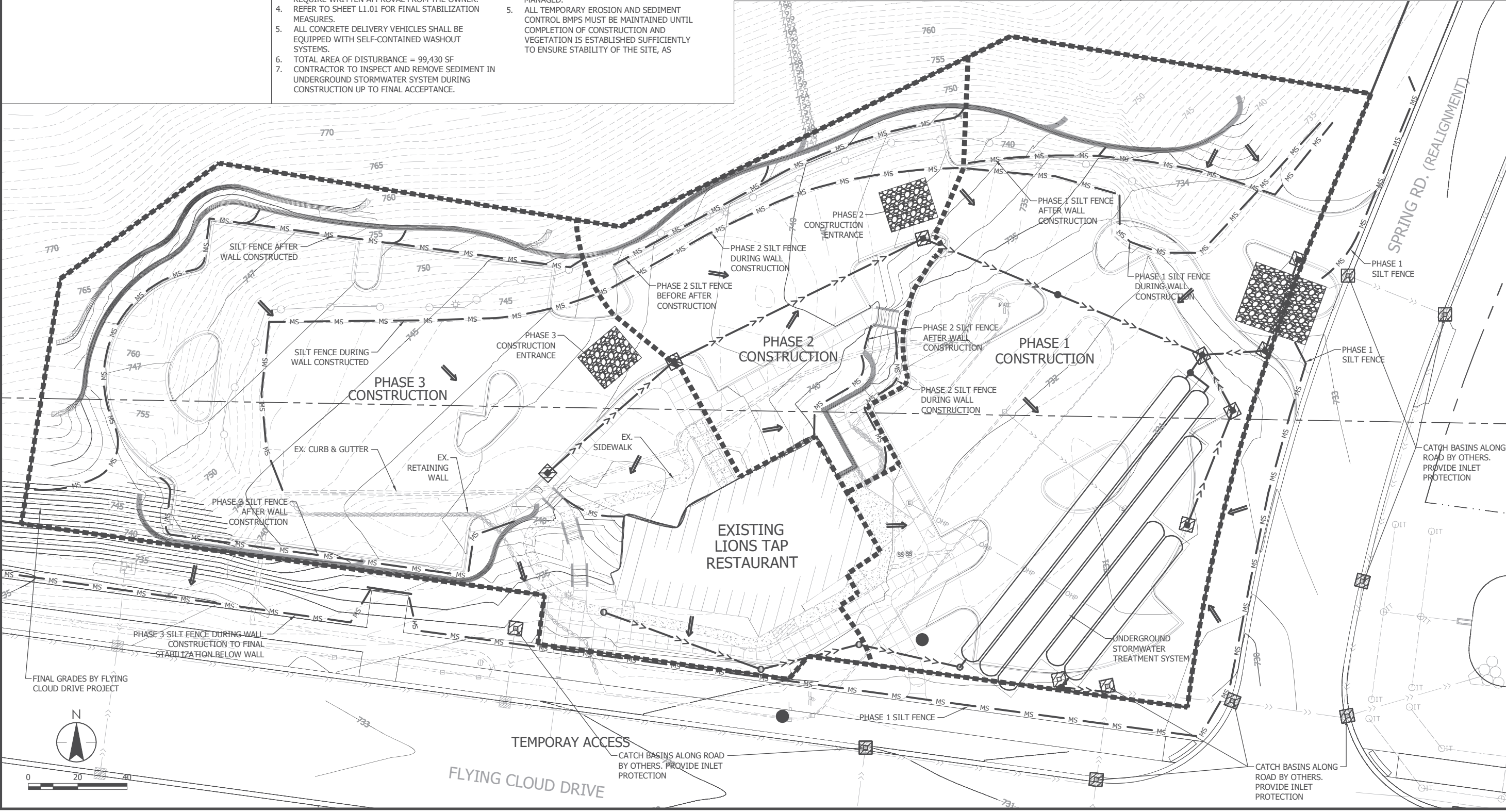
- DETERMINED BY THE DISTRICT.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S MUST BE REMOVED UPON FINAL STABILIZATION
- SOIL SURFACES COMPACTED DURING CONSTRUCTION AND REMAINING PERVIOUS UPON COMPLETION OF CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR RIPPING TO A DEPTH OF 18 INCHES (8 INCHES FOR SINGLE-FAMILY HOME PROPERTIES) WHILE TAKING CARE TO AVOID UTILITIES, TREE ROOTS AND OTHER EXISTING VEGETATION PRIOR TO FINAL REVEGETATION OR OTHER STABILIZATION.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED ON A PROPERTY THAT DRAINS TO AN IMPAIRED WATER, WITHIN 14 DAYS ELSEWHERE.

- THE PERMITTEE MUST, AT A MINIMUM, INSPECT, MAINTAIN AND REPAIR ALL DISTURBED SURFACES AND ALL EROSION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES EVERY DAY WORK IS PERFORMED ON THE SITE AND AT LEAST WEEKLY UNTIL LAND-DISTURBING ACTIVITY HAS CEASED. THEREAFTER, THE PERMITTEE MUST PERFORM THESE RESPONSIBILITIES AT LEAST WEEKLY UNTIL VEGETATIVE COVER IS ESTABLISHED. THE PERMITTEE WILL MAINTAIN A LOG OF ACTIVITIES UNDER THIS SECTION FOR INSPECTION BY THE DISTRICT ON REQUEST.

### EROSION CONTROL LEGEND

	MS		MACHINE SLICED SILT FENCE		TEMPORARY SEDIMENT TRAP
	BR		BIOROLL		SANDBAGS
	XXXXXXX		ROCK LOG		DIRECTION OF RUNOFF
			INLET PROTECTION		CONSTRUCTION ENTRANCE / EXIT
			DITCH CHECK - BIOLOG		CONSTRUCTION PHASING
			DITCH CHECK - ROCK		

NOTE: STEEL POSTS ARE REQUIRED FOR ALL SILT FENCES.



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.

PRINT NAME: JOGGERL HUMPHREY  
SIGNATURE: \_\_\_\_\_  
DATE: \_\_\_\_\_  
LIC. NO.: 28017

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**LIONS TAP**

EDEN PRAIRIE, MN

EROSION & SEDIMENT CONTROL PLAN

NO.	REVISION	DATE
1	WATERSHED SUBMITTAL	4-26-17
2	WATERSHED SUBMITTAL	5-24-17

SURVEY	STANTEC
DRAWN	RTM
DESIGNED	
CHECKED	RLH
APPROVED	RLH
PROJ. NO.	193803789
SHEET NUMBER	<b>C2.01</b>

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE**

**PROJECT DESCRIPTION/LOCATION**

THE LIONS TAP RESTAURANT PROJECT IS LOCATED AT 16180 FLYING CLOUD DRIVE, EDEN PRAIRIE, MN 55347, HENNEPIN COUNTY.

THE PLANNED SCOPE OF THE PROJECT INCLUDES:

1. PARKING LOT REMOVAL
2. INSTALLATION OF NEW STORM SEWER, INCLUDING AN UNDERGROUND STORMWATER TREATMENT SYSTEM
3. NEW SANITARY SERVICE AND WATER SERVICE
4. GRADING
5. RETAINING WALLS
6. INSTALLATION OF PARKING LOT
7. LANDSCAPING AND PERMANENT TURF RESTORATION

**SPECIAL AND IMPAIRED WATERS**

THESE SPECIAL AND IMPAIRED WATERS ARE LOCATED WITHIN ONE MILE (AERIAL RADIUS) OF THE PROJECT LIMITS AND RECEIVE RUNOFF FROM THE PROJECT SITE. DUE TO THE PROXIMITY OF THESE SPECIAL AND IMPAIRED WATERS, THE BMPS DESCRIBED IN APPENDIX A OF THE NPDES PERMIT WILL APPLY TO ALL AREAS OF THE SITE.

WATERBODY	IMPAIRMENT(S)
MINNESOTA RIVER	CHLORIDE, FECAL COLIFORM, FISHES BIOASSESSMENTS, MERCURY IN FISH TISSUE, MERCURY IN WATER COLUMN, PCB IN FISH TISSUE, TURBIDITY
RILEY CREEK	TURBIDITY

**AREAS OF ENVIRONMENTAL SENSITIVITY (AES) AND INFESTED WATERS**

THERE ARE NO WETLANDS WITHIN THE PROJECT BOUNDARY. THERE IS AN EXISTING WETLAND EAST OF SPRING ROAD.

THE FOLLOWING WATER BODIES HAVE BEEN LISTED BY THE DNR AS BEING INFESTED BY INVASIVE SPECIES: MINNESOTA RIVER.

**SOIL TYPES**

SOIL TYPES TYPICALLY FOUND ON THIS PROJECT ARE CROWFORK LOAMY SAND AND MINNEISKA FINE SANDY LOAM OVERLAID BY FILL.

**LONG TERM MAINTENANCE AND OPERATION**

LIONS TAP RESTAURANT IS RESPONSIBLE FOR THE LONG TERM MAINTENANCE AND OPERATION OF THE PERMANENT STORMWATER SYSTEM.

**PROJECT PERSONNEL AND TRAINING**

THIS SWPPP WAS PREPARED BY PERSONNEL THAT ARE CERTIFIED IN THE DESIGN OF CONSTRUCTION SWPPPS. COPIES OF THE CERTIFICATIONS ARE ON FILE WITH THE PROJECT ENGINEER AND ARE AVAILABLE UPON REQUEST.

PROVIDE A CERTIFIED EROSION CONTROL SUPERVISOR IN GOOD STANDING WHO IS KNOWLEDGEABLE AND EXPERIENCED IN THE APPLICATION OF EROSION PREVENTION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES. THE EROSION CONTROL SUPERVISOR WILL WORK WITH THE ENGINEER TO OVERSEE THE IMPLEMENTATION OF THE SWPPP AND THE INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE, DURING AND AFTER CONSTRUCTION UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA. PROVIDE PROOF OF CERTIFICATION AT THE PRECONSTRUCTION MEETING. WORK WILL NOT BE ALLOWED TO COMMENCE UNTIL PROOF OF CERTIFICATION HAS BEEN PROVIDED TO THE ENGINEER.

PROVIDE AT LEAST ONE CERTIFIED INSTALLER FOR EACH CONTRACTOR OR SUBCONTRACTOR THAT INSTALLS THE PRODUCTS LISTED IN SPECIFICATION SECTION 01 57 13. PROVIDE PROOF OF CERTIFICATION AT THE PRECONSTRUCTION MEETING. WORK WILL NOT BE ALLOWED TO COMMENCE UNTIL PROOF OF CERTIFICATION HAS BEEN PROVIDED TO THE ENGINEER.

**CHAIN OF RESPONSIBILITY**

THE OWNER AND THE CONTRACTOR ARE COPERMITTEES FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION PERMIT AND SHALL BE OBTAINED PRIOR TO START OF ANY LAND DISTURBING ACTIVITIES. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL ASPECTS OF THE NPDES CONSTRUCTION PERMIT AT ALL TIMES UNTIL THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA. THE CONTRACTOR WILL DEVELOP A CHAIN OF COMMAND WITH ALL OPERATORS ON THE SITE TO ENSURE THAT THE SWPPP WILL BE IMPLEMENTED AND STAY IN EFFECT UNTIL THE CONSTRUCTION PROJECT IS COMPLETE, THE ENTIRE SITE HAS UNDERGONE FINAL STABILIZATION, AND A NOTICE OF TERMINATION (NOT) HAS BEEN SUBMITTED TO THE MPCA.

**PROJECT CONTACTS**

THE ENGINEER AND CONTRACTOR ARE RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP AND INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE, DURING AND AFTER CONSTRUCTION UNTIL THE NOTICE OF TERMINATION HAS BEEN FILED.

ORGANIZATION	CONTACT NAME	PHONE
RPBCWD		
CITY OF EDEN PRAIRIE		

MPCA DUTY OFFICER 24 HOUR EMERGENCY NOTIFICATION:  
651-649-5451 OR 800-422-0798

**LOCATION OF SWPPP REQUIREMENTS**

THE REQUIRED SWPPP ELEMENTS MAY BE LOCATED IN MANY PLACES WITHIN THE PLAN SET AS WELL AS THE SPECIFICATIONS. THE NOTES AND TABLE BELOW ARE INTENDED TO BE A QUICK REFERENCE FOR THE CONTRACTOR AND CAR TO USE IN THE FIELD. THERE MAY BE ADDITIONAL REQUIRED SWPPP ELEMENTS INCLUDED ON THE PROJECT THAT ARE NOT LISTED ON THIS SHEET.

**LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN**

DESCRIPTION	LOCATION
TEMPORARY EROSION CONTROL MEASURES	SHEETS NO. C2.01
PERMANENT EROSION CONTROL MEASURES	SHEETS NO. L1.01
DIRECTION OF FLOW	SHEETS NO. C3.01
FINAL STABILIZATION	SHEETS NO. L1.01
STORM WATER PLAN	SHEETS NO. C4.01
EROSION AND SEDIMENT CONTROL DETAILS	SHEETS NO. C9.01
SITE PLAN	SHEETS NO. C1.01

STORMWATER CALCULATIONS AND ADDITIONAL HYDRAULIC DESIGN INFORMATION IS STORED AT THE PROJECT ENGINEER'S OFFICE.

THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. THIS DRAWING IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC & FORBIDDEN.

Plot Date: 05/24/2017 - 2:28pm  
Drawing Name: V:\193803789\active\193803789\CAD\DWG\SHEETS\LIONS TAP\193803789 C202-Ltap.dwg  
Xrefs: 193803789 BRD-Ltap



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.  
PRINT NAME: RODGER L HUMPHREY

SIGNATURE \_\_\_\_\_ UC. NO. 25017  
DATE \_\_\_\_\_

LIONS TAP  
EDEN PRAIRIE, MN  
STORMWATER POLLUTION PREVENTION PLAN

NO	REVISION	DATE
	WATERSHED	4-26-17
	SUBMITTAL	
	WATERSHED	5-24-17
	SUBMITTAL	

SURVEY	STANTEC
DRAWN	RTM
DESIGNED	
CHECKED	RLH
APPROVED	RLH
PROJ. NO.	193803789

SHEET NUMBER  
**C2.02**

**STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE (CONTINUED)**

**SITE INSPECTION AND MAINTENANCE**

INSPECT THE ENTIRE CONSTRUCTION SITE A MINIMUM OF ONCE EVERY SEVEN DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. INSPECT ALL TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT, EROSION PREVENTION AND SEDIMENT CONTROL BMPs UNTIL THE SITE HAS UNDERGONE FINAL STABILIZATION AND THE NOT HAS BEEN SUBMITTED. INSPECT SURFACE WATER INCLUDING DRAINAGE DITCHES FOR SIGNS OF EROSION AND SEDIMENT DEPOSITION. INSPECT CONSTRUCTION SITE VEHICLE EXIT LOCATIONS FOR EVIDENCE OF TRACKING ONTO PAVED SURFACES. INSPECT SURROUNDING PROPERTIES FOR EVIDENCE OF OFF SITE SEDIMENT ACCUMULATION. INSPECT INFILTRATION AREAS FOR SIGNS OF SEDIMENT DEPOSITION AND COMPACTION (TO ENSURE THAT EQUIPMENT IS NOT BEING DRIVEN ACROSS THE AREA).

RECORD ALL INSPECTIONS AND MAINTENANCE ACTIVITIES IN WRITING WITHIN 24 HOURS. SUBMIT INSPECTION REPORTS IN A FORMAT THAT IS ACCEPTABLE TO THE PROJECT ENGINEER. INCLUDE THE FOLLOWING IN THE RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY:

- A. DATE AND TIME OF INSPECTIONS
- B. NAME OF PERSONS CONDUCTING INSPECTIONS
- C. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS
- D. CORRECTIVE ACTIONS TAKEN, INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES
- E. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 0.5 INCH IN 24 HOURS
- F. DOCUMENTS AND CHANGES MADE TO THE SWPPP

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

- A. REPAIR, REPLACE, OR SUPPLEMENT PERIMETER CONTROL DEVICES WHEN IT BECOMES NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT OF THE DEVICE. COMPLETE REPAIRS BY THE END OF THE NEXT BUSINESS DAY FOLLOWING DISCOVERY.
- B. REPAIR OR REPLACE INLET PROTECTION DEVICES WHEN THEY BECOME NONFUNCTIONAL OR SEDIMENT REACHES 1/2 THE HEIGHT AND/OR DEPTH OF THE DEVICE.
- C. DRAIN AND REMOVE SEDIMENT FROM TEMPORARY AND PERMANENT SEDIMENT BASINS ONCE THE SEDIMENT HAS REACHED 1/2 THE STORAGE VOLUME. COMPLETE WORK WITHIN 72 HOURS OF DISCOVERY.
- D. REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS. RESTABILIZE ANY AREAS THAT ARE DISTURBED BY SEDIMENT REMOVAL OPERATIONS. SEDIMENT REMOVAL AND STABILIZATION MUST BE COMPLETED WITHIN 7 DAYS OF DISCOVERY. PREPARE AND SUBMIT A SITE MANAGEMENT PLAN FOR WORKING IN SURFACE WATERS. CONTACT ALL APPROPRIATE AUTHORITIES PRIOR TO WORKING IN SURFACE WATERS.
- E. REMOVE TRACKED SEDIMENT FROM PAVED SURFACES BOTH ON AND OFF SITE WITHIN 24 HOURS OF DISCOVERY. STREET SWEEPING MAY HAVE TO OCCUR MORE OFTEN TO MINIMIZE OFF SITE IMPACTS. LIGHTLY WET THE PAVEMENT PRIOR TO SWEEPING.
- F. MAINTAIN ALL BMPs UNTIL WORK HAS BEEN COMPLETED, SITE HAS GONE UNDER FINAL STABILIZATION, AND THE NOTICE OF TERMINATION (NOT) HAS BEEN SUBMITTED TO THE MPCA.

**ENVIRONMENTAL REVIEW**

THIS PROJECT IS NOT LOCATED IN A WELL HEAD PROTECTION AREA.

THIS PROJECT IS NOT LOCATED IN A DRINKING WATER SUPPLY MANAGEMENT AREA (DWSMA).

**LAND FEATURE CHANGES**

TOTAL DISTURBED AREA	2.3 ACRES
TOTAL EXISTING IMPERVIOUS SURFACE AREA	1.2 ACRES
TOTAL PROPOSED IMPERVIOUS SURFACE AREA	1.3 ACRES
TOTAL PROPOSED NET CHANGE IN IMPERVIOUS SURFACE AREA	0.1 ACRES

**STABILIZATION TIME FRAMES**

AREA	TIME FRAME	NOTES
LAST 200 LINEAL FEET OF DRAINAGE DITCH OR SWALE	WITHIN 24 HOURS OF CONNECTION TO SURFACE WATER OR PROPERTY EDGE	1, 2, 3
REMAINING PORTIONS OF DRAINAGE DITCH OR SWALE	7 DAYS	1, 3
PIPE AND CULVERT OUTLETS	24 HOURS	
EXPOSED SOILS AND STOCKPILES	7 DAYS	1

1. INITIATE STABILIZATION IMMEDIATELY WHEN CONSTRUCTION HAS TEMPORARILY OR PERMANENTLY CEASED ON ANY PORTION OF THE SITE. COMPLETE STABILIZATION WITHIN THE TIME FRAME LISTED. IN MANY INSTANCES THIS WILL REQUIRE STABILIZATION TO OCCUR MORE THAN ONCE DURING THE COURSE OF THE PROJECT. TEMPORARY SOIL STOCKPILES WITHOUT SIGNIFICANT CLAY OR SILT AND STOCKPILED CONSTRUCTED ROAD BASE ARE EXEMPT FROM THE STABILIZATION REQUIREMENT.
2. APPLICATION OF MULCH, HYDROMULCH, TACKIFIER AND POLYACRYLAMIDE ARE NOT ACCEPTABLE STABILIZATION METHODS IN THESE AREAS.
3. STABILIZE ALL AREAS OF THE SITE PRIOR TO THE ONSET OF WINTER. ANY WORK STILL BEING PERFORMED WILL BE SNOW MULCHED, SEEDED, AND BLANKETED WITHIN THE TIME FRAMES IN THE NPDES PERMIT.
4. TOPSOIL BERMS MUST BE STABILIZED IN ORDER TO BE CONSIDERED PERIMETER CONTROL BMPs. USE RAPID STABILIZATION METHOD 2, 3, OR 4 AS DIRECTED BY THE ENGINEER. THE SEED MIX USED IN THE RAPID STABILIZATION MAY BE SUBSTITUTED AS FOLLOWS:
  - A. SINGLE YEAR CONSTRUCTION BETWEEN MAY 1 - AUGUST 1, SEED WITH SEED MIXTURE 21-111
  - B. SINGLE YEAR CONSTRUCTION BETWEEN AUGUST 1 AND OCTOBER 31, SEED WITH SEED MIXTURE 21-112
  - C. MULTI YEAR CONSTRUCTION 22-111
5. KEEP DITCHES AND EXPOSED SOILS IN AN EVEN ROUGH GRADED CONDITION IN ORDER TO BE ABLE TO APPLY EROSION CONTROL MULCHES, HYDROMULCHES AND BLANKETS.

THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. THIS DRAWING IS NOT TO BE REPRODUCED OR USED FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC & FORBIDDEN.

Plot Date: 05/24/2017 - 2:26pm  
Drawing Name: V:\19380\active\193803789\CAD\dwg\SHEETS\LIONS TAP\193803789\_C202-Ltap.dwg  
Xref(s): 193803789\_BFD1-Ltap



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.  
PRINT NAME: RODGERLL HUMPHREY  
SIGNATURE: \_\_\_\_\_  
DATE: \_\_\_\_\_ UC. NO. 25017

LIONS TAP  
EDEN PRAIRIE, MN  
STORMWATER POLLUTION PREVENTION PLAN

NO	REVISION	DATE
	WATERSHED SUBMITTAL	4-26-17
	WATERSHED SUBMITTAL	5-24-17

SURVEY	STANTEC
DRAWN	RTM
DESIGNED	
CHECKED	RLH
APPROVED	RLH
PROJ. NO.	193803789

SHEET NUMBER  
**C2.03**













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To: Terry Jeffery  
 RPBCWD  
 File: 193803789

From: Peter Allen  
 Stantec  
 Date: May 30, 2017

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**Reference: Variance Request – Lions Tap – Permit #2017-031**

The following is a summary of the variance request per Rule K of the RPBCWD Rules for the rate control analysis related to the 10-day snowmelt event. The table below summarizes the rate control analysis for the 10-day snowmelt event. The current design does not meet the RPBCWD Rule J requirements at Outfall 2.

**10-Day Snowmelt Rate Control Summary**

Condition	Outfall 1		Outfall 2		Total	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10-day snowmelt	0.5	0.01	0.6	1.0	1.1	1.01

**Explanation of Design Goals**

The routing of stormwater runoff was modified from existing conditions on site. Under existing conditions, 0.87 acres are routed to Outfall 1 and 1.35 acres are routed to Outfall 2. The proposed conditions routes 0.07 acres to Outfall 1 and 2.15 acres to Outfall 2. This change in the route was a result of on-site soil and groundwater conditions in relation to the infiltration capacity. A goal of the stormwater design was to use the minimum number of BMP's as one larger BMP is generally more efficient than multiple smaller BMPs. The location of the underground infiltration facility was selected due to its location near the low point in the site as well as its proximity to granular soil for infiltration.

**Runoff Routing**

Runoff from Outfall 1 is routed into the Hennepin County CSAH 61 storm sewer system at CSAH 61 CB 113, which flows east through approximately 500 feet of sewer before it reaches CSAH 61 CB 271. CB 271 is where the underground infiltration system discharges off-site and where Outfall 2 is located. Flows from the site combine at CB 271 and flow east, across Spring Road to the County's stormwater BMP.

It is noted that the RPBCWDs rules for rate control state that the design must meet the rate control requirements at each discharge point. The current design meets this requirement for each storm event at each outfall, except during the 10-day snowmelt at Outfall 2. As explained above, flows from Outfall 1 and Outfall 2 combine at CB 271, prior to discharging to another stormwater BMP or surface water. As summarized in the above table, the peak rate at this point has been reduce by

**Design with community in mind**

**Reference: Variance Request – Lions Tap – Permit #2017-031**

approximately 0.1 cfs over existing conditions, which shows that peak rates will not adversely affect downstream conditions when compared to existing conditions.

**Constraints Unique to Site**

- CSAH 61 Right-of-Way: There is little space between the existing building and the CSAH 61 Right-of-Way, that provides few options for installing BMPs at this Outfall location. Also, any small surface BMP that provided storage would likely be out of compliance with the freeboard requirement of the 100-yr HWL being within 2 feet of the low floor elevation of the building.
- Off-site drainage: The off-site drainage that flow onto the site from upstream accounts for 3.33 acres of drainage area, which is approximately 1.1 acres more than the entirety of the on-site drainage area. Under existing conditions, the off-site drainage areas divided in to two areas, one drains to Outfall 1 and the other drains to Outfall 2. As a result, to meet the goals of the site stormwater BMP design, the entire 3.33 acres of off-site drainage area is routed to Outfall 2 in proposed conditions. A scenario was analyzed that excluded the off-site drainage areas from the HydroCAD model to quantify only the on-site flows. Without modifying anything else in the design or model, the 10-day snowmelt event resulted in peak rates of 0.3 cfs at Outfall 2 for both the existing and proposed conditions. While this result cannot be presented as the peak rate at Outfall 2 it serves as a data point

**Options Analysis**

In an effort to bring the design in to compliance with RPBCWD Rule J, three different analyses were conducted to determine the practicality of meeting the rate control requirement, (1) restrict the outflow from the underground infiltration system using a minimum orifice size (i.e. 6-inches); (2) determine the size (i.e. area) of the underground infiltration system needed to meet the rate control requirements, and (3) a combination of adding an orifice and increasing the size.

Analysis 1 – Restricting flow with an orifice

Restricting the flow with a 6-inch orifice decreases the 10-day snowmelt peak rate 0.9 cfs, a decrease of 0.1 cfs. This still does not meet the rate control requirement and it increases the clogging potential of the outlet structure. Additionally, because of the modification of the outlet structure and the need to include a weir wall, the peak rate of the 100-year storm event increases to 12.7 cfs, which is above the existing conditions rate of 12.4 cfs. This analysis also included raising the outlet elevation by 0.46 feet to maximize the infiltration volume.

Analysis 2 – Increase of underground infiltration system size

To meet the rate control requirement, the underground infiltration system will need to be increased in size by approximately 2.6 times the current design area. The current design will be approximately 5,215 square feet, while the required area is 13,335 square feet. An increase of this size is not practical at the site due to soil and groundwater constraints. The location of the current system, in the southeast corner of the site, is the only area where groundwater is low enough to install an underground system. This analysis also included raising the outlet elevation by 0.46 feet to maximize the infiltration volume.

**Design with community in mind**

**Reference: Variance Request – Lions Tap – Permit #2017-031**

Analysis 3 – Combination of adding orifice and increasing system size

Consideration was also made for a combination of adding a 6-inch orifice and increasing the size of the underground infiltration system. It was determined that the size of the infiltration system would need to be increased by 2.4 times the current design to approximately 12,320 square feet. As discussed above, and increase of this size is not feasibility for the site due to soil and groundwater limitations. This analysis also included raising the outlet elevation by 0.46 feet to maximize the infiltration volume.

Conclusion

Based on the above analysis it is requested that the design be approved as submitted. It is not anticipated that this increase in discharge rate during the 10-day snowmelt will adversely affect flooding levels since the current design decreases the outflow volume from the site as well as the site's proximity to a large surface water, the Minnesota River. Adding 6-inch orifice or increasing the size the underground facility does not seem to be practical modifications to the design based on the analysis above and site constraints. Also, raising the outlet elevation of the current design did not have an impact on peak discharge rates. In conclusion, when looking at the two outfalls of the site as one outfall since they are tied into the same system, they will have a net reduction in rates compared to existing conditions.

Please feel free to contact me with any questions.

**STANTEC CONSULTING SERVICES INC.**



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Attachment: HydroCAD print outs

- c. Scott Sobiech, RPBCWD
- Roger Humphrey, Stantec
- Dave Ahrens, Stantec

## 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 – Bidding Recommendation  
**Date:** 05/31/2017  
**Project:** 23/27-0053.14 019  
**c:** Claire Bleser – RPBCWD Administrator

At the April 2017 meeting, the RPBCWD Managers authorized Barr Engineering Co. to solicit of bids for the construction of the stormwater reuse system at Chanhassen High School. Project bidding began May 1, 2017 and bid opening was held on May 22, 2017. Three (3) bids were received and included the following contractors:

Contractor Name	Bid Price \$
Magney Construction	\$317,500
Municipal Builders Inc	\$328,000
Peterson Companies	\$301,293

The Engineer's Estimate for the project was \$190,000 (ranging from \$181,000 - \$210,000), with bids exceeding the Engineer's Estimate by \$100,000+. Follow-up with contractors revealed several items led to the higher than expected bid pricing including tight construction timeline, increased contractor mark-up on equipment, and equipment procurement window required to meet the proposed construction schedule.

The bid prices were reviewed and discussed with all project stakeholders including RPBCWD, city of Chanhassen, and ISD 112 staff. ISD 112 indicated a similar experience with recent bidding for a sports dome and swimming pool project where the bids received were significantly higher than engineer's estimates. All project stakeholders are still committed to implementing the project if lower bids can be obtained. Because the Met Council grant funding is available for use through December 31, 2018, we recommend that the RPBCWD managers re-bid the project in the winter 2017-2018 to provide an adequate timeline for contracting, submittal review, equipment procurement, and construction from mid-June to mid-August 2018 (as requested by the ISD 112).

If the Board of Managers authorizes re-bidding of the stormwater reuse system at Chanhassen High School, the following is the tentative schedule for the project.

- Advertisement to bid submitted(January 2018)

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**Page:** 2

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- Bid package final/bidding begins (January 2018)
- Bid opening (February 2018)
- Bidder recommendation to RPBCWD Managers for consideration at March 2018 meeting
- Notice of Award (March 2018)
- Notice to Proceed (Late March 2018)
- Construction (mid-June to mid-August)

Prior to re-bidding additional discussions with potential contractors could yield some value engineering ideas to potentially lower the anticipated project cost. Re-bidding the project will result in extra work/effort related to the value engineering, revisions to the bid package, and the bidding process. However, if the Managers move forward with the Lake Susan Park Pond reuse project, some project efficiencies can be gained if the Chanhassen High School stormwater reuse project and Lake Susan Park Pond reuse project are bid together.