RILEY-PURGATORY-BLUFF CREEK WATERSHED DISTRICT

2014 ANNUAL REPORT

Prepared and submitted by:

Riley-Purgatory-Bluff Creek Watershed District

14500 Martin Drive

Eden Prairie, MN 55344

(952) 607-6512

Table of Contents

CONTACTS

RILEY-PURGATORY-BLUFF CREEK BOARD OF MANAGERS

President
John Perry Forster (Hennepin 7/31/17)
9505 Highview Drive
Eden Prairie, MN 55347
Home: (952)-934-1525
Cell: (952) 334-0938
Email: pforster@rpbcwd.org

Vice President
Mary Bisek (Hennepin 7/31/17)
4700 Sparrow Road
Minnetonka, MN 55345
Home: (952) 474-9542
Email: mbisek@rpbcwd.org

Secretary
Kenneth Wencl (Carver 7/31/15)
8412 Waters Edge Drive
Chanhassen, MN 55317
Home: (952) 906-2181
Email: kwencl@rpbcwd.org

Treasurer
Jill Crafton (Hennepin 7/31/15)
10351 Decatur Avenue South
Bloomington, MN 55438
Work: (612) 349-8255
Home: (952) 944-5583
Email: jcrafton@rpbcwd.org

Manager
Leslie Yetka (Hennepin 7/31/16)
17452 Hampton Court
Minnetonka, MN 55345
Home: (952) 933-328
Email: lyetka@rpbcwd.org

CITIZEN ADVISORY COMMITTEE MEMBERS

Name	Residence	Mailing address
Jim Boettcher	Chanhassen	7476 Crocus Court Chanhassen, MN 55317
Sharon McCotter	Chanhassen	7000 Utica Lane Chanhassen, MN 55317
Laurie Susla	Chanhassen	7008 Dakota Avenue, Chanhassen, MN, 55317
Bob Shurson	Eden Prairie	7821 Bailey Drive Eden Prairie, MN 55347
Larry Koch	Chanhassen	471 Bighorn Drive Chanhassen, MN 55317
Peter Iversen	Eden Prairie	8002 Island Rd Eden Prairie, MN 55347
Matt Lindon	Eden Prairie	9026 Belvedere Drive Eden Prairie, MN 55347
Laurie Hable	Eden Prairie	9501 Highview Drive Eden Prairie, MN 55347
Paul Bulger	Eden Prairie	15807 South Lund Road Eden Prairie, MN 55346
Mark Weber	Eden Prairie	14940 Ironwood Court Eden Prairie, MN 55346
Dorothy Pedersen	Shorewood	6155 Ridge Rd Shorewood, MN 55331
Bill Coppage	Bloomington	9515 Woodbridge Road Bloomington, MN 55438
David Raby	Eden Prairie	10006 Indigo Dr Eden Prairie, MN 55347
Bob Adomaitis	Eden Prairie	9503 Highview Drive Eden Prairie, MN 55347

TECHNICAL ADVISORY COMMITTEE MEMBERS

Name and Office	Organization	Mailing address
Rod Rue City Engineer	City of Eden Prairie	8080 Mitchell Road Eden Prairie, MN 55344 (952) 949-8420
Leslie Stovring Water Resources Coordinator	City of Eden Prairie	8080 Mitchell Road Eden Prairie, MN 55344 (952) 949-8327
Shelly Pederson City Engineer	City of Bloomington	1700 West 98th Street Bloomington, MN 55431 (952) 563-4870
Steve Segar Water Resources Engineer	City of Bloomington	1700 West 98th Street Bloomington, MN 55431 (952) 563-4867
Lee Gustafson Director of Engineering	City of Minnetonka	14600 Minnetonka Boulevard Minnetonka, MN 55343 (952) 939-8239
Liz Stout Water Resources Engineer	City of Minnetonka	14600 Minnetonka Boulevard Minnetonka, MN 55343 (952) 939-8233
Robert Bean Jr. Water Resources Engineer	City of Deephaven (Bolton & Menk, Inc.)	2638 Shadow Lane, Suite 200 Chaska, MN 55318 (952) 448-8838 x2607
Larry Brown Public Works Director	City of Shorewood	5755 Country Club Road Shorewood, MN 55331 (952) 474-3236
Bill Joynes City Administrator	City of Shorewood	5755 Country Club Road Shorewood, MN 55331
Paul Oehme City Engineer/Director of Public Works	City of Chanhassen	7700 Market Boulevard P.O. Box 147 Chanhassen, MN 55317 (952) 227-1169
Matt Lindon Citizen Advisor	Citizen Advisory Committee	9026 Belvedere Drive Eden Prairie, MN 55347
Terry Jeffery Water Resource Coordinator	City of Chanhassen	7700 Market Boulevard P.O. Box 147 Chanhassen, MN 55317 (952) 227-1168

EMPLOYEES AND CONSULTANTS

The Riley-Purgatory-Bluff Creek Watershed District (District) employs three full-time employees. The administrator oversees daily operations of the District and represents the District on numerous state-wide committees. A Water Quality & Outreach Coordinator, and a District Technician & Compliance Officer were hired in spring of 2014. The District retains the services of an engineering consultant, a legal advisor and an accountant to assist with District activities. The District contracts with another accounting firm to perform its annual financial audit.

Administrator
Claire Bleser
14500 Martin Drive Suite 1500
Eden Prairie, MN 55344
Telephone: (952) 607-6512
Email: cbleser@rpbcwd.org

District Technician II
Josh Maxwell
14500 Martin Drive Suite 1500
Eden Prairie, MN 55344
Telephone: (952) 607-6486
Email: jmaxwell@rpbcwd.org

Water Quality and Outreach Coordinator
Michelle Jordan
14500 Martin Drive Suite 1500
Eden Prairie, MN 55344
Telephone: (952) 607-6481
Email: mjordan@rpbcwd.org

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

Engineer
Scott Sobiech
BARR Engineering Co
4700 W 77th St # 200
Edina, MN 55435
Telephone: (952) 832-2755
Facsimile: (952) 832-2601
Email: ssobiech@barr.com

Accountant
Dan Cavanaugh
Cavanaugh & Associates, P.A.
1660 South Hwy 100, #500
St. Louis Park, MN 55416
Telephone: (952) 697-3577
Facsimile: (952) 697-3566
Email: accountant@rileywd.org

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

INTRODUCTION

The Riley-Purgatory-Bluff Creek Watershed District was established on July 31, 1969, by the Minnesota Water Resources Board acting under the authority of the Watershed Law. The District is located in the southwestern portion of the Twin Cities metropolitan area consisting of a largely developed urban landscape, and encompassing portions of Bloomington, Chanhassen, Chaska, Deephaven, Eden Prairie, Minnetonka and Shorewood (Figure 1). It is an area close to 50 square miles and includes three watersheds: Riley Creek, Purgatory Creek and Bluff Creek Watershed. Approximately 32.8 square miles of the District lies within Hennepin County and 14.5 square miles lies within Carver County. Four Managers are appointed by the Hennepin County Commissioners and one Manager is appointed by the Carver County Commissioners. Each of the District's five Managers serves a three-year term.

Pursuant to Minnesota Statutes Section §103D.351 and Minnesota Rules §8410.0150, the Board of Managers has prepared this Annual Report of the Riley-Purgatory-Bluff Creek Watershed District's financial status, its yearly activities, its 2014 permitting and enforcement, and its 2014 goal and objectives. The Managers invite comments and suggestions concerning this report. The 2014 Annual Report is available on the Riley-Purgatory-Bluff Creek Watershed District website – www.rpbcwd.org. Copies are also available by contacting Claire Bleser, District Administrator, Riley-Purgatory-Bluff Creek Watershed District, 14500 Martin Drive, suite 1500, Eden Prairie, MN 55344, (952) 607-6512.

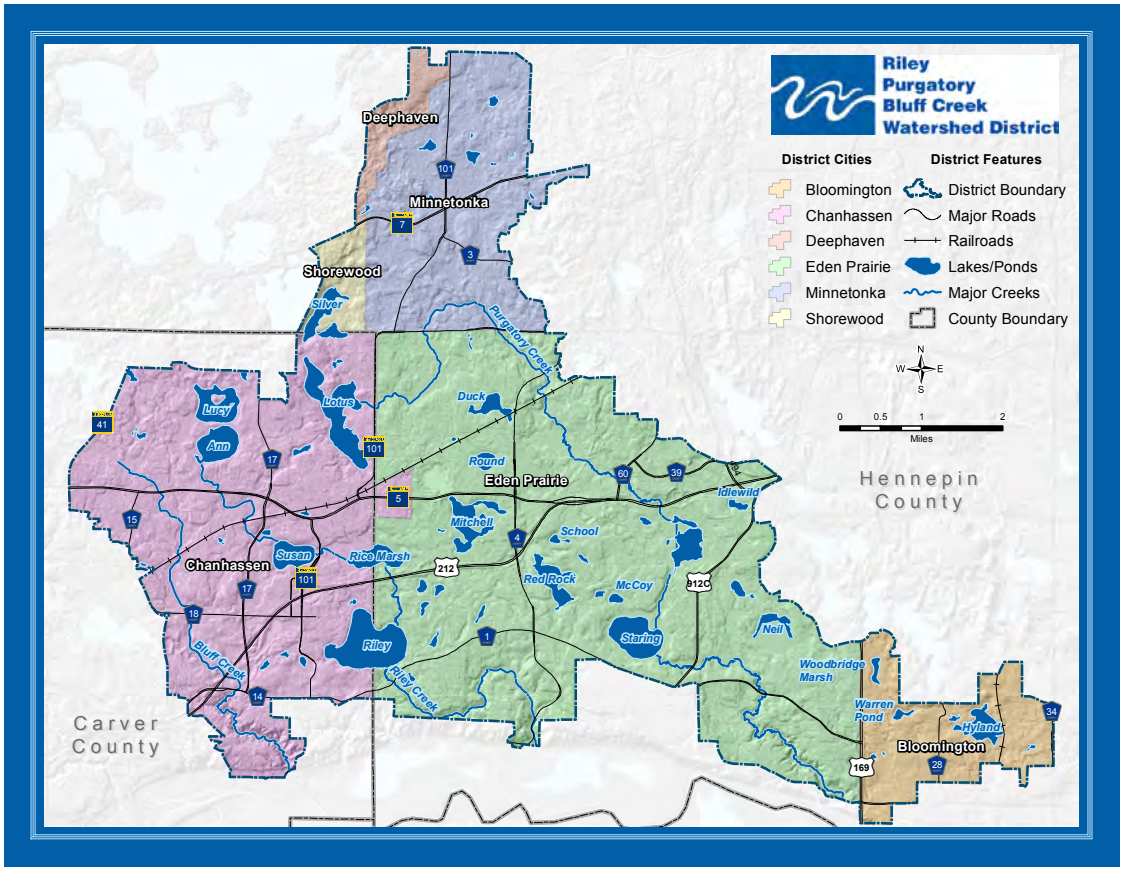


Figure 1. Map of the Riley-Purgatory-Bluff Creek Watershed District

2014 HIGHLIGHTS

2014 was a very active year for the Riley-Purgatory-Bluff Creek Watershed District (District). The District hired two full-time employees to run its monitoring program and developed a broad outreach program. The Board of Managers adopted new rules and moved to new offices. The District also was awarded three Department of Natural Resources grants (two for curlyleaf pondweed management, one for invasive species inspections) as well as a Clean Water Legacy grant for the Bluff Creek fish passage and stabilization project. In 2014, the District finalized carp management in the Riley Creek Chain of Lakes. This project was part of a multiple-year grant with the University of Minnesota.

Other 2014 highlights include:

- Continued work with the University of Minnesota in Purgatory Creek Chain of Lakes to reduce carp impacts and restore a healthy ecosystem
- Engaged residents at the 1st Shallow Lakes Forum
- Released Lake Water Quality Fact Sheets reflecting historical monitoring data
- Held four continuing education workshops for professionals
- Engaged residents in the development of lake vegetation management plans
- Developed the Aquatic Invasive Species Junior Inspector Program

2014 Work Plan with Goals and Objectives

The 2014 overall goal for the District was to re-establish itself as a permitting authority, develop plans and implement practices to improve water resources consistent with its 10-year plan. Specific goals on both the District-wide scale, and individual watershed scale are as follows:

District-wide

Watershed District Rules and Regulatory Program

The District continued working with the Technical Advisory Committee as well as the Citizen Advisory Committee to develop rules that would help protect our water resources. The District adopted the new rules in November 2014, with an effective date of January 1, 2015.

Aquatic Invasive Species

The District continued to support the City of Eden Prairie and the City of Chanhassen in their efforts to inspect boats to prevent the spread of aquatic invasive species. Additionally, the District was awarded a grant for cost-share funding of DNR inspectors to inspect boats on Lotus Lake. The District coordinated efforts with the City of Chanhassen as to avoid duplication efforts. The District was part of the West Metro Aquatic Invasive Species Work Group. In addition, the District increased awareness of AIS through its Education and Outreach Program. The District developed an Aquatic Invasive Species Junior Inspector Program which was embraced by the Wisconsin Department of Natural Resources.

Citizen Advisory Committee

The Riley-Purgatory-Bluff Creek Watershed District has an active Citizen Advisory Committee (CAC). In 2014, the District welcomed three new applicants bringing the CAC to 10 members. The CAC was involved in our rulemaking and the cost-share program, and have shared other concerns with the District.

Cost-Share Program

The District again had a cost-share program this year. The program has three tiers: 1) residential, 2) non-profit organization, 3) commercial and public entities. In addition, the District worked with Carver County Soil and Water Conservation District to target non-profit organizations as well the residents in the Duck Lake subwatershed. In 2013, the District was awarded a Community Partners Grant for the Clean Water Legacy funds and still has funds available for non-profits to apply.

Education and Outreach

In 2014, the District participated in several local community and environment fairs. These included the Bloomington's home improvement fair, the Everything Spring Expo in Eden Prairie and the Native Plant Market in Minnetonka. The District sought opportunities to partner with local groups and give presentations about our water resources and water quality in the Riley-Purgatory-Bluff Creek Watershed District.

Professional Training

The District hosted turf and road salt management workshops in 2014.

Project Wet

The District partnered again with the Nine Mile Creek Watershed District to offer Project Water Education for Teachers workshops.

Community Education

The District, with other local partners developed a half-day Shallow Lake Forum to raise awareness on the complex nature of shallow lakes. Close to 100 participants took part in the forum.

Website

The District continued working on its new website.

Blue Thumb
In 2014, the District was again a Blue Thumb Partner. The partnership helped provide education and outreach programs to the citizens of the Riley-Purgatory-Bluff Creek Watershed District.

NEMO (Non-Point source Education for Municipal Officials)
The Riley-Purgatory-Bluff Creek Watershed District is a sponsor of the NEMO program. In 2014, the District took part in a year-long regional effort to educate city officials and staff on the importance of protecting, restoring water quality as it impacts quality of life in the community. Four workshops were held throughout the year.

Evening with the Watershed
Twice a year, the District holds the Evening with the Watershed event. The events included 3 seminar presentations each that focused on water resources. City staff and officials that work within the boundaries of the District were also invited to these events. These events mix fun with education and provide the citizens of the District another means of interacting. The events were held at the Chanhassen American Legion in April and December.

Technical Advisory Committee
The District continued working with its Technical Advisory Committee coordinating plans, budgets and resources. Furthermore, the District continues working with its TAC during the District's rulemaking program for recommendations.

Individual Watersheds

Bluff Creek One Water
The Board and the City of Chanhassen identified a site along the creek that needed restoration. The site is located south of the Southwest Regional LRT Trail. The site requires a culvert repair and the stream bank needs to be restored. The District applied for a Clean Water Fund grant in 2013 and was awarded the grant in 2014. The project is a partnership with the City of Chanhassen, Lower Minnesota River Watershed District and the Hennepin County Regional Railroad Authority. The District will be implementing the project in 2015.

Riley Creek One Water
UAA Updates and Management Plans
In partnership with the City of Chanhassen, the District funded the Lake Lucy/Ann and Lake Susan Use Attainability Analyses in 2013. Both studies included recommendations of Best Management Practices (BMP) to help improve the health of these waters. The District levied funds in 2014 to begin the implementation of these projects. The District performed a feasibility analysis for a spent lime treatment near Lake Lucy and explored the construction of a bioreactor on the southwest drainage to Lake Susan. The spent lime treatment is located on the right of way of two private properties. The District is working with residents to design a spent lime treatment that is not invasive and would blend more with their landscape. In regards to the Lake Susan project, it was determined that the bioreactor on Lake Susan would disturb a large area of woodland type terrain and that instead a spent lime treatment would be more suited. Both of these practices would reduce the amount of phosphorus to these water bodies. The District will be implementing these projects in 2015.

Curly-leaf Pondweed Harvesting
The District worked with the Lake Susan and the Lake Riley Lake Associations to pass Lake Vegetation Management Plans in 2013 and implement lake-wide early season herbicide treatment in 2013. The District continued treating both of these water bodies in 2014. The herbicide treatment is an early effort to keep curly-leaf pondweed in check and help native plant populations prosper.

Lake Lucy Plant Management Plan

In 2014, the City of Chanhassen and the District partnered to develop a Plant Management Plan for Lake Lucy. Lake Lucy has curlyleaf pondweed which is known to deteriorate lake water quality when abundant. The process was almost a year-long effort for which the District reached out to Lake Lucy stakeholders. The board will be taking next steps in 2015.

Biological Restoration
The District with the U of M Team have continued to work on restoring the plant and fish ecosystem in the Riley Creek chain of lakes. The University of Minnesota finalized the Riley Creek Carp Management Plan. The District has actively been managing the carp population to improve water quality in the chain of lakes in the Riley Creek subwatershed.

Rice Marsh Lake Paleolimnology
In spring of 2014, through a partnership with the St. Croix Watershed Research Station, a sediment core was collected from Rice Marsh Lake. The core was analyzed to reconstruct the phosphorus and sedimentation history of the lake. The results of the study suggest that Rice Marsh Lake can be managed to meet MPCA shallow lake standards. Historical reconstruction clearly showed an increase in sediment and nutrient loads after the construction of wastewater treatment plant (that discharged into the lake) in 1959. Since the plant was decommissioned in 1972, water quality has improved.

PURGATORY CREEK ONE WATER

Purgatory Creek Hydrology and Hydraulic Model
In 2013, the District completed its preliminary hydrology and hydraulic model for Purgatory Creek. However, in 2014, our new engineer reviewed the model and found flaws which made the model unusable for District purposes. Thus, the District directed BARR to review and finalized the Purgatory Creek model and delay working on Bluff and Riley Creek models for 2015.

Red Rock Lake and Mitchell Lake Harvesting
In partnership with the City of Eden Prairie, the District will continued curlyleaf pondweed harvesting in Red Rock Lake and Mitchell Lake. The aim of this project was to control the spread of non-native curly-leaf pondweed. In addition, the District will be partnering with the city in the development of plant management plans involving stakeholders for both Red Rock and Mitchell Lakes.

Delisting Red Rock Lake
In 2013, the District initiated the delisting of Red Rock Lake as it has met water quality standards for the past few years. The District has provided additional requested information to the Minnesota Pollution Control Agency for the delisting process. The Minnesota Pollution Control Agency is expected to make its decision in 2015.

Biological Restoration
The District with the U of M Team will continue to work on managing the carp population in Staring Lake.

ANNUAL COMMUNICATION TO THE PUBLIC

As required by Minnesota Rule §8410.0100, subp4, the District prepared and disseminated its annual communication. This year's Annual Communication was a 4-page newsletter. Copies of the written communication are included in Appendix A.

PERMITTING ACTIVITIES

In 2008, the District deferred permitting to the cities that are within the District. The District did not hold permitting authority in 2014 but worked to reinstate its permitting

authority and developed rules that were adopted unanimously in November 2014 to be implemented January 1, 2015.

SUMMARY OF WATER QUALITY MONITORING DATA

The District continues to monitor the lakes and creeks in the District. Please read appendix B for the District's 2014 Lakes and Creeks Data Report. The District updated, as part of the report, Lake & Creek Water Quality Fact Sheets to help residents understand how healthy our water bodies and what actions the District has taken to improve our water bodies.

STATUS OF LOCAL PLAN ADOPTION AND IMPLEMENTATION

The District was not asked to act upon any local water management plan approvals.

FINANCIAL STATUS

The District's fund balances and financial status are included in the District's Annual Audit. The Annual Audit is included as Appendix D to this report. The District's audited financial report was prepared by Redpath and Company, a certified public accounting firm. As required by Minnesota Rules §8410.0150, subp. 2, the Audited Financial Report includes classification and reporting of revenues and expenditures, a balance sheet, an analysis of changes in final balances, and all additional statements necessary for full financial disclosures. The 2014 Audited Financial Report may be found in Appendix D.

BIENNIAL SOLICITATION OF INTEREST PROPOSALS

Under Minnesota Statutes §103B.227, subd 5, the District must issue a biennial solicitation for legal, technical, and other professional services. The District will issue a formal solicitation for accounting, engineering, and legal service in 2015. The District retained Cavanaugh and Associates as its accountant and Smith Partners, PLLP as its legal counsel. BARR Engineering was selected as District Engineer in June 2013. Redpath and Company conducted the District's annual financial audit.

2014 ANNUAL BUDGET

The District adopted its 2014 Annual Budget in September 2013. The 2014 Budget can be found in Appendix C of this Annual Report.

2015 GOALS AND OBJECTIVES

The 2015 overall goal for the District is to implement projects to improve water resources consistent with its 10-year plan and at the same time prioritize creek restoration strategies. The District will also run a dynamic monitoring program that will help guide managers in their decision-making. Specific objectives for 2015 are as follows:

District-wide

IMPLEMENT WATERSHED DISTRICT RULES AND REGULATORY PROGRAM

In 2015, the District will have reinstated its permitting authority. It will work with agencies and other local government units to make this transition as smooth as possible. In addition, the District will develop a user-friendly web guide that will help potential permittees understand what rules might apply to them, and what exhibits are required. At the same time, the District will be developing a permit database linked to our inspection program.

AQUATIC INVASIVE SPECIES

The District will continue to support the City of Eden Prairie and the City of Chanhassen in their efforts to inspect boats to prevent the spread of aquatic invasive species (AIS). In addition, the District will be revising all of its monitoring protocols to minimize spread of AIS. Furthermore, in 2014, the District acquired a pick-up truck that it will retrofit with a portable decontamination unit. The decontamination unit will be used for the District's monitoring program and also as an education tool to encourage boaters to follow best practices in helping reduce the spread of AIS. The District will also continue to develop communications in regards to AIS through their education and outreach programs.

CITIZEN ADVISORY COMMITTEE

The Riley-Purgatory-Bluff Creek Watershed District has an active Citizen Advisory Committee (CAC). In 2015, the District will welcome both returning and new members. In addition, the District will host a board-CAC workshop at the start of the year. The board has directed the CAC to provide feedback in regards to the District's 2015 Aquatic Invasive Species Goals and Strategies as well as wanting input for the Creek Restoration Action Strategies study. We look forward to working with the CAC in 2015.

CREEK RESTORATION ACTION STRATEGIES

The District will be developing a prioritization scheme to determine which stretches of the creek should first be considered for restoration and stabilization projects. The study will utilize a combination of creek visits, existing data review, and stakeholder input to rank sections of all three creeks.

COST-SHARE PROGRAM

The District developed and implemented its first cost-share program in 2013. The program has three tiers: 1) residential, 2) non-profit organization, 3) commercial and public entities. The aim of the program is to implement best management practices that would improve water resources. In addition, we were awarded Clean Water Legacy funds for community partners grants. The grant expires this year.

GRANTS

The District has applied for grants in 2014 from Clean Water Legacy Funds and will know if they have been awarded in 2015. The District will also seek grants in 2015 for herbicide applications and look for other opportunities.

Hydraulics and Hydrology Model

In 2015, the District will be updating the Bluff and Riley Creek Hydraulics and Hydrology Models. The models provide valuable information in regards to floodplains, flood control and water quality to name a few. These are important also as it can help define the types of projects that can be implemented in the watershed.

Technical Advisory Committee

The District will continue to work with its Technical Advisory Committee coordinating plans, budget and resources. Furthermore, the District will work with its TAC to engage them with our Creek Restoration Action Strategies study as well as with the refreshing of our 10 year plan.

Education and Outreach

In 2015, the District will be participating in local community and environment fairs. These will include the Everything Spring Expo in Eden Prairie and the Native Plant Market in Minnetonka. The District also will seek opportunities to partner with local groups and give presentations about our water resources and water quality in the Riley-Purgatory-Bluff Creek Watershed District.

Professional Training

In collaboration with the Nine Mile Creek Watershed District, the Riley-Purgatory-Bluff Creek Watershed District will be planning to develop a turf/landscape mini-workshop for seasonal municipal employees that could also be used for seasonal private entities. This would train temporary employees on the importance of implementing Best Management Practices and the significant benefits and outcomes for our water resources. In addition, the District will be hosting turf and winter maintenance workshops.

Project Wet/ Project Learning Tree

The District will partner again with the Nine Mile Creek Watershed District to offer a Project Water Education for Teachers workshop. However, the workshop will differ from past years as it will focus on teachers teaching in Spanish immersion programs.

NEMO (Non-Point source Education for Municipal Officials)

The Riley-Purgatory-Bluff Creek Watershed District is a sponsor for the NEMO program. In 2015, the District will continue to build on the 2014 workshops.

Evening with the Watershed

Twice a year, the District holds a public "Evening with the Watershed" event. The Evening with the Watershed mixes fun with education and provides the citizens of the District another means of interacting. The District plans on having two events again in 2015.

Individual Watersheds

Bluff Creek One Water

The District will be working with the City of Chanhassen, Lower Minnesota River Watershed District and the Hennepin County Railroad authority to stabilize streambanks and implement a fish passage at Bluff Creek south of the regional trail and west of County 101. The District was awarded a Clean Water Fund grant in 2014. The District plans on implementing this project in 2015.

Riley Creek One Water

Use Attainability Analysis Updates and Management Plans

In partnership with the City of Chanhassen, the District solicited bids to update the Lake Lucy/Ann and Lake Susan Use Attainability Analyses (UAA) and develop a lake management plan to meet water quality standards. Both studies were completed in July. The District levied funds for 2014 to implement projects based on recommendations from both plans. In 2015, the District will again levy funds to implement projects identified in these UAAs.

Curlyleaf Pondweed and Eurasian Watermilfoil Control
The District worked with the Lake Susan and the Lake Riley Lake Associations to pass Lake Vegetation Management Plans in 2013 and implement lake-wide early season herbicide treatments. The herbicide treatments were an early effort to keep curlyleaf pondweed in check and help native plant population prosper. In 2015, the University of Minnesota recommended not to conduct a curlyleaf pondweed treatment on Lake Susan as the 2013 and 2014 treatment were effective. However, the University of Minnesota has recommended that the District continue curlyleaf pondweed treatment on Lake Riley as well as a treatment targeting Eurasian watermilfoil treatment followed with an Alum treatment. The District will be looking at the possibility of all three of these elements in 2015.

Alum Treatment on Lake Riley
The District will be looking at the possibility of implementing an Alum treatment on Lake Riley.

Biological Restoration
The District with the U of M Newman laboratory will continue to work on evaluating restoration strategies in Lake Susan, and Lake Riley.

PURGATORY CREEK ONE WATER

Purgatory Creek Hydrology and Hydraulic Model
In 2015, the District will be reviewing flood profiles in the watershed using Atlas 14.

Red Rock Lake and Mitchell Lake Plant Management
In partnership with the City of Eden Prairie, the District will develop implementation strategies when the plant management plans are finalized.

Red Rock Delisting
The District put a forward a request to the Minnesota Pollution Control Agency to delist Red Rock Lake. We hope to hear from the MPCA in 2015 for the delisting status.

Biological Restoration
The District with the U of M Team will continue to work on restoring the plant and fish ecosystem in the Purgatory Creek chain of lakes.

APPENDIX

A - Annual Written Communication to the Public
B - Lakes and Streams Data Report
C - 2014 Annual Budget
D - Annual Audited Financial Report and Financial Report

APPENDIX A: ANNUAL WRITTEN COMMUNICATION TO THE PUBLIC

Annual Communication 2014

Riley Purgatory Bluff Creek Watershed District

together protect manage restore our water resources

Meet the Board of Managers, a group of five appointees who direct district activities.

Since the formation of the Riley Purgatory Bluff Creek Watershed District (RPBCWD) in 1969, a board of managers has guided actions to protect, manage, and restore water resources in this 50 square mile section of the southwest metropolitan area.

Throughout their three-year terms, the managers work in conjunction with state agencies in Carver and Hennepin Counties and cities within the district to implement the goals and policies of the Water Management Plan.

The RPBCWD Board of Managers meet the **first Wednesday** of each month, **7:00 pm** at the **district office**.

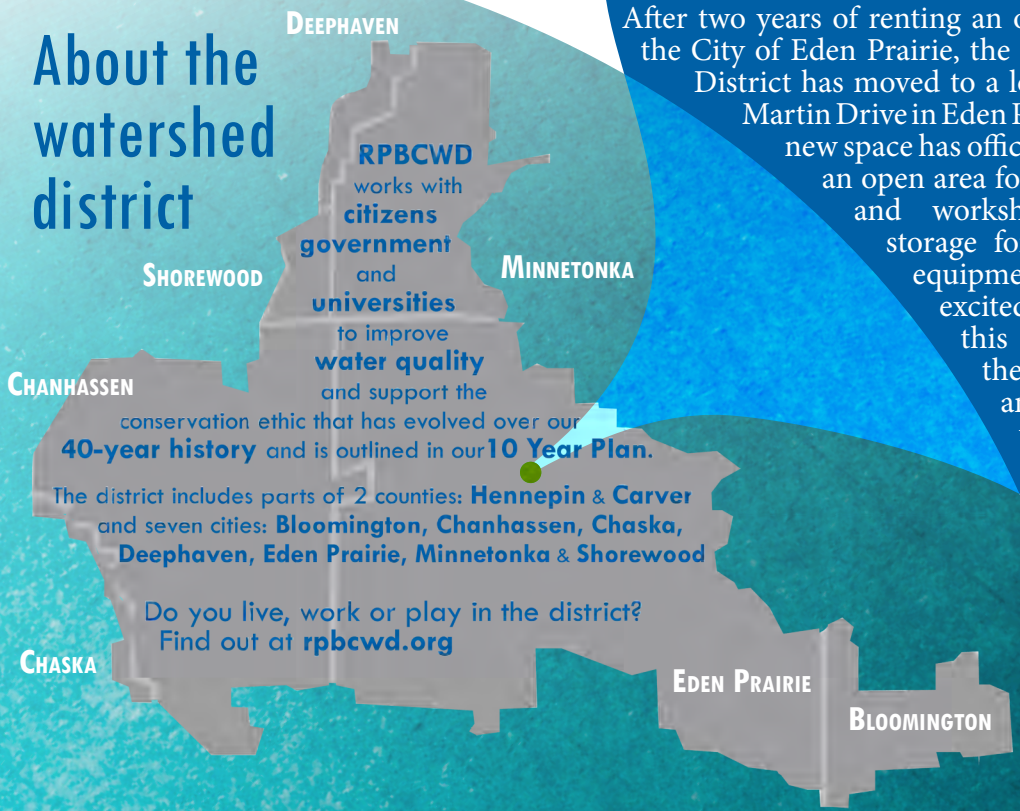
Leslie Yetka 2016 **Perry Forster** 2017 **Ken Wencl** 2015
Mary Bisek 2017 **Jill Crafton** 2015

We moved!

14500 Martin Drive, Suite 1500, Eden Prairie MN 55344

After two years of renting an office from the City of Eden Prairie, the Watershed District has moved to a location on Martin Drive in Eden Prairie. The new space has offices for staff, an open area for meetings and workshops, and storage for sampling equipment. We are excited to use this space to the fullest, and invite you to visit!

About the watershed district



RPBCWD works with **citizens** **government** and **universities** to improve **water quality** and support the conservation ethic that has evolved over our **40-year history** and is outlined in our **10 Year Plan.**

The district includes parts of 2 counties: **Hennepin** & **Carver** and seven cities: **Bloomington, Chanhassen, Chaska, Deephaven, Eden Prairie, Minnetonka** & **Shorewood**

Do you live, work or play in the district? Find out at **rpbcwd.org**

3 creeks 15 lakes wetlands ponds aquifers

rpbcwd.org

Meet the staff of the RPBCWD. The district has three full-time employees: an administrator, a water quality & outreach coordinator, and a district technician & compliance officer.

District Administrator
Claire Bleser 2012

Claire grew up in France, where she spent her vacations on archaeological digs with her mother and collecting water quality samples from the Seine River. Claire has been with the district since 2012. She previously served as the Education and Outreach Coordinator for the Nine Mile Creek Watershed District. She has taught at the University of Minnesota, worked for local government, and conducted international research. Claire holds bachelor's degrees in Integrated International Studies and International Economics, a master's from the University of Leeds in Middle East Studies with a focus on water conflicts, and a doctorate in Water Resources Science from the University of Minnesota. Claire is a chocoholic and loves spending time with her family.

Water Quality & Outreach Coordinator
Michelle Jordan new hire: May 2014

A native Minnesotan, Michelle's earliest memory is falling into the headwaters of the Mississippi on a family vacation. Her introduction to water management was an international environmental program focused on water issues in both the United States and Russia. She holds a bachelor's degree from UW-Madison where she double-majored in Zoology and Russian Language, and a dual master's degree from Oregon State University in Water Resources and Microbiology. Her thesis focused on links between altered flow-regimes and fish-parasite dynamics in the Klamath River, CA. Michelle is excited to be back in her home state and actively involved in water resources. When she's not turning over rocks in a creek, Michelle is likely to be found spending time with her family or swing dancing.

District Technician & Compliance Officer
Josh Maxwell new hire: May 2014

Josh grew up by Lake Minnie-Belle near Litchfield, MN. Growing up near a lake, Josh developed an early fascination with water resources. During high school, he volunteered on carp pheromone studies and with water quality monitoring for the University of Minnesota. Later, at UW-Stevens Point, he earned a bachelor's degree in Water Resources/Fisheries and Biology. In college he was a teaching assistant for the University's Summer Waters program, an intern for the Grand Marais fisheries office, and a research assistant on walleye fecundity. Most recently, Josh worked for the Illinois Natural History Survey on water quality monitoring, zooplankton and benthic invertebrate sampling, and sustainable fisheries projects. Josh is happy to be able to put these skills and experiences to work at the district.

Service learners are an important part of the RPBCWD team. Often university students, these volunteers learn valuable career skills while helping the district accomplish its goals.

Kirstin capturing the district

Nicole measuring temperature

Jasmine canoe sampling

Kari measuring stream flow

Caroline collecting water samples

Successful management of Riley Creek Watershed Carp

Through a six-year partnership with The University of Minnesota, carp populations in the Riley Creek Watershed have been managed. Carp are an invasive species that negatively impact water clarity and native fish and plant populations. Decreasing carp abundance can both improve lakes and creeks for recreation, and restore overall water quality. University researchers have also developed a management plan that will help the district continue to control carp. The plan includes yearly monitoring, and removal of adults in winter if numbers pass a set threshold. The university is currently conducting a similar project on the Purgatory Creek Watershed. For more information on this work, visit our website, **rpbcwd.org**

After a year and a half of development the watershed district adopted new rules on November 5, 2014

The rules are a watershed-wide regulatory structure that ensures a consistent level of resource protection across the watershed as required by the Metropolitan Surface Water Management Act. The District developed rules for: floodplain management and drainage alterations, erosion and sediment control, wetland and creek buffers, dredging and sediment removal, shoreline and streambank stabilization, waterbody crossings and structures, appropriation of public surface waters, appropriation of groundwater, and stormwater management. The process included multiple meetings with the District's Technical Advisory Committee and Citizen Advisory Committee, information sessions, a public comment period, and a public hearing. The district would like to thank all of the members who took part in the rule making process but also all members from the public who have taken part in the public comment period. The rules can be found under the permit tab on our website rpbcwd.org.

Have a rain garden or other stormwater project in mind?

The district's cost share program provides funding assistance of up to 75% [with a maximum award of $3,000 for single family homes and $20,000 for businesses, townhome associations and other types of property owners] for projects that help decrease stormwater runoff pollution. The raingarden above at Edendale Residence in Eden Prairie helps to capture 31 lbs of phosphorous each year and was funded by the district cost-share and through the Clean Water Land & Legacy Amendment. Cost shares will be available in 2015, deadline is April 10. Visit rpbcwd.org for applications and information.

The cost-share is made possible through one of the grants awarded to the district

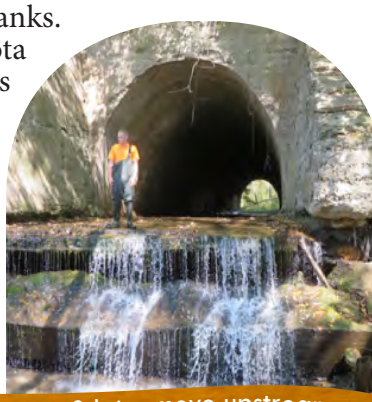
In 2014, the district was awarded 4 grants. A second Clean Water Land & Legacy grant [the first was received in 2013 for the cost-share program] was awarded for the Bluff Creek Fish Passage and Streambank Restoration Project. Bluff Creek is impaired for turbidity and fish. The passage will allow fish to access the upstream reach of Bluff Creek and stabilize the adjacent streambanks.

CLEAN WATER LAND & LEGACY AMENDMENT

The district also received 3 Minnesota Department of Natural Resources grants for aquatic invasive species projects. Two grants were for reduction of curly-leaf pondweed (an invasive plant that impacts water quality) in Lakes Riley and Susan. The third was for watercraft inspections on Lotus Lake.

Jayme measuring salt in lakes

Brett checking for erosion



A passage will allow fish to move upstream

The district in action in 2014

Check out some of the actions taken in 2014 to support the water quality goals in the Water Management Plan (10 Year Plan).

Riley Purgatory Bluff Creek Watershed District

Model hydraulics & hydrology

A hydraulics and hydrology model helps us to evaluate how the watershed will respond to varied precipitation patterns.

2014 The model for Purgatory Creek has been completed.
2015 The models for Bluff and Riley Creeks will be updated.

Develop rules

Rules are one tool for protecting, managing, and restoring our water resources.

Began to develop in 2013
Adopted rules November 2014

Reach out & educate

We can all be stewards of our resources. Education and outreach projects help to empower citizens of all backgrounds with the knowledge to protect our shared waters.

2014 programs: Water Education for Teachers training (Project WET), Shallow Lakes Forum, native plant seminars, Evening With the Watershed, family fishing event, ecofairs, best management practice (BMP) trainings for city staff, BMP trainings for contractors, rules informational sessions, service learning projects for college students, AIS Jr Inspector program, presentations at local schools.

Assess Resources

Assessing our water resources allows us to prioritize areas for restoration, and determine if management efforts are improving water quality.

Rice Marsh Lake (paleolimnology study); Lakes Lucy & Susan (before & after studies); water quality monitoring (lakes & creeks)

Manage invasives & promote natives

Invasive species can disrupt ecosystems and decrease the recreational quality of water bodies.

Carp Management: Riley Chain of Lakes, Purgatory Chain
Plants: Lakes Susan, Riley, Mitchell, Red Rock, Lucy, Hyland

Reduce phosphorus

Phosphorous is a nutrient that can cause problems (soupy green algal blooms) when concentrations are too high. Phosphorous comes from both external loads (outside of the lakes or creeks), or internal loads (resuspension from sediment).

External load projects: Lucy Susan; district cost share program - 3 raingardens & Chanhassen Lake Riley Improvement Project
Internal load projects: Rice Marsh Lake(aeration)

Restore waterbodies

Restoration projects are an important part of the districts mission to improve water quality.

Bluff Creek fish passage & streambank restoration project (to be completed 2015)
Purgatory Creek restoration project (to be completed 2015)
Cost Share Program - 3 shoreline buffer restorations

Collaborating with partners

The district is not alone in its mission to protect, manage, and restore water resources. Our many partner organizations are essential to achieving these water quality goals.

City of Bloomington Minnesota; Carver Soil & Water Conservation District; University of Minnesota; City of Shorewood; ThreeRivers Park District; City of Chanhassen; Chaska; Deephaven; Eden Prairie; City of minnetonka

APPENDIX B: LAKES AND CREEKS MONITORING REPORT

Lakes and Creeks

2014 Annual Report

Riley
Purgatory
Bluff Creek
Watershed District

Executive Summary

The Riley-Purgatory-Bluff Creek Watershed District had a successful water quality sampling season, completing a full year of sample collection and data analysis. This effort was made possible through multiple partnerships with municipalities and organizations based within the watershed. The results from the 2014 sampling effort are presented in this report.

Lake monitoring

During the 2014 monitoring season, fourteen lakes were monitored. A multi-probe sonde was used to measure water chemistry and a secchi disk to measure clarity. Water samples were collected for nutrient and chloride analysis (regular lake sampling). Figures EX 1-3 display 2014 growing season (May-September) averages for the monitored lakes in the district and the Minnesota Pollution Control Agency (MPCA) lake water quality standards for Chlorophyll-a, Total Phosphorus, and Secchi Disk Depth. These three standards are primary indicators of lake water quality and were measured on each lake approximately every two weeks throughout the growing season. In addition to regular lake sampling, the district monitored water levels of thirteen lakes using In-Situ Level Troll 500 sensors and three lakes were monitored for zooplankton.

The 2014 growing season chlorophyll-a mean for all lakes sampled within the District is shown in Figure EX-1. Four lakes sampled in 2014 within the District are categorized as 'deep' by the MPCA (>15 ft deep, < 80% littoral area): Lake Ann, Lotus Lake, Lake Riley, and Round Lake. The MPCA standard for Chlorophyll-a in deep lakes (< 14 ug/L) was met by Lake Ann and Round Lake, but levels were twice the standard in Lotus Lake and Lake Riley. The remainder of the lakes sampled in 2014 are categorized as 'shallow' by the MPCA (<15 ft deep, >80% littoral area): Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Staring Lake, Lake Susan and Silver Lake. The water quality standard for shallow lakes (< 20 ug/L) was met by Duck Lake, Lake Idlewild, Mitchell Lake, and Red Rock Lake in 2014. Lake Lucy and Rice Marsh Lake were only slightly above the standard while, Staring, Susan and Silver doubled the standard. Overall, six of the fourteen lakes in 2014 met the MPCA Chlorophyll-a standard for their lake classification: Lake Ann, Duck Lake, Lake Idlewild, Mitchell Lake, Red Rock Lake, and Round Lake.

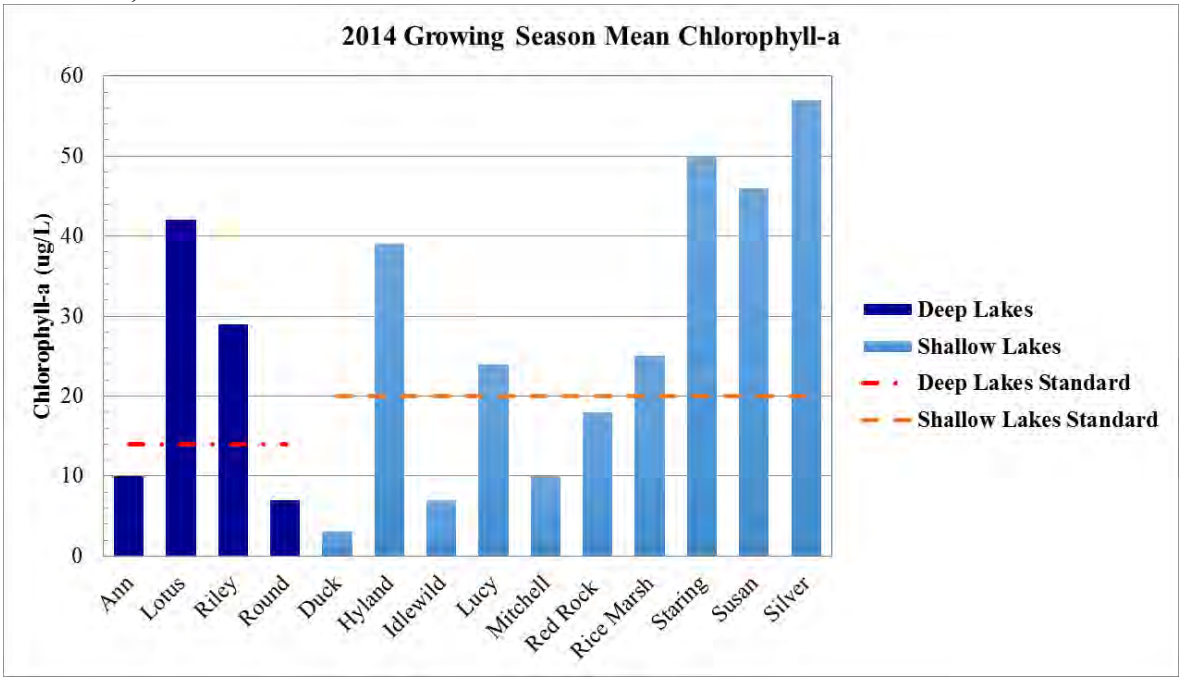


Figure EX-1. Growing Season (May-September) Mean Chlorophyll-a (mg/L) for shallow (lakes <15 ft. deep, >80% littoral area-light blue bars) and deep lakes (lakes >15 ft. deep, < 80% littoral area-dark blue bars) in the Riley Purgatory Bluff Creek Watershed District. The dashed lines represent the Minnesota Pollution Control Agency water quality standards for Chlorophyll-a for shallow (< 20 ug/L-orange dashed line) and deep lakes (< 14 ug/L-red dashed line).

The total phosphorous growing season average for all lakes sampled within the District in 2014 is shown in Figure EX-2. The MPCA standard for total phosphorus in deep lakes (<0.040 mg/L) was met by Lake Ann and Round Lake, but the levels were above the standard in Lotus Lake and Lake Riley. For shallow lakes, the MPCA standard (<0.060 mg/L) was met by Duck Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, and Red Rock Lake. Rice Marsh Lake, Silver Lake, and Staring Lake were significantly above the standard, while Lake Susan was slightly above the standard. Overall, seven of the fourteen lakes sampled met the MPCA total phosphorus standard for their lake classification in 2014: Lake Ann, Duck Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake and Round Lake.

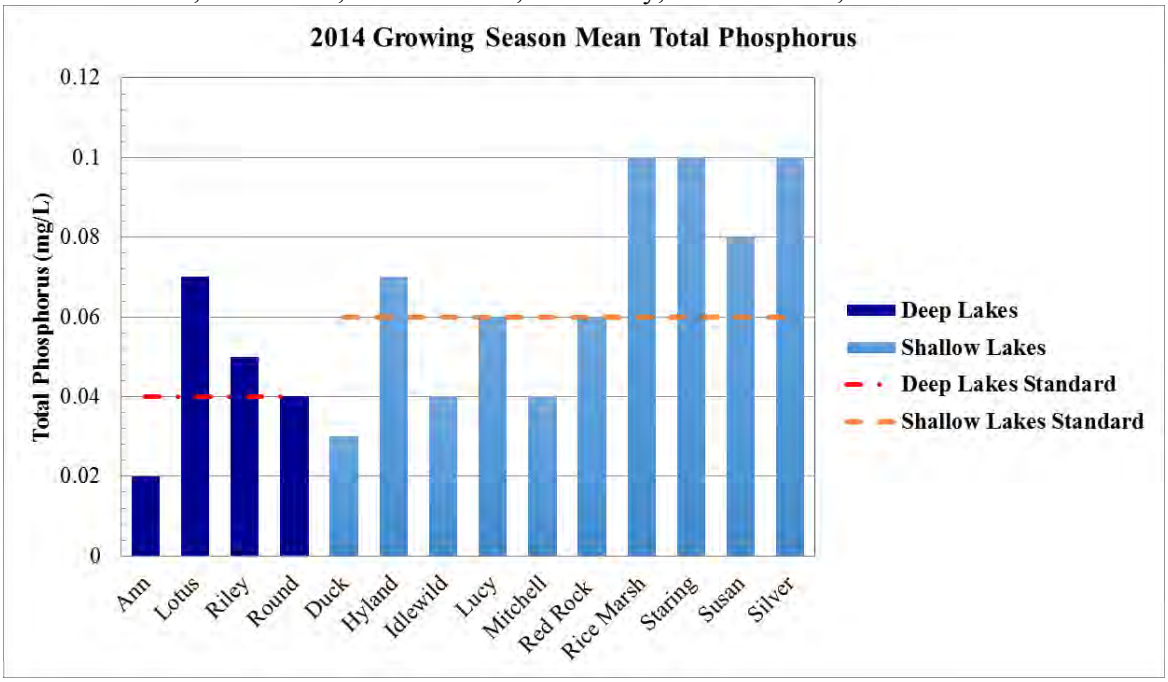


Figure EX-2. Growing Season (May-September) Mean Total Phosphorus (mg/L) for shallow (lakes <15 ft. deep, >80% littoral area-light blue bars) and deep lakes (lakes >15 ft. deep, < 80% littoral area-dark blue bars) in the Riley Purgatory Bluff Creek Watershed District. The dashed lines represent the Minnesota Pollution Control Agency water quality standards for Total Phosphorus for shallow (< 0.060 ug/L-orange dashed line) and deep lakes (< 0.040 ug/L-red dashed line).

The 2014 secchi disk growing season mean for all district lakes sampled is shown in Figure EX-3. The MPCA standard for secchi disk depth for deep lakes (> 1.4 m) was met by all deep lakes in the district. For shallow lakes (>1), nine of ten lakes monitored met and exceeded the secchi depth water quality standard. Silver Lake did not meet the standard while, Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice March Lake, Staring Lake, and Lake Susan met the standard. Lake Ann, Duck Lake, Lake Idlewild, Lake Lucy, Red Rock Lake, and Round Lake had secchi measurements that doubled the MPCA standard. In 2013 Staring Lake did not meet the standard however it exceeded the standard in 2014, which may be due to the ongoing carp removal being conducted by the University of Minnesota.

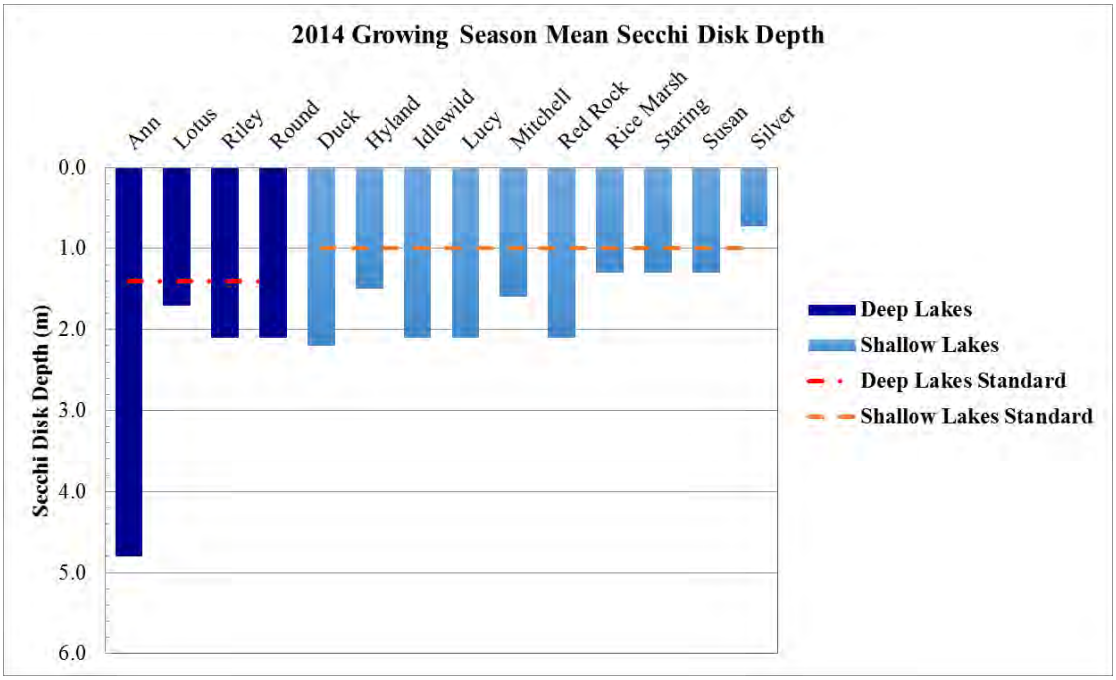


Figure EX-3. Growing Season (May-September) Mean Secchi Disk Depth (meters) for shallow (lakes <15 ft. deep, >80% littoral area-light blue bars) and deep lakes (lakes >15 ft. deep, < 80% littoral area-dark blue bars) in the Riley Purgatory Bluff Creek Watershed District. The dashed lines represent the Minnesota Pollution Control Agency water quality standards for Secchi Disk depths for shallow (> 1 m-orange dashed line) and deep lakes (> 1.4 m-red dashed line).

Creek monitoring

In addition to lake sampling, the District collected water quality samples and performed data analysis at 18 different sampling sites along Riley Creek (5 sites), Bluff Creek (5 sites), and Purgatory Creek (8 sites). For the 2014 creek monitoring season (May through October) a multi-probe sonde was used to measure water chemistry (pH, dissolved oxygen, conductivity) and a transparency tube to measure clarity. Water samples were collected for nutrient and suspended sediment analysis (total phosphorus, total suspended sediment). Creek flow was calculated from velocity measurements taken at consistent cross sections.

The summary for all three creeks is based on new water quality parameters developed by the MPCA in 2014 for Eutrophication and Total Suspended Solids (Figure EX-4). These standards were enacted into law by the state legislature, however they are in litigation and are subject to change. The new standards also include some parameters the District has not yet incorporated into monitoring procedures and therefore Figure EX-4 is a draft assessment of stream sections that did not meet MPCA water quality standards using the current parameters measured by the district. The parameters measured by the District during the summer season (April-September) and the associated MPCA water quality limits for streams located in the Central River Region include: Dissolved Oxygen (DO) daily minimum > 4 mg/L, summer season average Total Phosphorous (TP) < 0.1 mg/L, Total Suspended Solids (TSS) < 10% exceedance of 30 mg/L limit during the summer season, summer season average pH < 9 su.

Most creek sites monitored in the 2014 field season had at least one violation of the new MPCA standards (Figure EX-4). Bluff Creek had the most violations, while Riley Creek and Purgatory Creek were similar in the number of violations. The steep ravines and fine soil types along Bluff Creek may explain the elevated number of violations. The creek locations with the most violations (n = 3) were B1 and R4. Dissolved oxygen and total phosphorous water quality standards were the standards most violated across all the creeks. DO must remain above 4 mg/L and TP summer average must remain below 0.1 mg/L to pass these standards. More information pertaining to each individual creek can be found in the Creek Fact Sheets located in Section 4.

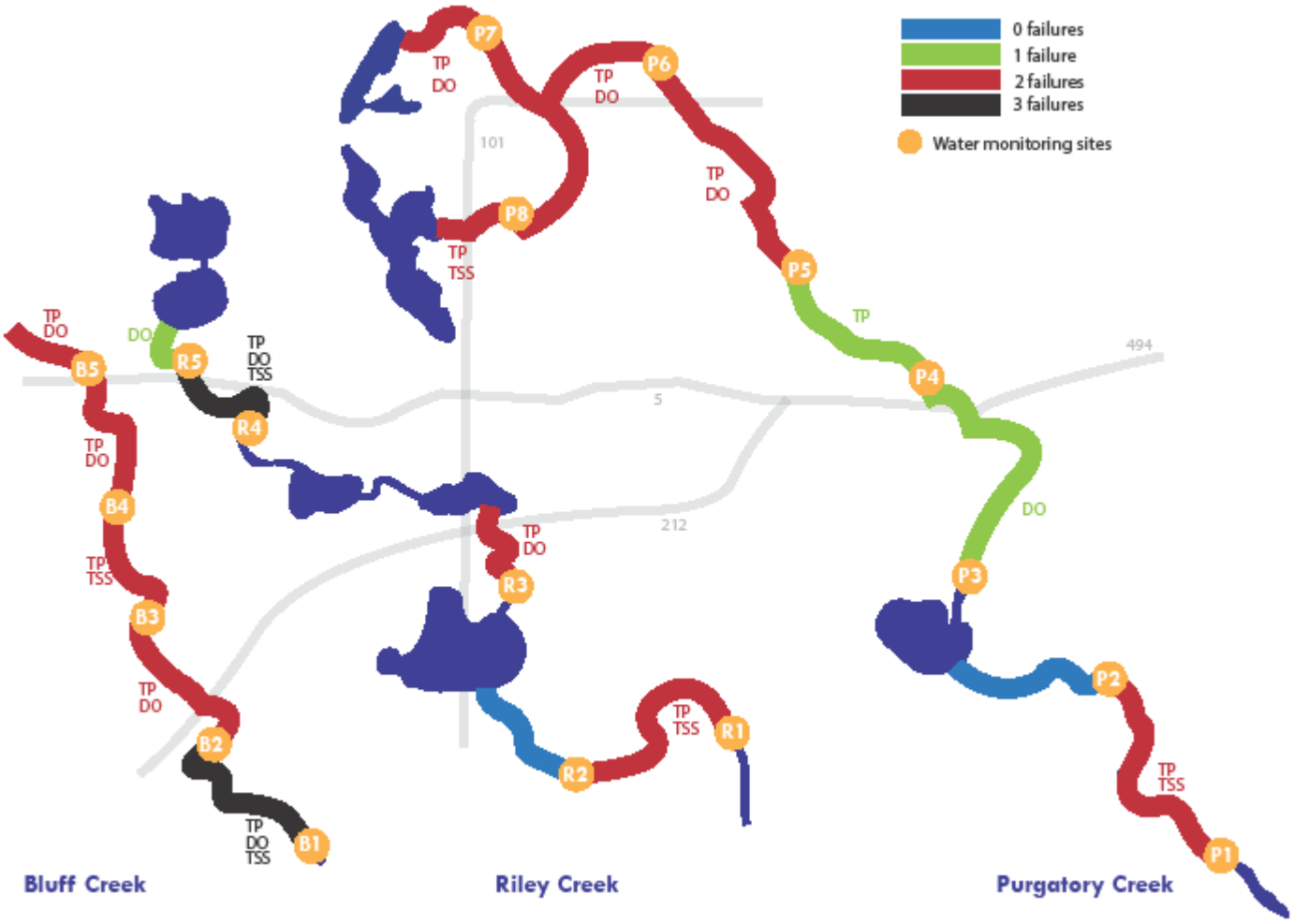


Figure EX-4. Stream Water Quality based on Minnesota Pollution Control Agency (MPCA) Water Quality Standards for Rivers and Streams for all monitoring locations on Bluff Creek, Riley Creek and Purgatory Creek in 2014. Creeks are broken into sections by water monitoring locations (orange circles) and information gathered from the individual sites are applied upstream to the next monitoring location. Water quality standards used are part of the 2014 Eutrophication and Total Suspended Solids standards developed by the MPCA include: Dissolved Oxygen (DO) daily minimum > 4 mg/L, summer season average Total Phosphorous (TP) < 0.1 mg/L, Total Suspended Solids (TSS) < 10% exceedance of 30 mg/L limit during the summer season, summer season average pH < 9 su and > 6 su. The corresponding labels next each stream section indicate which water quality standard is being violated. The grey lines represent major roadways within the Riley Purgatory Bluff Creek Watershed District.

Table of Contents

List of Figures

List of Tables

List of Exhibit

1 Introduction and Overview

The Riley-Purgatory-Bluff Creek Watershed District was established on July 31st, 1969, by the Minnesota Water Resources Board acting under the authority of the watershed law. The District is located in the southwestern portion of the Twin Cities Metropolitan Area consisting of a largely developed urban landscape and encompassing portions of Bloomington, Chanhassen, Chaska, Deephaven, Eden Prairie, Minnetonka and Shorewood (Figure 1.1.1). This total area for the watershed is close to 50 square miles in both Hennepin and Carver Counties and includes three smaller subwatersheds: Riley Creek Watershed, Purgatory Creek Watershed, and Bluff Creek Watershed.

The task of data collection and reporting is the foundation for the Riley-Purgatory-Bluff Creek Watershed District's work. Regular, detailed water quality monitoring provides the District with scientifically reliable information that is needed to decide what water improvement projects are needed and will be effective in the watershed. Data collection remains a key component as the District progresses towards the de-listing of District lakes and improving lake and stream water quality.

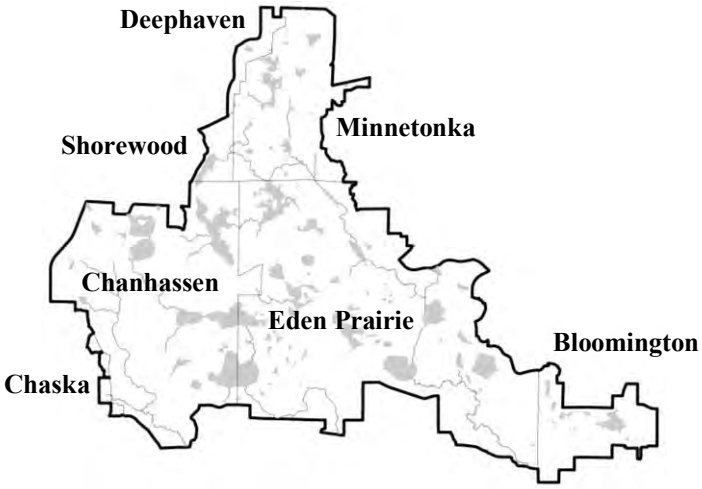


Figure 1.1.1 Riley-Purgatory-Bluff Creek Watershed District Boundary

Table 1.1.1 District Water Resource Sampling Partnerships

Water Resource	RPBCWD	Eden Prairie	University of Minnesota	Three Rivers Park District
Lake Lucy	■			
Lake Ann	■			
Lake Susan	■		■	
Lake Riley	■		■	
Lotus Lake	■			
Rice Marsh Lake	■		■	
Duck Lake		■		
Round Lake		■		
Lake Idlewild		■		
Mitchell Lake	■	■		
Red Rock Lake	■			
Staring Lake	■		■	
Hyland Lake				■
Silver Lake	■			
Bluff Creek	■			
Purgatory Creek	■	■	■	
Riley Creek	■			

Through partnerships with the City of Chanhassen and Eden Prairie, Three Rivers Park District, and the University of Minnesota (RPBCWD Grant), water quality data was collected on fourteen lakes in the District. Lake McCoy has not been part of the district's sampling regime. Each partner was responsible for monitoring certain parameters of their respective lakes and reporting their findings, allowing for more time and attention to be given to each individual water resource (Table 1.1.1) The City of Chanhassen assisted District Staff in monitoring sites located in Chanhassen.

In 2014, the District increased monitoring efforts from 11 to 18 creek locations. Each creek was monitored during the field season approximately twice a month. Both water quality samples and flow monitoring activities were performed in the same reach section of the creek during each sampling event. If a creek site were dry or stagnant only images and climate data were recorded. In addition to water quality monitoring, creek walks were conducted on 2 of the uppermost reaches of Purgatory Creek (P7 and P8). These creek walks were part of the initial stages of the Creek Restoration Action Strategy (CRAS) developed by the District to identify and prioritize future stream restoration sites.

Winter monitoring occurred on the Riley Chain of Lakes (Lucy, Ann, Susan, Rice Marsh, and Riley) and on 3 separate storm water ponds. Extending the monitoring activities into the winter months can provide key insights into ways to improve water quality during the summer months. Lakes are monitored at the same location on each sampling trip, typically at the deepest part of the lake. Lake monitoring took place approximately every two weeks in the summer season and once a month during the winter season, and the data collection and reporting events are tracked throughout the year (Table 1.1.2). Data was not collected in April because of staff changes and in November/December due to unsafe ice conditions.

Table 1.1.2 2014 Monthly District Field Data Collection Locations

Water Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lake Ann	■	■	■		■	■	■	■	■	■		
Lotus Lake					■	■	■	■	■	■		
Lake Lucy	■	■	■		■	■	■	■	■	■		
Mitchell Lake*							■	■	■	■		
Red Rock Lake					■	■	■	■	■	■		
Rice Marsh Lake	■	■	■		■	■	■	■	■	■		
Lake Riley	■	■	■		■	■	■	■	■	■		
Staring Lake					■	■	■	■	■	■		
Lake Susan	■	■	■		■	■	■	■	■	■		
Silver Lake					■	■	■	■	■	■		
Bluff Creek (all sites)					■	■	■	■	■	■		
Purgatory Creek (all sites)					■	■	■	■	■	■		
Riley Creek (all sites)					■	■	■	■	■	■		

*Only zooplankton samples were collected on Mitchell Lake by the RPBCWD.

2 Methods

Water quality and quantity monitoring entails the collection of multi-probe sonde data readings, water samples, zooplankton samples and physical readings, as well as recording the general site conditions at the time of sampling. Listed below are the methods and materials, for both lake and stream monitoring, used to gather the water quality and quantity data during the 2014 field monitoring season.

2.1 Monitoring and Sampling

2.1.1 Water Quality Monitoring

Multi-probe sondes (Lakes DS-5/ Streams MS-5) were used for collecting water quality measurements. Sonde readings measured include: temperature, pH, dissolved oxygen, conductivity, and other technical parameters. Secchi disk depth readings were recorded at the same time as sonde readings were collected at the lake locations. When monitoring stream locations, transparency and flow measurements were collected as well as the sonde readings. General site conditions related to weather and other observations were recorded as well while out in the field. A list of the variety of parameters monitored during each sampling event can be seen in Table 2.1.1.

Table 2.1.1 Sampling Parameters Monitored during the 2014 Field Season.

Parameter	Sonde or Wet Chemistry	Summer Lakes	Winter Lakes	Streams	Reason for Monitoring
Total Phosphorus (TP)	Wet	■	■	■	Nutrient, phosphorus (P) controls algae growth
Orthophosphate	Wet	■	■		Nutrient, form of P most useful to algae
Chlorophyll-a, pheophytin	Wet	Surface	Surface		Measure of algae concentration
Ammonia as N	Wet	■	■		Nutrient, form of nitrogen (N) most useful to algae
Nitrate + Nitrite as N	Wet	■	■		Nutrient, also oxygen substitute for bacteria
Total Alkalinity, adjusted	Wet	Surface	Surface		Measure of ability to resist drop in pH
Total Suspended Solids	Wet			■	Measure of the solids in water (block light)
Chloride	Wet		■		Measure of chloride ions, salts in water
Temperature	Sonde	■	■	■	Impacts biological and chemical activity in water
pH	Sonde	■	■	■	Impact chemical reactions (acidic or basic)
Conductivity	Sonde	■	■	■	Measure of salts in water
Dissolved Oxygen	Sonde	■	■	■	Oxygen for aquatic organisms to live
Oxidation Reduction Potential (ORP)	Sonde	■	■	■	Tracks chemistry in low or no oxygen conditions
Phycocyanin	Sonde	■	■		Pigment, measures cyanobacteria concentration
Photosynthetic Active Radiation (PAR)	Sonde	■			Measure of light available for photosynthesis
Turbidity	Sonde			■	Measure of light penetration in shallow water
Secchi disk depth		■	■		Measure of light penetration in deeper water
Transparency Tube				■	Measure of light penetration into shallow water
Zooplankton		■			Organisms fluctuate due to environmental variables

The monitoring program supports the District's 10-year water management plan to delist lakes from the Minnesota Pollution Control Agency's (MPCA) 303d Impaired Waters list and to improve stream water quality. The parameters monitored during the field season help determine the sources of water quality impairments and provide supporting data that is necessary to design and install water quality improvement projects.

2.1.2 Water Quality Sampling

At each lake monitoring location, multiple water samples were collected using a Van Dorn, or depth integration sampler, for analytical laboratory analysis. For Rice Marsh, Silver, and Staring Lakes water samples were collected at the surface and bottom due to shallow depths (2 m). For the deep lakes within the District, water samples were collected at the surface, middle, and bottom of the lake, based on the temperature and dissolved oxygen profile of the lake. All samples are collected from whole meter depths except for the bottom sample, which is collected 0.5 meters from the lake bottom to prevent disrupting the sediment. The surface sample is a composite sample of the top 2 meters of the water column. The middle sample is collected from the approximate mid-point of the temperature/dissolved oxygen change or thermocline. During winter sampling events, water samples are collected by following the same lake monitoring protocol as is followed during the summer months.

Water quality samples collected during stream monitoring events were collected from the approximate middle (width and depth) of the stream flow in ideal conditions or from along the bank when necessary. Secchi tube measurements were also taken at these locations. If no water or flow was recorded only pictures and climatic data was collected.

Zooplankton sampling and analysis was brought in house to reduce costs and expand analysis. Zooplankton samples were collected using an 80 micrometer Wisconsin style zooplankton net on Lake Mitchell, Lake Riley, and Red Rock Lake in 2014. The net was lowered to a depth of 0.5 meters from the bottom at the deepest point in the lake and raised slowly. A Zeiss Primo Star microscope was purchased with a Zeiss Axiocam 100 digital camera and will allow the district to monitor zooplankton populations, scan for invasive zooplankton, and to calculate Cladoceran grazing rates on algae in the future.

The activities associated with the monitoring program are described in Table 2.1.2.

Table 2.1.2 District Monitoring Program Activities during the 2014 Field Season

Pre-Field Work Activities	Calibrate Water Quality Sensors (sonde) Obtain Water Sample Bottles and Labels from RMB Environmental Laboratories Prepare Other Equipment and Perform Safety Checks Coordinate Events with Other Projects and Other Entities
Summer Lake – Physical and Chemical	Navigate to Monitoring Location Read Secchi Disk Depth and Record Climatic Data Record Water Quality Sonde Readings at 1 Meter Intervals Collect Water Samples (generally from top, middle, and bottom)
Summer Lake – Biological	Collect Zooplankton Tow (pulling a net) from Lake Bottom to Top
Winter Lakes	Navigate to Monitoring Location Record Ice Thickness Read Secchi Disk Depth and Record Climatic Data Record Water Quality Sonde Readings at 1 Meter Intervals Collect Water Samples (generally from top, middle, and bottom)
Streams – Physical and Chemical	Navigate to Monitoring Location Measure Flow by Measuring Velocity at 0.5 to 1 feet Increments across Stream Read Water Quality Sensors Upstream of Flow Measurement in Middle of Stream Read Transparency Tube from Water Collected at Middle of Stream and Record Climatic Data Collect Water Sample Collection from Middle of Stream
Post-Field Work Activities	Ship Water Samples to Analytical Lab Download Data, Perform Quality Control Checks and Format Data for Database Clean and Repair Equipment Reporting and Summarizing Data for Managers, Citizens, Cities and Others

2.2 Analytical Laboratory Methods

RMB Environmental Labs, located in Detroit Lakes, MN, is the third party company that is responsible for conducting the analytical tests on the lake and stream water samples that were collected by the District's Water Quality Specialists. Through the beginning of the year the District had been taking samples for processing to Braun Intertec in Bloomington, MN, however changes within the company prompted the District to make changes. The methods used by the laboratory to analyze the water samples for the specified parameters are noted in Table 2.2.1.

Table 2.2.1 RMB Environmental Laboratories
Parameters and Methods Used for Analyses

Parameter	Standard Method
Alkalinity	EPA 310.2
Ammonia	EPA 350.1 Rev 2.0
Nitrogen, Nitrate & Nitrite	EPA 353.2 Rev 2.0
Chlorophyll a.	SM 10200H
Total Phosphorus	EPA 365.3
Orthophosphate	EPA 365.3
Chloride	SM 10200H

2.3 Creek Restoration Action Strategy

The Riley Purgatory Bluff Creek Watershed District (RPBCWD) has developed a Creek Restoration Action Strategy (CRAS) in order to prioritize creek reaches, sub-reaches, or sites, in need of stabilization and/or restoration. RPBCWD has identified eight categories of importance for project prioritization including: infrastructure risk, erosion and channel stability, public education, ecological benefits, water quality, project cost, partnerships, and watershed benefits. These categories will be scored using methods developed for each category based on a combination of published studies and reports, erosion inventories, field visits, and scoring sheets from specific methodologies. Final tallied scores of each category will be used to prioritize sites for restoration/remediation.

In 2014, two stream reaches were walked on Purgatory Creek as part of the initial CRAS study. These reaches include P7 from Silver to below Highway 101 and P8 Lotus Lake to Highway 101. Staff conducted Pfankuch Stream Assessments, MPCA Stream Habitat Assessments, took photos, and recorded notes of each subreach to assess overall stream conditions. Three potential project locations were identified from the creek walks with the most severe being located in Reach 7 at the culvert under Covington Road and the immediate stream section stretching 200 meters downstream. During the following field season staff plans to visit more creek locations and collect more stream information to prioritize project sites for restoration across all creeks in the District.

2.4 Lake Water Levels

Lake level readings were used to monitor water quantity in District water bodies, recording continuous water level monitoring data from ice out until late fall. Lake levels are measured using an In-Situ Level Troll 500, 15-psig water level sensor that is mounted inside a protective PVC pipe attached to a vertical post placed in the water. A staff gauge or measuring device was mounted to the vertical post and was then surveyed by a professional land surveyor to determine the elevation at the specific level sensor. Once the Level Trolls are installed and activated, they record the lake level at 30 minute intervals until they are deactivated.

In 2014, lake level measurements were collected on thirteen lakes in the District (Table 2.3.1). Lake level data is used for developing and updating the District's models, which are used for stormwater and floodplain analysis. Monitoring the lake water levels can also help to determine the impact that climate change may have on lakes and land interactions in the watershed. Lake level data is submitted to the Minnesota Department of Natural Resources (DNR) at the end of each monitoring season. See Exhibit A for 2014 level sensor results. Lake Levels for 2013 are also provided for comparison.

Table 2.3.1 2014 District Lakes Monitored with Staff Gauges

Lakes with Level Monitoring Staff Gauges in 2014
Duck Lake
Hyland Lake
Lake Ann
Lake Lucy
Lake Riley
Lake Susan
Lotus Lake
Mitchell Lake
Red Rock Lake
Rice Marsh Lake
Round Lake
Silver Lake
Staring Lake

3 Water Quality Standards

In 1974, the Federal Clean Water Act set forth the requirements for states to develop water quality standards for surface waters. In 2014, specific standards were developed for Eutrophication and Total Suspended Solid for rivers and streams. In Minnesota, the agency in charge of regulating water quality is the Minnesota Pollution Control Agency (MPCA). Water quality monitoring and reporting is a priority for the District in order to determine the overall health of the water bodies within the watershed boundaries. The District's main objective is to prevent lakes and streams within the RPBCWD from showing a decline in overall water quality and being added to the 303d Impaired Water Bodies list put out by the MPCA. The District is also charged with the responsibility to take appropriate actions to improve the water quality in water bodies that are currently listed for impairments.

There are seven ecoregions within Minnesota, the RPBCWD is within the Northern Central Hardwood Forest (NCHF) ecoregion. Rural areas in the NCHF are dominated by agricultural land use practices as the ecoregion is characterized by fertile soils. For most water resources in the region, phosphorous is the limiting (least available) nutrient in water bodies, meaning that the extent of algal growth in a water body is controlled by the available concentration of phosphorous. The accumulation of excess nutrients (i.e. Total Phosphorus and Chlorophyll-a) in a waterbody is called eutrophication. This relationship has a direct impact on the clarity and recreational potential of lakes and streams. Lakes and streams with high phosphorus and a large amount of algal growth have reduced water clarity and limited recreational potential.

All waters sampled in 2014 are considered Class 2B surface waters. This means that they should support the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life, and their habitats. They should also be suitable for aquatic recreation of all kinds, including bathing. This class of surface water is not protected as a source of drinking water.

For more detailed information regarding water quality standards in Minnesota, please see the MPCA's Guidance Manual for Assessing the Quality of Minnesota Surface Waters for the Determination of Impairment, 305(b) Report, and 303 (d) List of Impaired Waters. These resources provide information to better understand the water quality assessment process and the reasoning behind their implementation.

Lakes

The MPCA defines shallow lakes as those lakes where over 80% of the surface is able to support aquatic plants (littoral) or in which the maximum depth is less than 15 feet. Summer averages of the parameters listed in Table 3.1.1 are compared to the MPCA standards to determine the overall state of the lake. The standards are set in place to address issues of eutrophication or excess nutrients in local water bodies. Lakes with a maximum depth greater than 15 feet and a littoral area that is less than 80% of the lake surface are categorized as deep lakes. Table 3.1.1 shows the deep lake and shallow lake key water quality standards set forth by the MPCA.

Secchi Disk readings are collected to measure the transparency, or visibility, in a given lake. A higher individual reading corresponds to increased clarity within the lake as the Secchi Disk was visible at a deeper depth in the water column.

Table 3.1.1 MPCA Water Quality Standards for Lakes

Parameter	Shallow Lakes Criteria	Deep Lakes Criteria
Total Phosphorus (mg/L)	≤ 0.060	≤ 0.040
Chlorophyll a (ug/L)	≤ 20	≤ 14
Secchi Disc (m)	≥ 1	≥ 1.4

Creeks

Table 3.1.2 displays the new water quality parameters developed by the MPCA in 2014 for Eutrophication and Total Suspended Solids. These standards have been passed into law by the state legislature, but are currently in litigation and are subject to change. The new standards include some parameters the District has not yet incorporated into their monitoring procedures, but will most likely be added in the future.

Eutrophication pollution is measured based upon the exceedance of the summer average (April-September) of total phosphorus levels and chlorophyll-a (seston), five-day biochemical oxygen demand (amount of Dissolved Oxygen needed by organisms to breakdown organic material present in a given water sample at a certain temperature over a 5 day period), diel dissolved oxygen flux (difference between the maximum Dissolved Oxygen concentration and the minimum daily DO concentration), or summer average pH levels. Streams that exceed the phosphorus levels but do not exceed the chlorophyll-a (seston), five-day biochemical oxygen demand, diel dissolved oxygen flux, or pH levels meet the eutrophication standard. The district does not yet measure Chlorophlyy-a in streams, however a polluted condition also exists when the chlorophyll-a (periphyton) concentration exceeds 150 mg/m2 more than once in ten years. The daily minimum Dissolved Oxygen concentration for all Class 2B Waters cannot dip below 4 mg/L to achieve the MPCA standard and was used in the analysis for the Annual Report.

Total suspended solids (TSS) is a measure of the amount of particulates (soil particles, algae, etc) in the water. Increased levels of TSS can be associated with many negative effects including: nutrient transport, reduced aesthetic value, reduced aquatic biota, and decreased water clarity. For the MPCA standard, TSS concentrations are assessed from April through September and can be exceeded no more than 10 percent of the time during that period.

Table 3.1.2 MPCA Water Quality Standards for Lakes

Standard	Parameter	Exceedance Criteria
Eutrophication	Phosphorus	≤ 100 ug/L
	Chlorophyll-a (seston)	≤ 18 ug/L
	Diel Dissolved Oxygen	≤ 3.5 mg/L
	Biochemical Oxygen Demand	≥ 2 mg/L
	pH Max	≤ 9 su
	pH Min	≥ 6.5 su
TSS	TSS	≤ 30 mg/L

4 Lake and Creek Fact Sheets

The Riley-Purgatory-Bluff Creek Watershed District has included in this report informational fact sheets for the lakes and creeks that were monitored during the 2014 sampling season. The lake fact sheets include: Lake Ann, Duck Lake, Hyland Lake, Idlewild Lake, Lotus Lake, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Lake Riley, Round Lake, Silver Lake, Staring Lake, and Lake Susan. The creek fact sheets include: Bluff Creek, Purgatory Creek, and Riley Creek.

Each lake fact sheet includes a summary of the historical water quality data collected as related to the MPCA water quality parameters: Secchi Disk depth, Total Phosphorus, and Chlorophyll-a. Each creek fact sheet includes a summary of the current water quality data collected for the following parameters: Creek Flow, Total Phosphorus, and Total Suspended Solids. Lake or creek characteristics, stewardship opportunities, and information about what the District is doing in and around local water bodies are also described in each fact sheet.

Exhibit A

2014 Lake Level Sensor Graphs

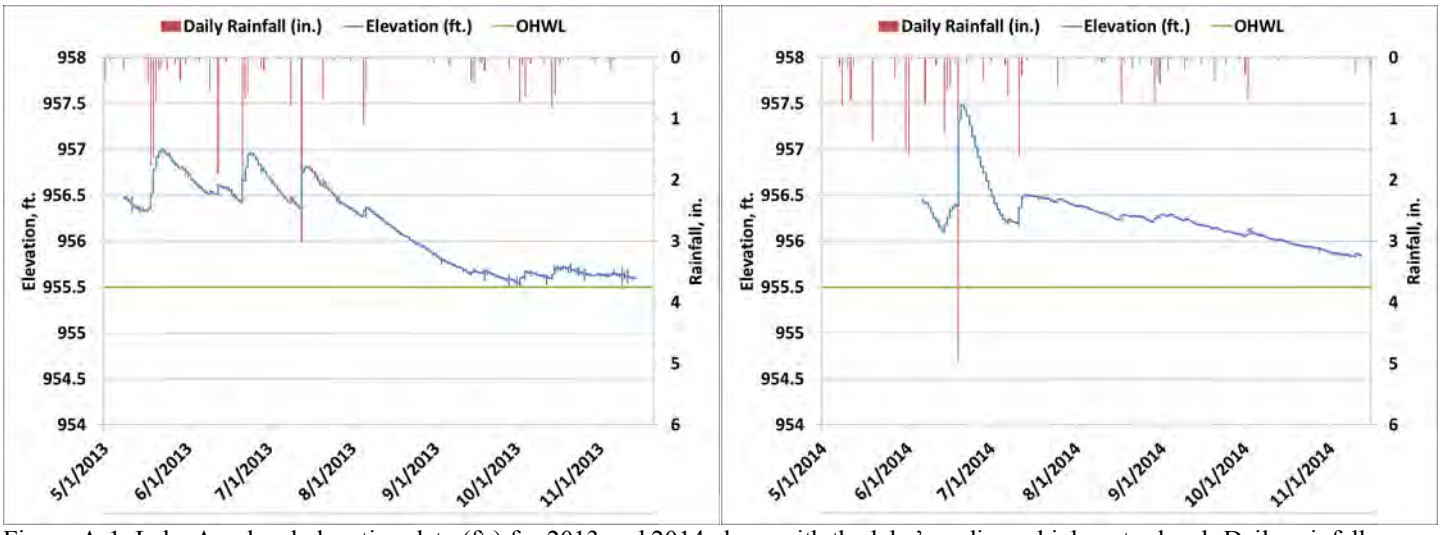


Figure A-1. Lake Ann level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

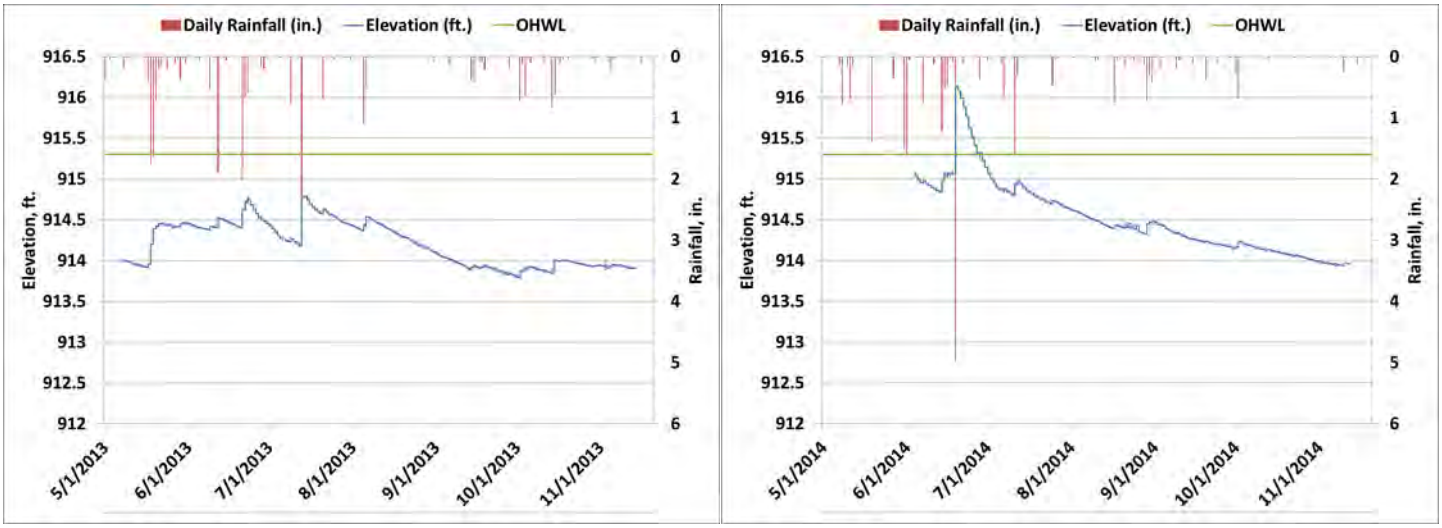


Figure A-2. Duck Lake level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

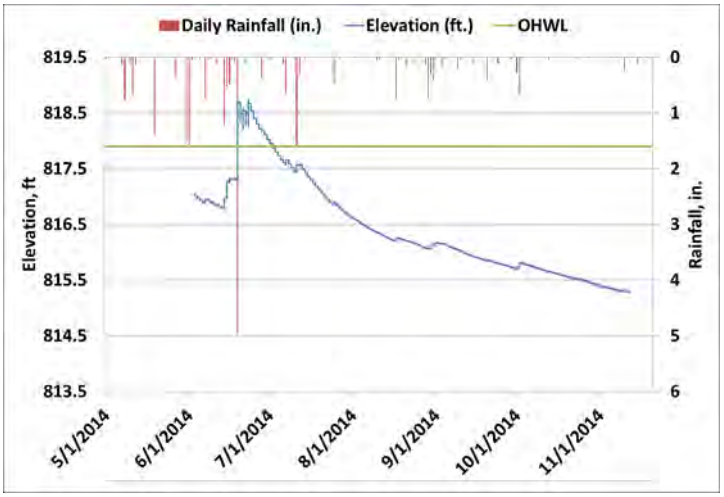


Figure A-3. Hyland Lake level elevation data (ft.) for 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

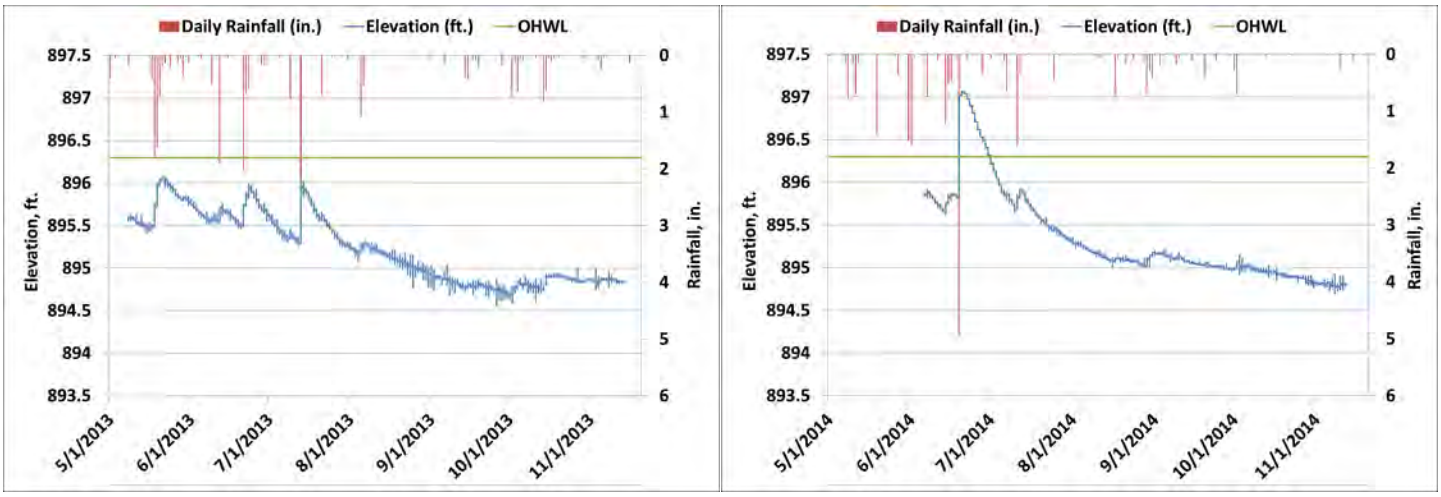


Figure A-4. Lotus Lake level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

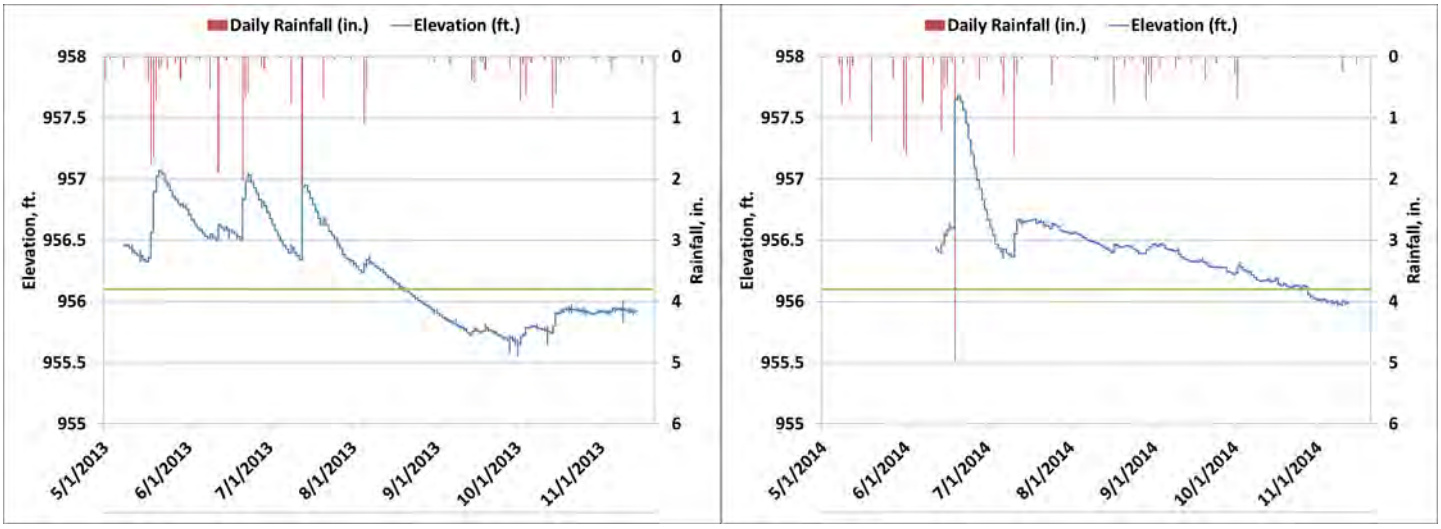


Figure A-5. Lake Lucy level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

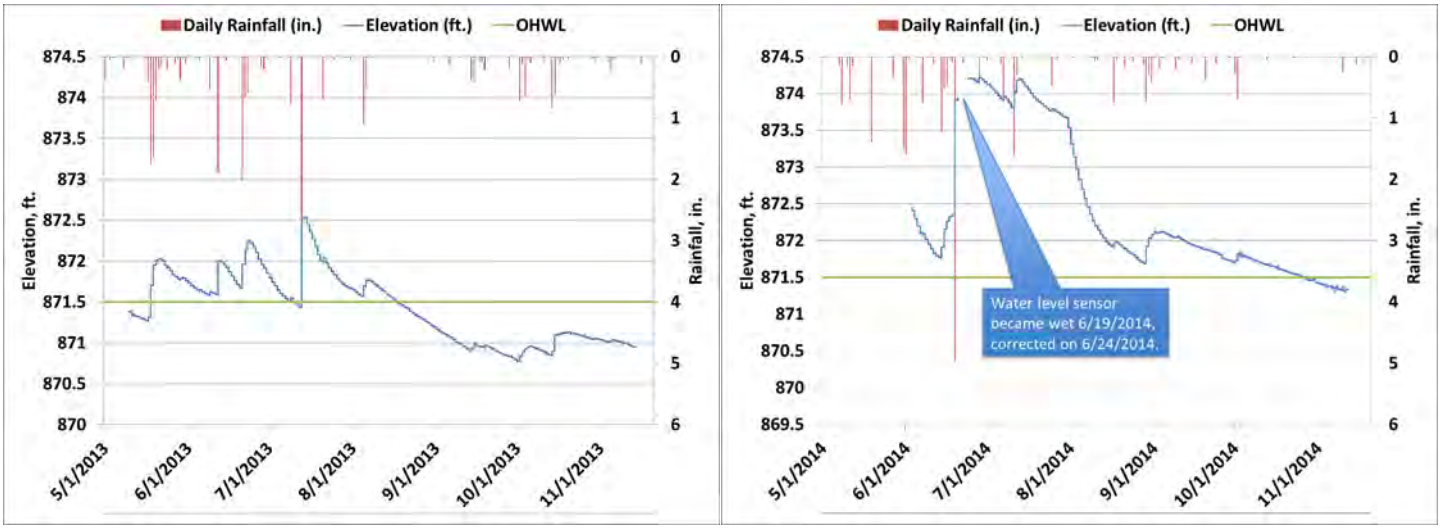


Figure A-6. Mitchell Lake level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

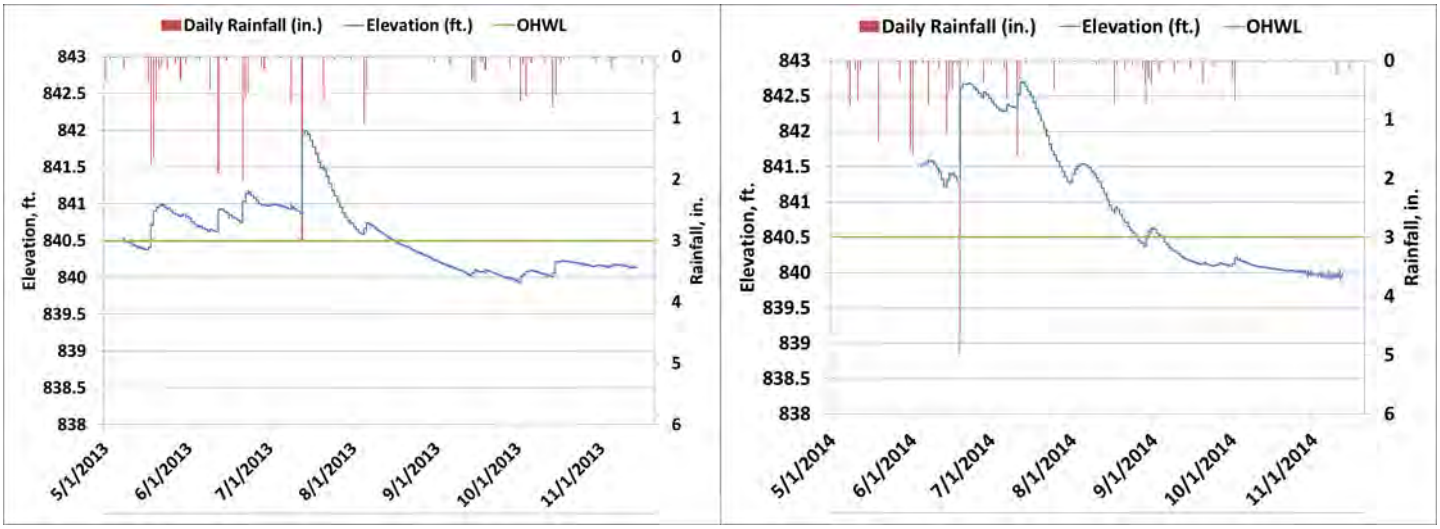


Figure A-7. Red Rock Lake level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

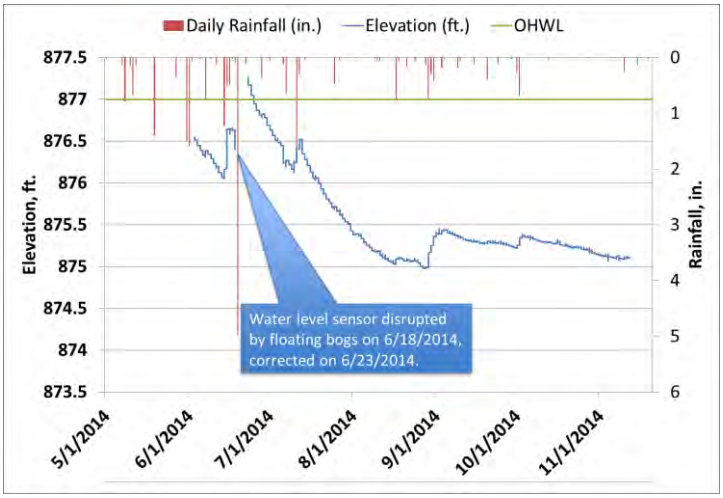


Figure A-8. Rice Marsh Lake level elevation data (ft.) for 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

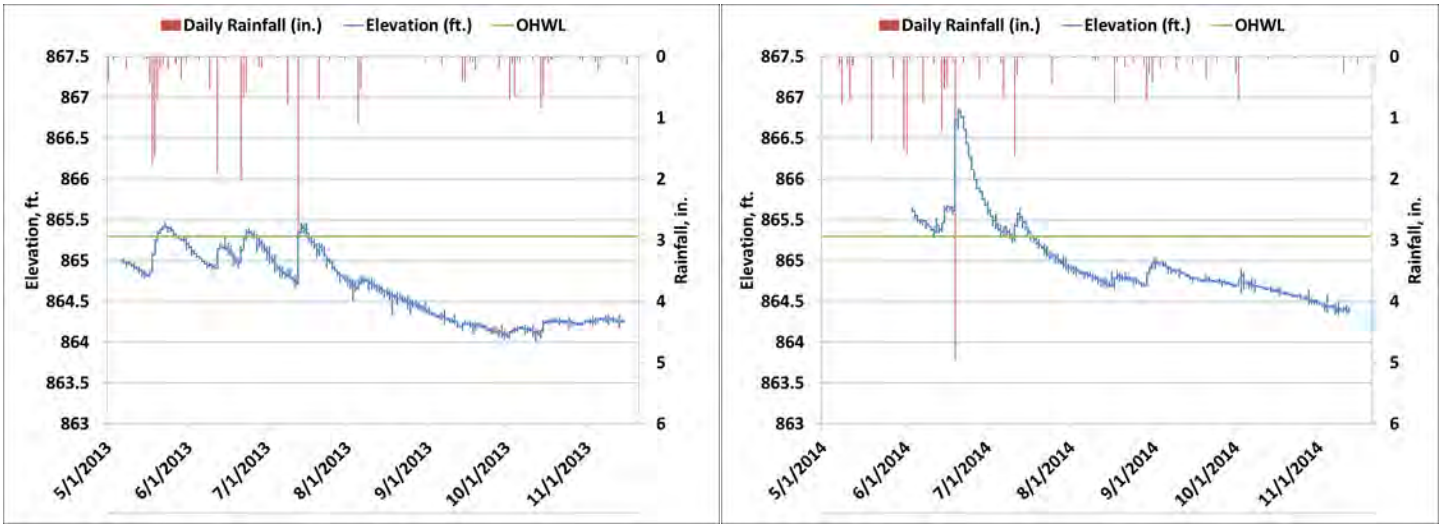


Figure A-9. Lake Riley level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

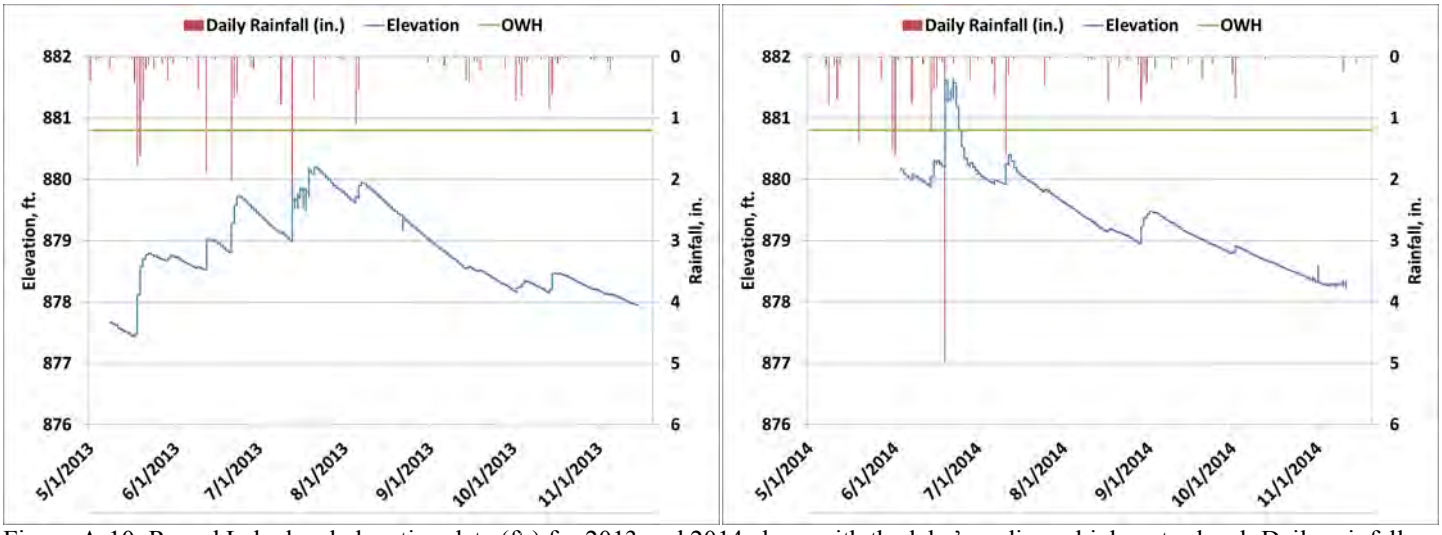


Figure A-10. Round Lake level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

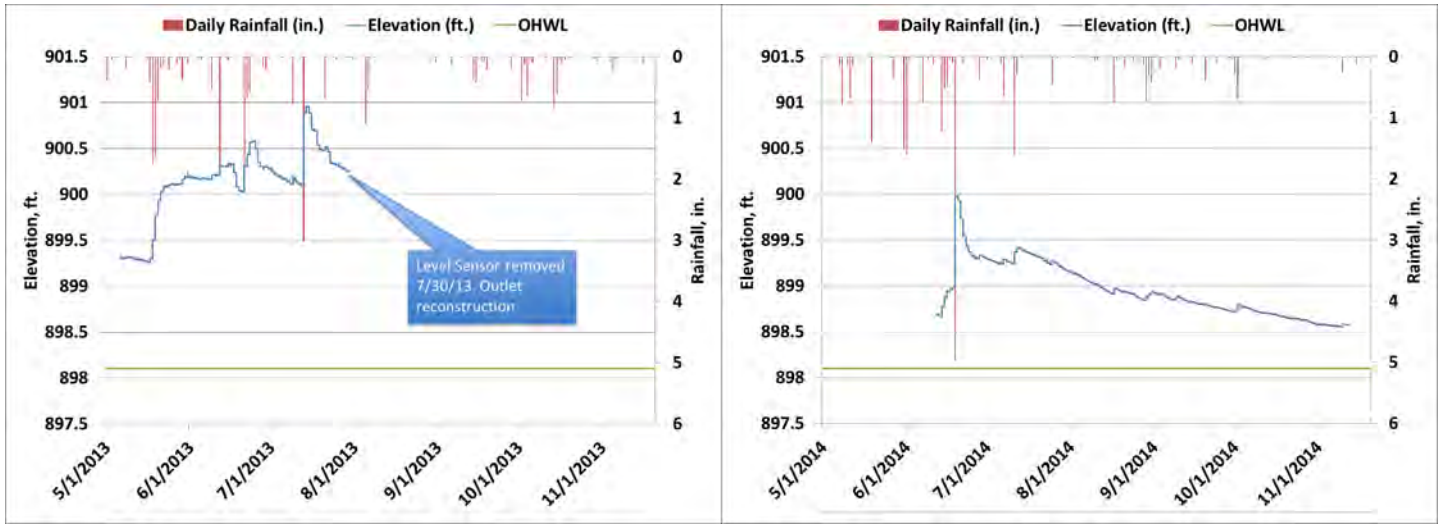


Figure A-11. Silver Lake level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

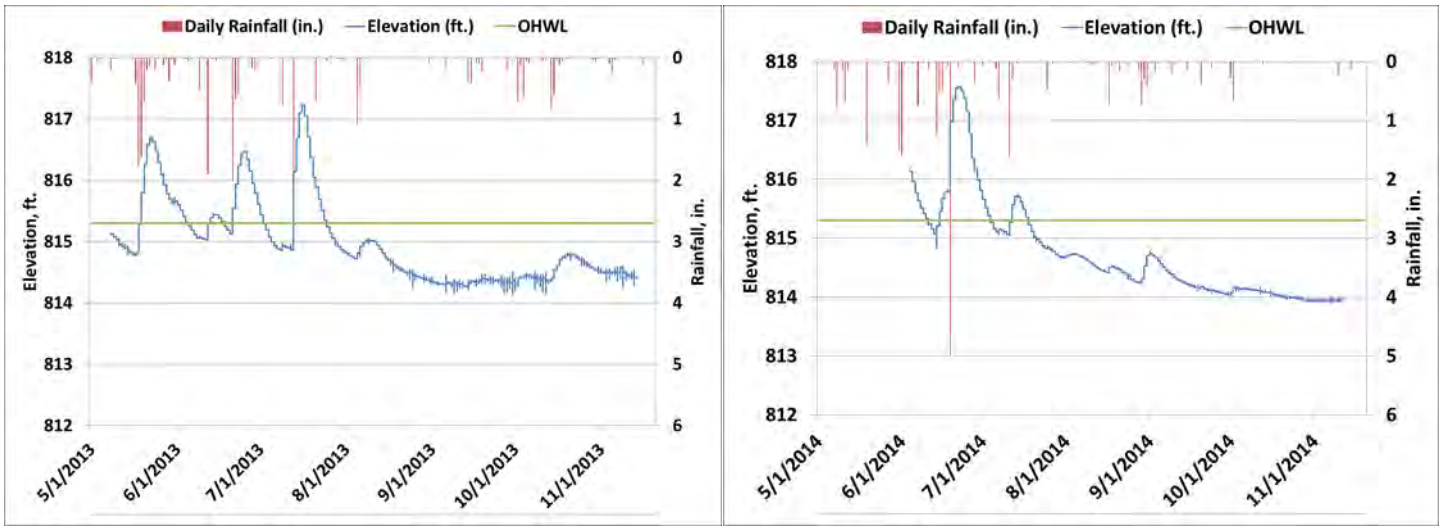


Figure A-12. Staring Lake level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

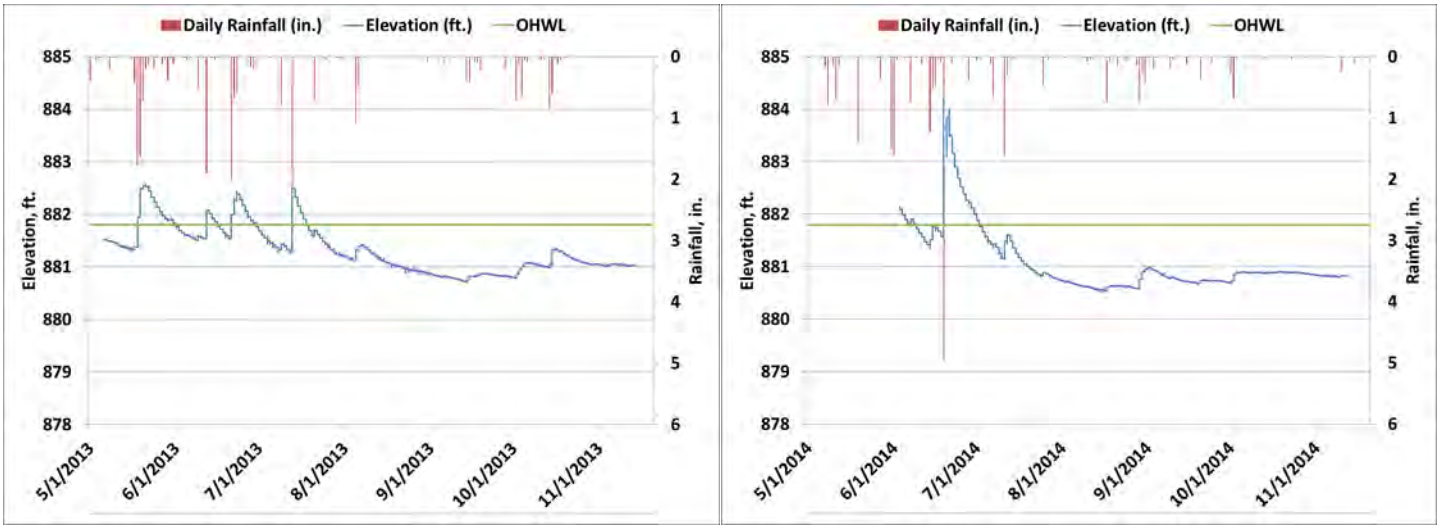


Figure A-13. Lake Susan level elevation data (ft.) for 2013 and 2014 along with the lake's ordinary high water level. Daily rainfall (in.) is displayed along the top of the graph.

District in Action

AQUATIC INVASIVE SPECIES (AIS) GOALS AND STRATEGIES DOCUMENT

District staff, with the input of the citizen advisory committee, are developing an AIS Goals & Strategies document, to guide prevention of and response to AIS.

Aquatic invasive species are both an ecologial and economic threat to lakes and streams. The detection of zebra mussles in neighboring Christmas Lake (Minnehaha Creek Watershed District) has caused increased concern about the spread of AIS. At the suggestion of the RPBCWD citizen advisory committee (CAC), district staff are developing an AIS Goals & Strategies document, and a corresponding AIS Monitoring & Detection Protocol.

These documents will outline best practices for increasing awareness and education about AIS, preventing the spread of invasive spieces, and managing established populations. Once the documents are finalized, they will be available on the district website: rpbcwd.org

AQUATIC PLANT STUDY

In partnership with the University of Minnesota, aquatic plant surveys were conducted from 2010 to 2014. Lake Ann had the most diverse plant community of the lakes studied (Lotus, Lucy, Mitchell, Susan, Riley, Staring). The invasive Eurasian watermilfoil declined over the study period.

Identifying and monitoring plant communities is an important tool for understanding lake ecosystem dynamics, and crafting management and restoration strategies. The plant surveys conducted by the University of Minnesota found that Lake Ann had the most healthy and diverse plant community of the lakes surveyed (Lotus, Lucy, Mitchell, Susan, Riley, Staring). Ann has a high diversity of native plants: over 25 species regularly present. While both curlyleaf pondweed and Eurasian watermilfoil were present, they did not appear to be either a nuisance, or a threat to the native plant community. In fact, the Eurasian watermilfoil population decreased over the study period. The diversity in the plant community, and the low prevalence of invasive species is likely due to the good summer water clarity and lack of disruptive management.

Families enjoy an ice fishing event on Lake Ann.

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley
Purgatory
Bluff Creek
Watershed District

LAKE ANN

Riley
Purgatory
Bluff Creek
Watershed District

2014

Quick Facts

Watershed size	250 acres
Lake size	119 acres
Lake volume	2005 acre-feet
Maximum lake depth	40 feet
Mean lake depth	16.8 feet
Direct land draining	105 acres
MPCA lake classification	Deep

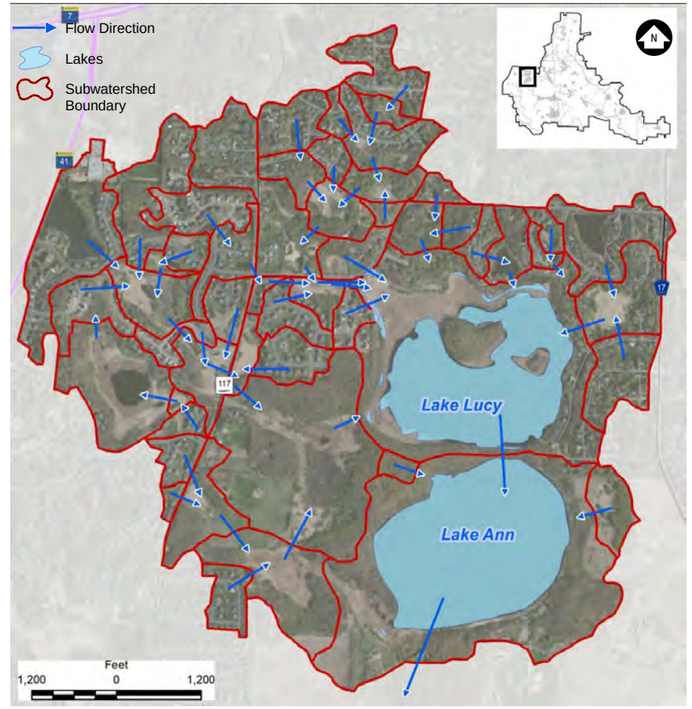
Most abundant common fish species
Blue Gill, White Sucker, Black Crappie, Yellow Perch

Invasive species
Curlyleaf Pondweed, Eurasian Watermilfoil

Trophic status	Impairment
Mesotrophic (moderate nutrients levels)	Mercury

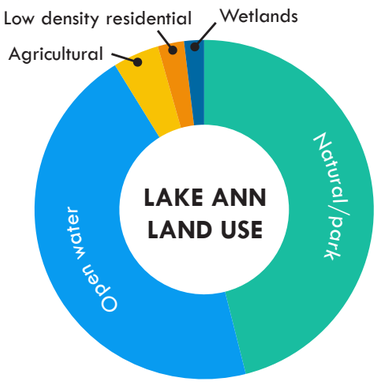
Coots make a stop at Lake Ann during their fall migration.

LOCATION Located north of Highway 5 and just east of Preserve Blvd, Lake Ann is located entirely within Chanhassen and is directly connected to Lake Lucy by a small channel along the northern edge. Only boats with electric motors and carry-on craft are permitted. Lake Ann Park is positioned on the southeast corner of the lake. The surrounding area is mostly open hills and dense tree cover in the western quarter.



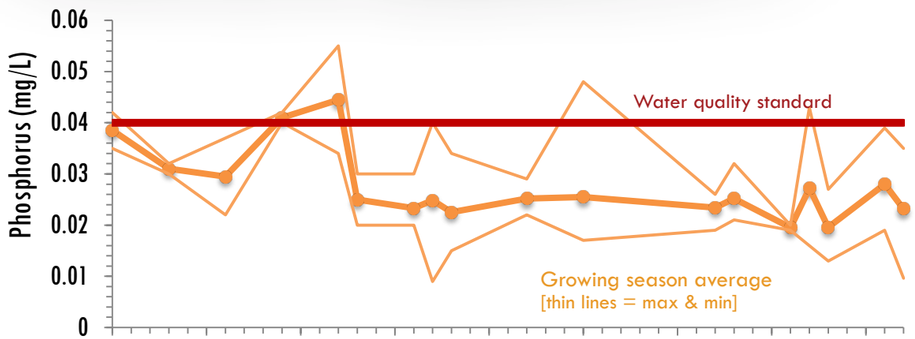
Did you know?

- Lake Ann and Lake Lucy act as the headwaters to Riley Creek, which ultimately discharges into the Minnesota River
- Existing land use is primarily open space and natural land uses, but future land development is expected to occur (open space converted to low-density residential)
- Residence time in Lake Ann is approximately 11 years

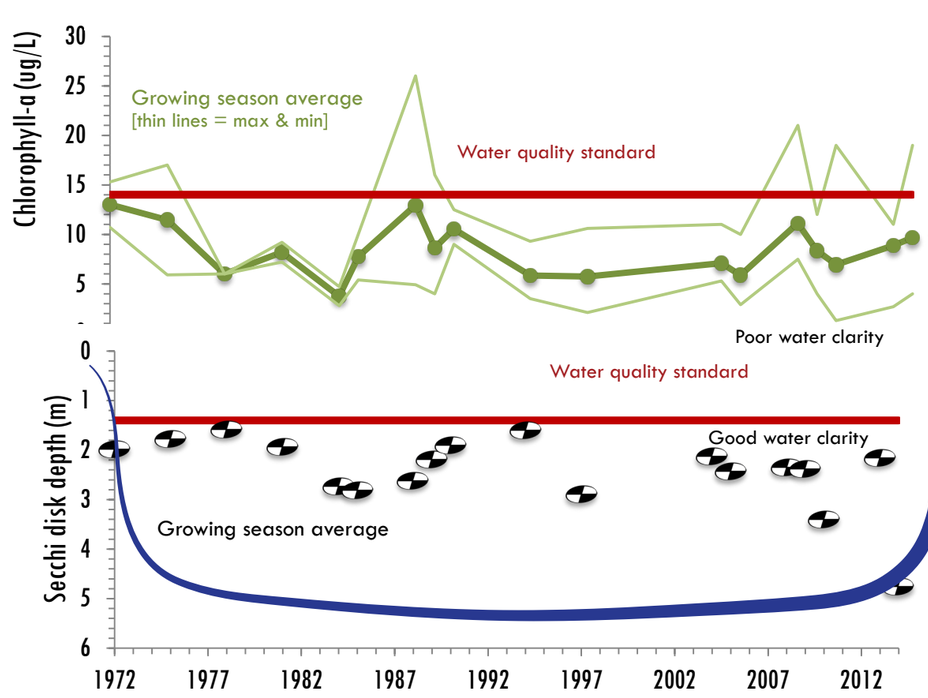


WATER QUALITY

CHARTS

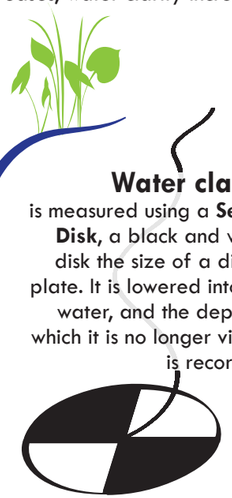


Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP) Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.

Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



LAKE ANN

WATER QUALITY SUMMARY

Lake Ann has been monitored since 1972. Since that time, water quality in Ann has been consistently better than the standards set by the Minnesota Pollution Control Agency (MPCA). This may be attributed in part to the low level of development in the Lake Ann subwatershed [see the pie chart on the first page]. Development decreases the amount of water that soaks into the soil and is filtered of nutrients and pollutants before it enters a lake or stream.

In 2014, samples were collected from Lake Ann on 9 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Average secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a (chl-a) all met the MPCA standards this year, as they have for almost all previous years.

TABLE

		2014			1972-2013		
	MPCA standard*	Average	Maximum	Minimum	Average	Maximum	Minimum
TP	< 0.04 mg/L	0.02	0.04	0.01	0.03	0.04	0.02
Chl-a	< 14 µg/L	10	19	4	8	13	5
Secchi	> 1.4 m	4.8	6.75	3.33	2.3	3.1	1.7

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Lake Ann is classified as a deep lake, and the standards listed above are for deep lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Lake Ann water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, visit the district website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Phosphorus pollution is the primary component influencing eutrophication in freshwater resources. Excess phosphorus can lead to increased algal growth, turbid water, and loss of biodiversity and desirable aquatic habitat. The major sources of phosphorus for Lake Ann are internal loading (resuspension of phosphorus-rich sediments), stormwater runoff from the surrounding watershed, and inflow from Lake Lucy. Stabilizing the shoreline by planting a native plant buffer close to the water's edge is an effective way to prevent erosion and absorb excess nutrients from stormwater runoff.

An egret hunts for fish near a shoreline buffer.

District in Action

DUCK LAKE SUBWATERSHED ANALYSIS

A subwatershed-wide grant program will reduce runoff to Duck Lake, and improve water quality by helping community members install best management practices, like raingardens.

In 2005, Duck Lake was identified as being undertreated. This means that some of the stormwater runoff from houses, roads, and parkinglots enters the lake directly, without being treated to remove phosphorus, sediment, and other pollutants. Ways that stormwater can be treated are called best management practices (BMPs), and include stormwater ponds, raingardens, and pervious asphalt & pavers. Each of these methods slows the movement of water over the landscape, and allows it to seep into the ground and be filtered before it enters a waterbody.

In 2014, the district partnered with the Carver County Soil and Water Conservation District to identify where BMPs could be implemented and where it would be most cost-effective to reduce phosphorus loads to Duck Lake. In 2015, the district will begin working with homeowners to implement these projects as a part of the Low Impact Development Program.

Cost-shares provide grants for part of the cost of creating a BMP, which can include: raingardens, pervious asphalt & pavers, shoreland restoration, volume reduction & runoff treatment practices, wetland restoration.

For more information:
visit rpbcwd.org or contact the RPBCWD Water Quality & Outreach Coordinator, Michelle Jordan: [mjordan@rpbcwd.org, 952-607-6481]

This large raingarden will catch and filter runoff before it enters Duck Lake. The photo was taken before the basin was planted.

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

zebra mussel with its distinctive stripes

monitoring plates

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

DUCK LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	228 acres
Lake size	38 acres
Lake volume	164 acre-feet
Maximum lake depth	10 feet
Mean lake depth	4 feet
Direct land draining	174 acres
MPCA classification	Shallow

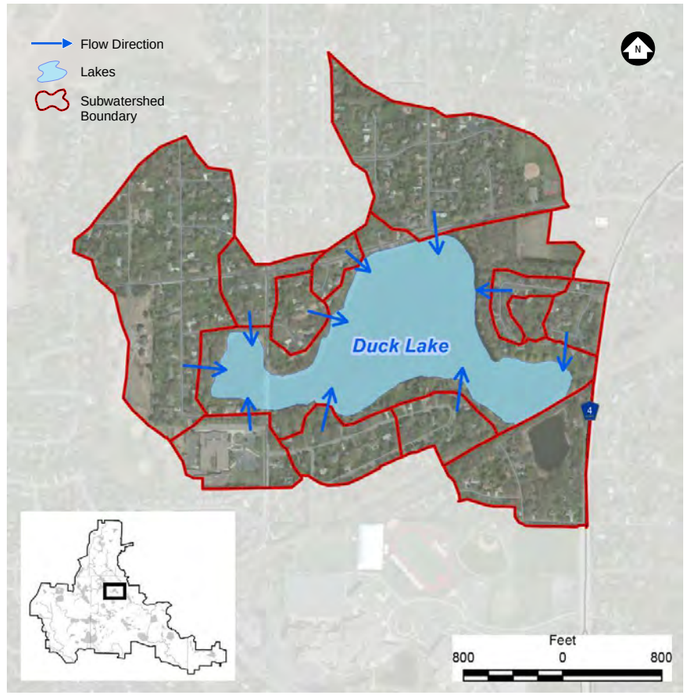
Most abundant common fish species
Bluegill, Black Crappie, Bullhead

Invasive species
Curlyleaf Pondweed, Purple Loosestrife

Trophic status	Impairment
Mesotrophic (moderate nutrient level)	Not Listed

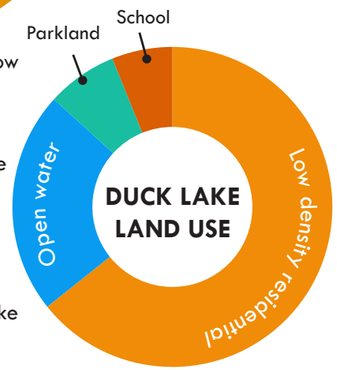
Duck Lake is a perfect spot for a relaxing paddle in a canoe or kayak.

LOCATION Located in northwest Eden Prairie, Duck Lake is situated just west of Eden Prairie Road and south of Duck Lake Trail. Off the northern side of the lake, public parking and a paved trail are available along Duck Lake Trail. Boat access on the lake is limited due to motorized boat restriction. Non-motorized boats such as canoes, kayaks, and sailboats are welcome!



Did you know?

- Duck Lake stands alone - there are no upstream creeks or lakes that flow directly into the lake
- Water exits lake through piped outlet located on the south east side of the lake
- Residence time is approximately three years
- Historic land use surrounding the lake was primarily agricultural



WATER QUALITY

DUCK LAKE

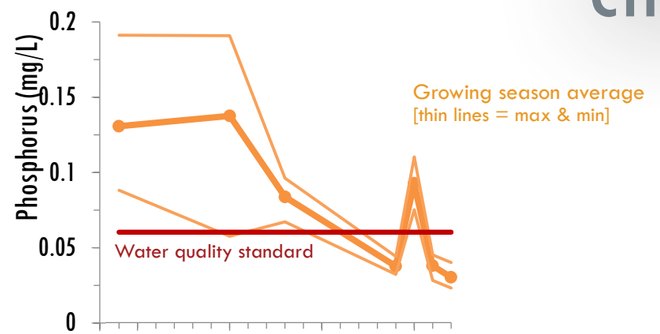
WATER QUALITY SUMMARY

Duck Lake water clarity (secchi depth) has been monitored since 1972, and water samples have been collected since 1996. Early monitoring showed that Duck Lake was not meeting the Minnesota Pollution Control Agency (MPCA) standards for secchi depth, total phosphorus (TP), or chlorophyll-a (chl-a).

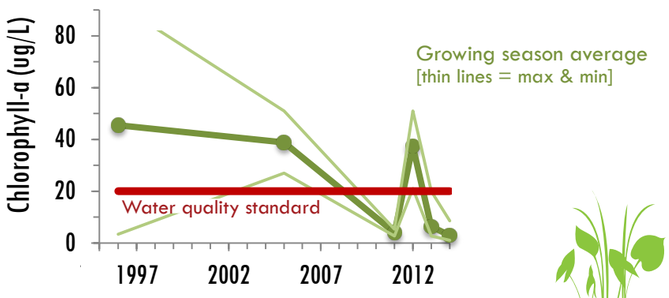
In 2014, the City of Eden Prairie collected samples from Duck Lake on 10 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Duck Lake met all three MPCA water quality standards for 2014, with values similar to those from 2013.

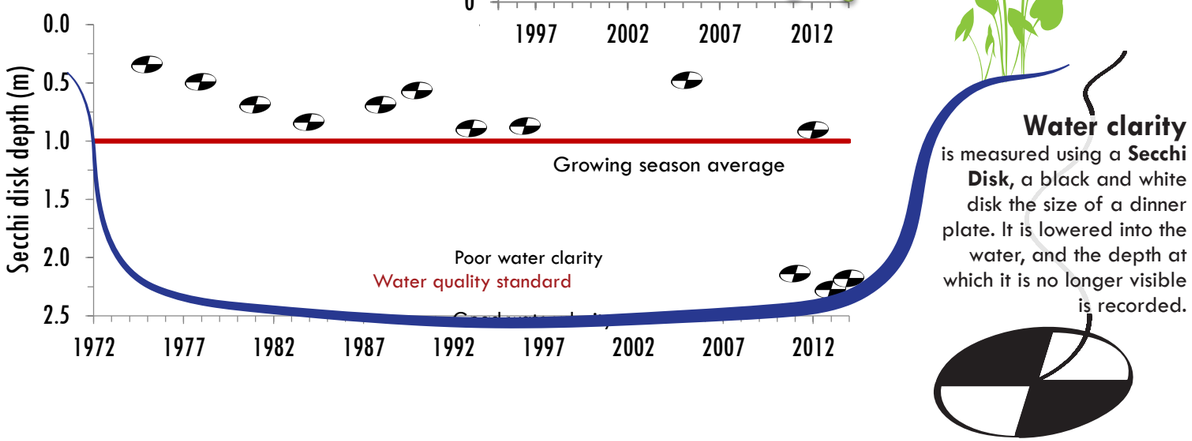
CHARTS

Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.





Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.

TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1972/1996-2013 Average	1972/1996-2013 Maximum	1972/1996-2013 Minimum
TP	< 0.06 mg/L	0.03	0.04	0.02	0.08	0.19	0.03
Chl-a	< 20 µg/L	2.94	8.5	<1	24	92	2.7
Secchi	> 1 m	1.52	2.9	2.19	1.2	2.7	0.2

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Duck Lake is classified as a shallow lake, and the standards listed above are for a shallow lake.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Duck Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Every property connects to our water bodies through streets, sewers and rivers. Due to our ever changing landscape and the increase of impervious surfaces (such as roads and concrete where water cannot naturally soak in), we are all responsible for making a positive impact. An easy way to do this is by planting rain gardens and using native plants which can act as filters by trapping sediment and absorbing water, thereby decreasing the potential for flooding or other activities that can be detrimental to the landscape.

By planting native plants in your garden, the deep root systems help to anchor the soil, collect nutrient-rich stormwater runoff, and separate out pollutants before the water continues through the watershed, eventually into the main water body.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Grants are available for projects that:
- improve watershed resources
- foster water resource stewardship
- increase awareness of water resource vulnerability
- increase knowledge/acceptance of water sollutions

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Water Quality & Outreach Coordinator, Michelle Jordan [mjordan@rpbcwd.org; 952-607-6481]

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

AQUATIC INVASIVE SPECIES GOALS AND STRATEGIES DOCUMENT

District staff, with the input of the citizen advisory committee, are developing an AIS Goals & Strategies document, to guide prevention of and response to AIS.

Aquatic invasive species are both an ecologial and economic threat to lakes and streams. The detection of zebra mussles in neighboring Christmas Lake (Minnehaha Creek Watershed District) has caused increased concern about the spread of AIS. At the suggestion of the RPBCWD citizen advisory committee (CAC), district staff are developing an AIS Goals & Strategies document, and a corresponding AIS Monitoring & Detection Protocol.

These documents will outline best practices for increasing awareness and education about AIS, preventing the spread of invasive spieces, and managing established populations. Once the documents are finalized, they will be available on the district website: rpbcwd.org

CONTACT US:
14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344
www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

HYLAND LAKE

Riley Purgatory Bluff Creek Watershed District 2014

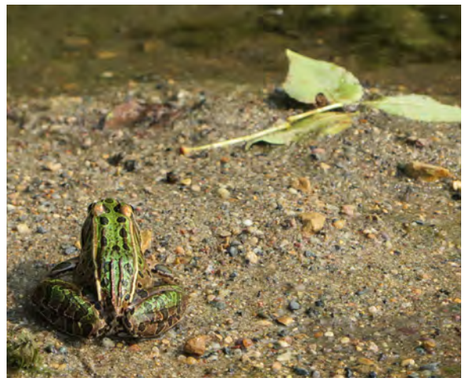
Quick Facts

Watershed size	1040 acres
Lake size	83 acres
Lake volume	725 acre-feet
Maximum lake depth	10 feet
Mean lake depth	7.5 feet
MPCA classification	Shallow

Most abundant common fish species
Bluegill, Black crappie, Walleye, Black bullhead

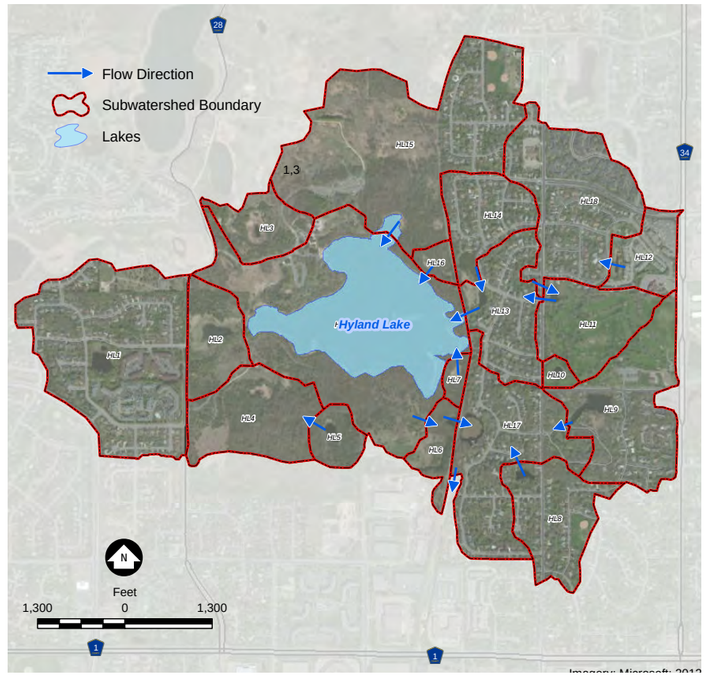
Invasive species
Curlyleaf pondweed

Trophic status	Impairment
Eutrophic-hypereutrophic (nutrient rich)	Nutrients



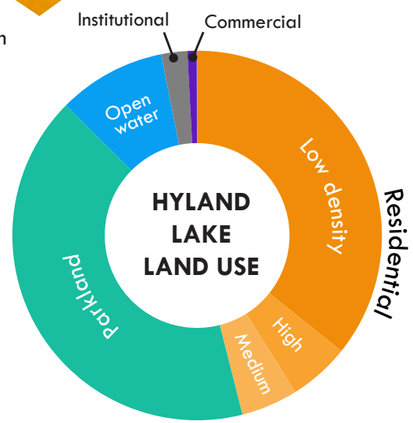
A leapord frog suns itself on the beach at Hyland Lake.

LOCATION Hyland Lake is located in the City of Bloominton in the southeastern part of the Riley Purgatory Bluff Creek Watershed, and drains to Purgatory Creek. The lake is surrounded by Three Rivers Park District land, and the park operates a public boat launch and fishing pier.



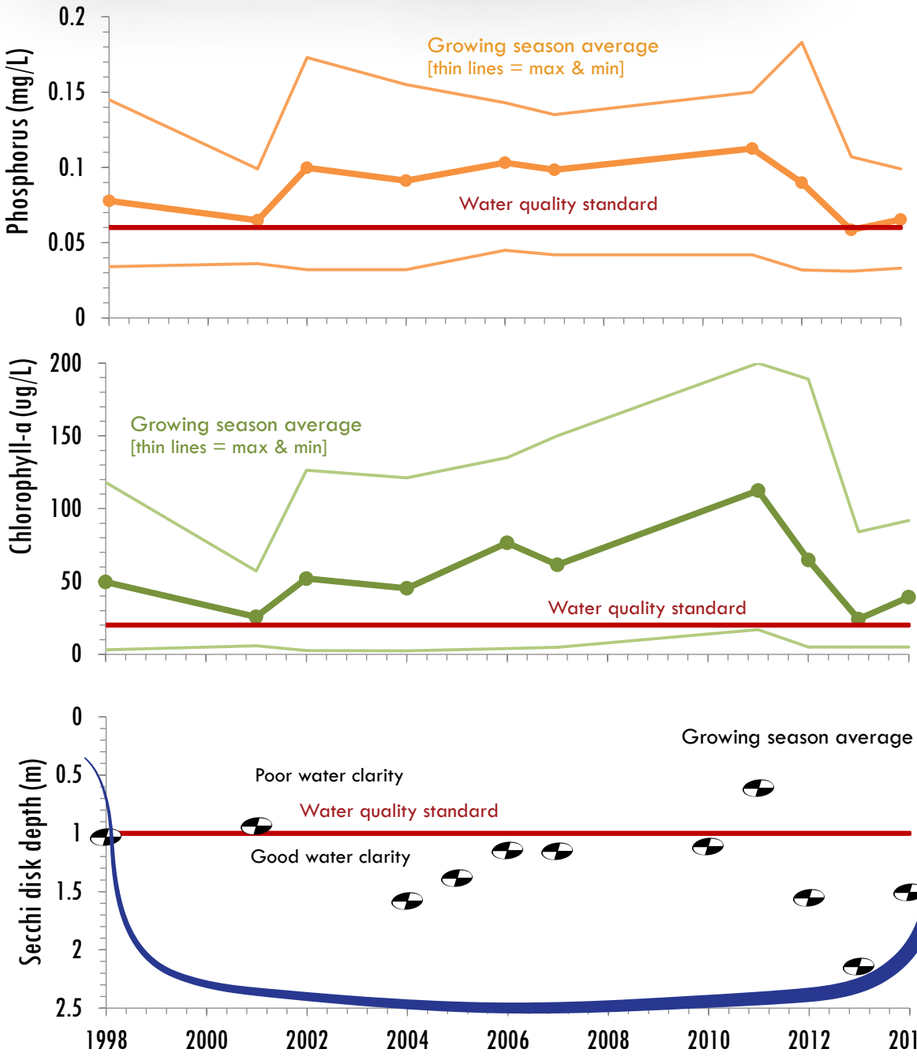
Did you know?

- Hyland Lake lies entirely within the borders of Three Rivers Park District.
- It is not designated as a swimming lake, but does support a recreational fishery.
- A weir at the outlet controls discharge, and Hyland Lake only outflows to Purgatory Creek during extreme wet conditions.



WATER QUALITY

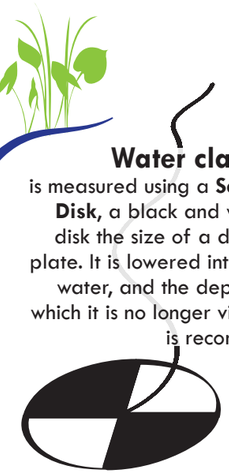
CHARTS



Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.

Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.

Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



HYLAND LAKE

WATER QUALITY SUMMARY

Hyland Lake water quality has been monitored since 1998. Since that time water quality has consistently failed to meet the Minnesota Pollution Control Agency (MPCA) standards for total phosphorus (TP) and chlorophyll-a (chl-a). As a result, Hyland is listed on the MPCA impaired waters list. The lake has, however, often met MPCA standards for secchi depth (water clarity).

In 2014, samples were collected by Three Rivers Park District on 11 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Hyland Lake failed to meet MPCA standards for TP or chl-a, but did meet standards for water clarity.

TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1998 - 2013 Average	1998 - 2013 Maximum	1998 - 2013 Minimum
TP	< 0.06 mg/L	0.07	0.1	0.03	0.09	0.18	0.03
Chl-a	< 20 µg/L	39	92	5	55	200	2
Secchi	> 1 m	1.5	4.6	0.6	1.3	3.7	0.24

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Hyland Lake is classified as a shallow lake, and the standards listed above are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Hyland Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Every property connects to our water bodies through streets, sewers and rivers. Due to our ever changing landscape and the increase of impervious surfaces (such as roads and concrete where water cannot naturally soak in), we are all responsible for making a positive impact. An easy way to do this is by planting rain gardens and using native plants which can act as filters by trapping sediment and absorbing water, thereby decreasing the potential for flooding or other activities that can be detrimental to the landscape.

By planting native plants in your garden, the deep root systems help to anchor the soil, collect nutrient-rich stormwater runoff, and separate out pollutants before the water continues through the watershed, eventually into the main water body.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Grants are available for projects that:
- improve watershed resources
- foster water resource stewardship
- increase awareness of water resource vulnerability
- increase knowledge/acceptance of water sollutions

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Water Quality & Outreach Coordinator, Michelle Jordan [mjordan@rpbcwd.org; 952-607-6481]

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

AQUATIC INVASIVE SPECIES GOALS AND STRATEGIES DOCUMENT

District staff, with the input of the citizen advisory committee, are developing an AIS Goals & Strategies document, to guide prevention of and response to AIS.

Aquatic invasive species are both an ecologial and economic threat to lakes and streams. The detection of zebra mussles in neighboring Christmas Lake (Minnehaha Creek Watershed District) has caused increased concern about the spread of AIS. At the suggestion of the RPBCWD citizen advisory committee (CAC), district staff are developing an AIS Goals & Strategies document, and a corresponding AIS Monitoring & Detection Protocol.

These documents will outline best practices for increasing awareness and education about AIS, preventing the spread of invasive spieces, and managing established populations. Once the documents are finalized, they will be available on the district website: rpbcwd.org

CONTACT US:
14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344
www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

HYLAND LAKE

Riley Purgatory Bluff Creek Watershed District 2014

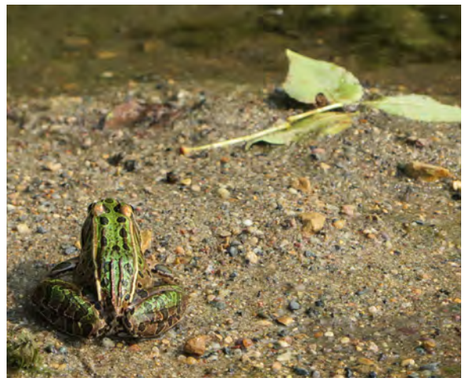
Quick Facts

Watershed size	1040 acres
Lake size	83 acres
Lake volume	725 acre-feet
Maximum lake depth	10 feet
Mean lake depth	7.5 feet
MPCA classification	Shallow

Most abundant common fish species
Bluegill, Black crappie, Walleye, Black bullhead

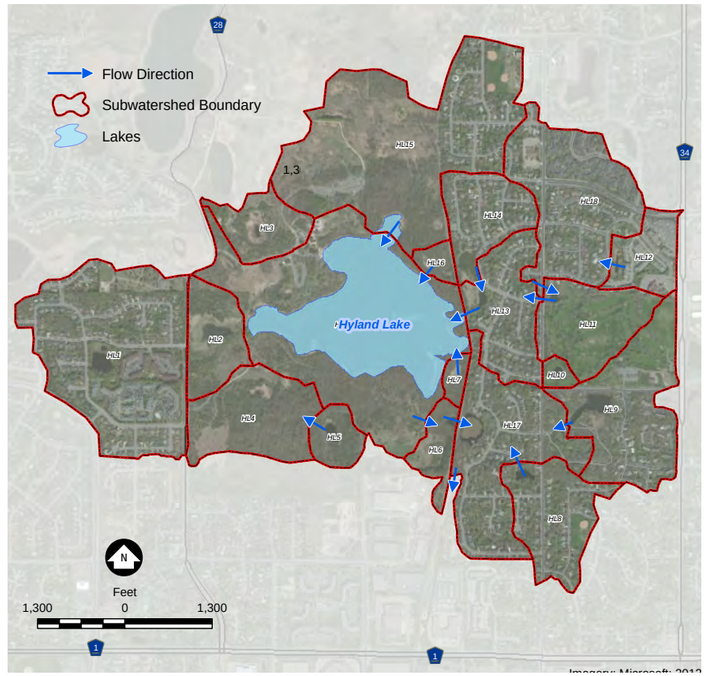
Invasive species
Curlyleaf pondweed

Trophic status	Impairment
Eutrophic-hypereutrophic (nutrient rich)	Nutrients



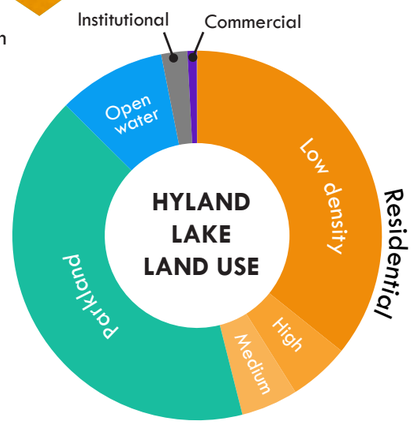
A leapord frog suns itself on the beach at Hyland Lake.

LOCATION Hyland Lake is located in the City of Bloominton in the southeastern part of the Riley Purgatory Bluff Creek Watershed, and drains to Purgatory Creek. The lake is surrounded by Three Rivers Park District land, and the park operates a public boat launch and fishing pier.



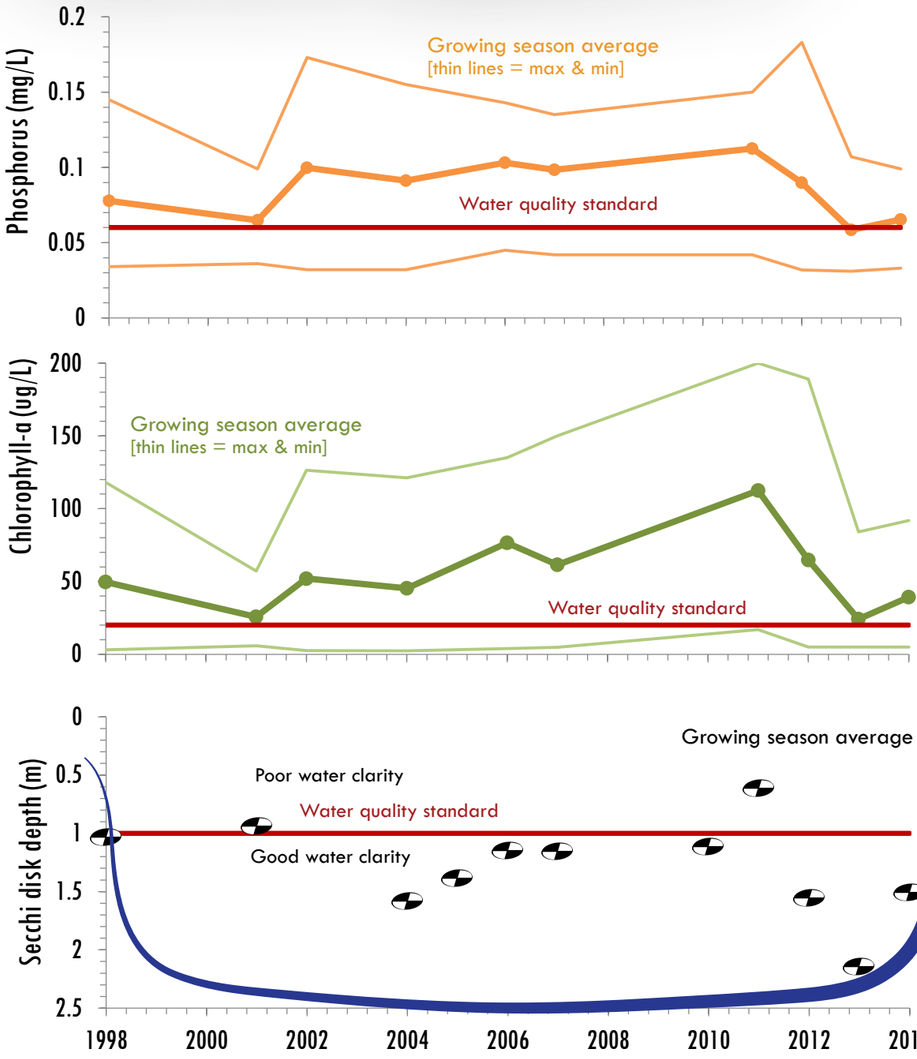
Did you know?

- Hyland Lake lies entirely within the borders of Three Rivers Park District.
- It is not designated as a swimming lake, but does support a recreational fishery.
- A weir at the outlet controls discharge, and Hyland Lake only outflows to Purgatory Creek during extreme wet conditions.



WATER QUALITY

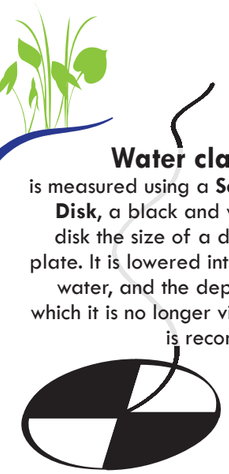
CHARTS



Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.

Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.

Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



HYLAND LAKE

WATER QUALITY SUMMARY

Hyland Lake water quality has been monitored since 1998. Since that time water quality has consistently failed to meet the Minnesota Pollution Control Agency (MPCA) standards for total phosphorus (TP) and chlorophyll-a (chl-a). As a result, Hyland is listed on the MPCA impaired waters list. The lake has, however, often met MPCA standards for secchi depth (water clarity).

In 2014, samples were collected by Three Rivers Park District on 11 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Hyland Lake failed to meet MPCA standards for TP or chl-a, but did meet standards for water clarity.

TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1998 - 2013 Average	1998 - 2013 Maximum	1998 - 2013 Minimum
TP	< 0.06 mg/L	0.07	0.1	0.03	0.09	0.18	0.03
Chl-a	< 20 µg/L	39	92	5	55	200	2
Secchi	> 1 m	1.5	4.6	0.6	1.3	3.7	0.24

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Hyland Lake is classified as a shallow lake, and the standards listed above are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Hyland Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Every property connects to our water bodies through streets, sewers and rivers. Due to our ever changing landscape and the increase of impervious surfaces (such as roads and concrete where water cannot naturally soak in), we are all responsible for making a positive impact. An easy way to do this is by planting rain gardens and using native plants which can act as filters by trapping sediment and absorbing water, thereby decreasing the potential for flooding or other activities that can be detrimental to the landscape.

By planting native plants in your garden, the deep root systems help to anchor the soil, collect nutrient-rich stormwater runoff, and separate out pollutants before the water continues through the watershed, eventually into the main water body.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Administrator Claire Bleser at 952-607-6512

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

PLANT SURVEYS

The City of Eden Prairie conducted two plant surveys in Idlewild Lake in 2014. They found low plant diversity, but no non-native species.

Plant surveys were conducted in early and late summer to evaluate the native plant communities, and to identifiy any invasive species. The surveys did not detect either curlyleaf pondweed or Eurasian watermilfoil, two common invasive species. The early summer surveys found two species of native aquatic plants, and the late summer surveys found three species. These plant assemblage data are important information for informing any management or restoration activies.

A rake sample of aquatic plants in Idelwild Lake. Photo credit: City of Eden Prairie

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.

zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

IDLEWILD LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Lake size	15 acres
Maximum lake depth	9 feet
Median lake depth	6 feet
MPCA lake classification	Shallow

Most abundant common fish species
Bluegill, Golden shiner, Black crappie, Black bullhead

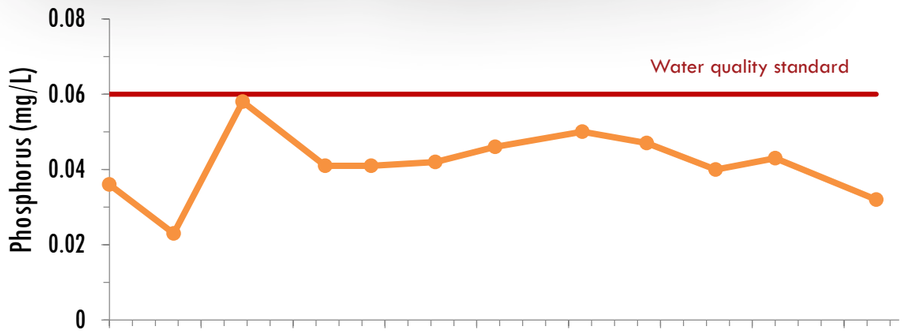
Invasive species
None listed

Trophic status	Impairment
Eutrophic (rich in nutrients)	Not Listed

LOCATION Idlewild Lake is located in Eden Prairie, south of the intersection of Highways 212 and 494, and west of Flying Cloud Drive. Idlewild outflows eventually to Purgatory Creek through the Purgatory Creek Recreation Area.

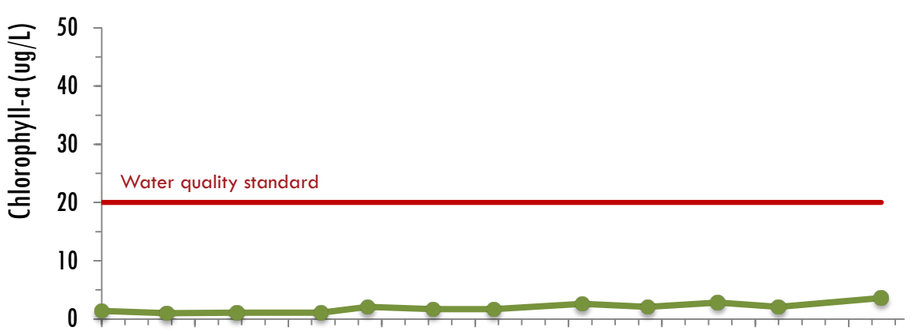
Late summer on Idlewild Lake. Photo credit: City of Eden Prairie

WATER QUALITY

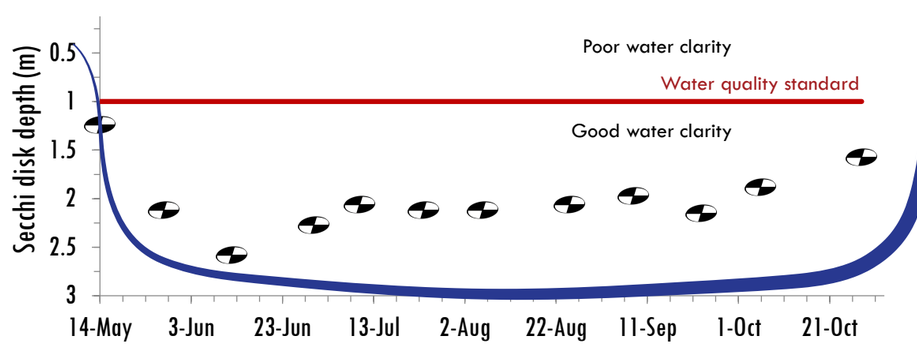


CHARTS

Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.

TABLE

IDLEWILD LAKE

WATER QUALITY SUMMARY

Idlewild Lake water quality was monitored for the first time in 2014, by the City of Eden Prairie. The lake was sampled on 10 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Idlewild Lake met the Minnesota Pollution Control Agency (MPCA) water quality standards for secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a (chl-a).

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum
TP	< 0.060 mg/L	0.04	0.06	0.04
Chl-a	< 20 µg/L	1.84	2.8	1
Secchi	> 1.0 m	2.1	2.6	1.2

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Idlewild Lake is classified as a shallow lake, and the standards listed above are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Idlewild Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Every property connects to our water bodies through streets, sewers and rivers. Due to our ever changing landscape and the increase of impervious surfaces (such as roads and concrete where water cannot naturally soak in), we are all responsible for making a positive impact. An easy way to do this is by planting rain gardens and using native plants which can act as filters by trapping sediment and absorbing water, thereby decreasing the potential for flooding or other activities that can be detrimental to the landscape.

By planting native plants in your garden, the deep root systems help to anchor the soil, collect nutrient-rich stormwater runoff, and separate out pollutants before the water continues through the watershed, eventually into the main water body.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Administrator Claire Bleser at 952-607-6512

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

AQUATIC INVASIVE SPECIES (AIS) GOALS AND STRATEGIES DOCUMENT

District staff, with the input of the citizen advisory committee, are developing an AIS Goals & Strategies document, to guide prevention of and response to AIS.

Aquatic invasive species are both an ecologial and economic threat to lakes and streams. The detection of zebra mussles in neighboring Christmas Lake (Minnehaha Creek Watershed District) has caused increased concern about the spread of AIS. At the suggestion of the RPBCWD citizen advisory committee (CAC), district staff are developing an AIS Goals & Strategies document, and a corresponding AIS Monitoring & Detection Protocol. These documents will outline best practices for increasing awareness and education about AIS, preventing the spread of invasive spieces, and managing established populations. Once the documents are finalized, they will be available on the district website: rpbcwd.org

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.

zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344
www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

LOTUS LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	1339 acres
Lake size	240 acres
Lake volume	3509 acre-feet
Maximum lake depth	29 feet
Mean lake depth	16 feet
Direct land draining	316 acres
MPCA lake classification	Deep

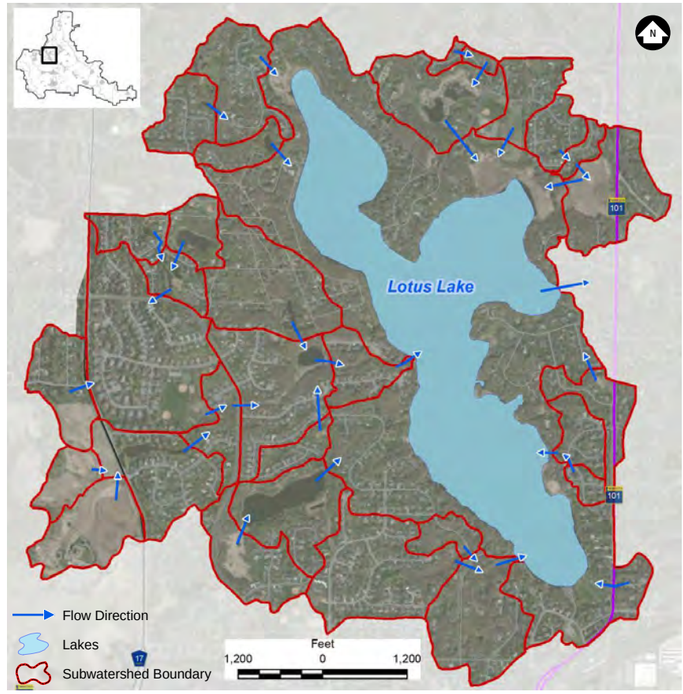
Most abundant common fish species
Bluegill, Yellow Perch, Walleye

Invasive species
Eurasian Watermilfoil, Common Carp

Trophic status	Impairment
Eutrophic (rich in nutrients)	Mercury and nutrients

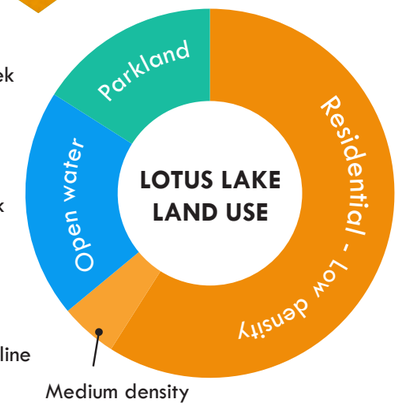
A loon floats on Lotus Lake in October.

LOCATION Lotus Lake is located in northeast Chanhassen within Carver County, west of Highway 101 and north of Highway 5. The Lotus Lake watershed includes the majority of Chanhassen and a small portion of Eden Prairie east of Highway 101. The west side of the lake's landscape has steep topography containing many ravines, which can make the lake vulnerable to sedimentation.



Did you know?

- Lotus Lake is one of the three headwaters to Purgatory Creek
- Water exits the lake by groundwater infiltration or through an outlet, which discharges to Purgatory Creek
- Residence time (time a drop of water stays in the lake) is approximately five years
- The District completed a shoreline restoration in 2013



WATER QUALITY

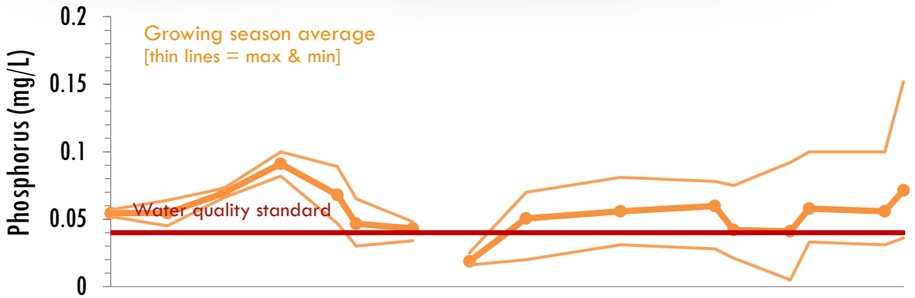
LOTUS LAKE

WATER QUALITY SUMMARY

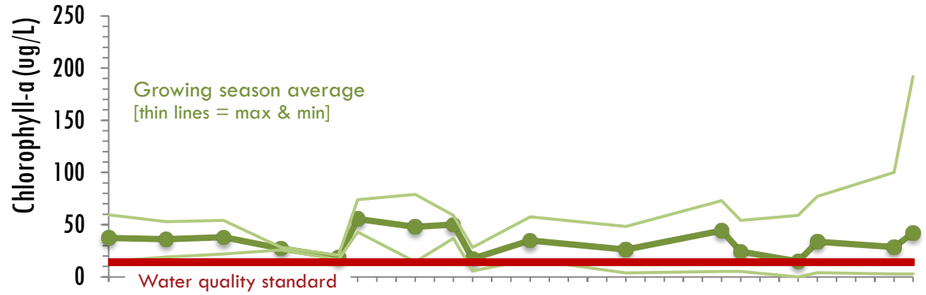
Lotus Lake has been monitored since 1972. Since that time water quality has stayed relatively steady and consistently failed to meet the Minnesota Pollution Control Agency (MPCA) standards for secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a (chl-a). As a result, Lotus is listed on the MPCA impaired waters list.

In 2014, samples were collected from Lotus Lake on 9 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. In 2014, water clarity met MPCA standards, continuing a trend toward improvement since 2009. Lotus Lake failed however to meet the standards for TP and chl-a, with values similar to previous years.

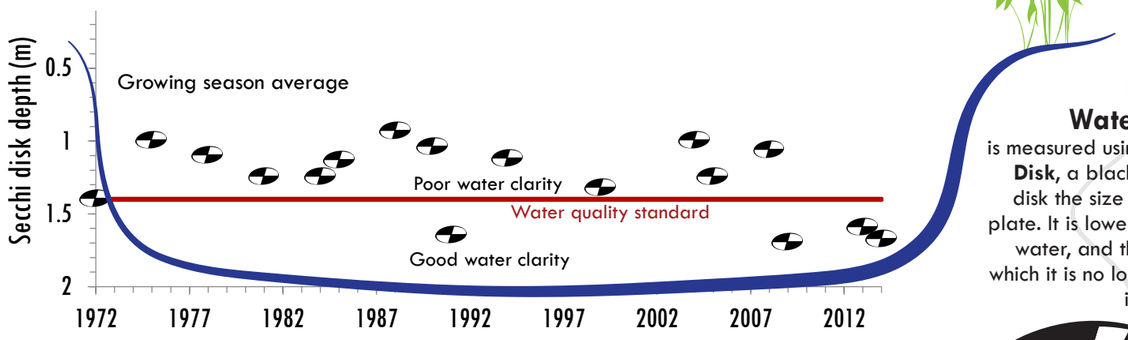
CHARTS



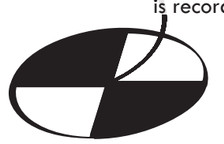
Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1972 - 2013 Average	1972 - 2013 Maximum	1972 - 2013 Minimum
TP	< 0.04 mg/L	0.07	0.15	0.04	0.05	0.1	0.01
Chl-a	< 14 µg/L	42	192	2.7	30	100	0
Secchi	> 1.4 m	1.7	4.2	0.8	1.3	3	0.3

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Lotus Lake is classified as a deep lake, and the standards listed above are for deep lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Lotus Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections A shoreline buffer provides a final defense in blocking unwanted nutrients and pollutants from entering the lake. An effective buffer prevents erosion, absorbs excess nutrients, stabilizes and shades the shoreline, and recharges the groundwater.

It also provides wildlife habitat for small animals and helps to deter waterfowl, such as Canada geese, from grazing on lawns accessed from the lake.

An egret hunts for fish near a shoreline buffer.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:

- raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:

visit rpbcwd.org or contact the RPBCWD Administrator Claire Bleser at 952-607-6512

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant.

PLANT MANAGEMENT PLAN

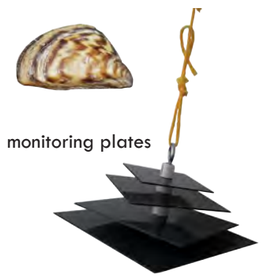
Plant management plans address long-term management of aquatic plants, especially invasive species. In 2014, the district engaged residents in developing a plan for Lake Lucy.

The objective of the plant management plan for Lake Lucy was to develop an aquatic plant control program that defined the problems, set quantifiable management goals, and identified specific management actions to improve lake conditions. In 2014, the district held four meetings for Lake Lucy residents and other stakeholders. These meetings were an opportunity both to learn about plant management, and to help build the plan.

Once the plan is finalized, it will be available on the district website: rpbcwd.org.

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.



Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district.

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

LAKE LUCY

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	997 acres
Lake size	88 acres
Lake volume	558 acre-feet
Maximum lake depth	20 feet
Mean lake depth	6.5 feet
Direct land draining	111 acres
MPCA lake classification	Shallow

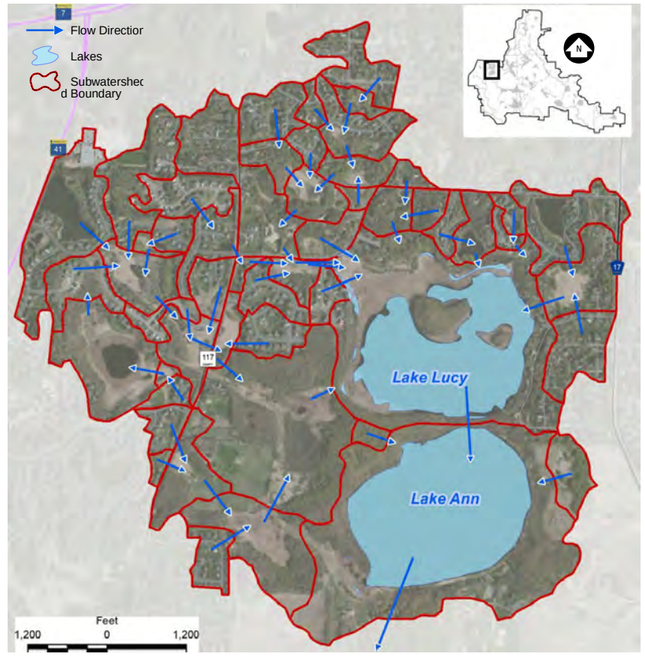
Most abundant common fish species
Bluegill, Northern Pike, Yellow Bullhead, Black Crappie

Invasive species
Eurasion Watermilfoil, Curlyleaf Pondweed, Common Carp

Trophic status	Impairment
Eutrophic (rich in nutrients)	Mercury

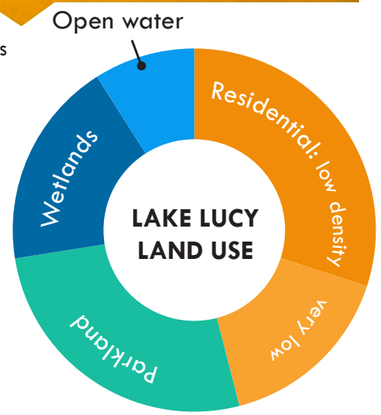
See the light colored circles in the sand? These are sunfish beds along the shore of Lake Lucy. Female sunfish lay their eggs here, and the males protect them from predators.

LOCATION Located north of Highway 5 and just west of Powers Blvd, Lake Lucy is directly connected to Lake Ann by a small channel located in the southeast corner of the lake. Lake Lucy is primarily used for fishing and canoeing. There is no public boat access on Lake Lucy, but the public is permitted to carry-in small water crafts (canoes or kayaks) via the small channel that connects the two lakes.

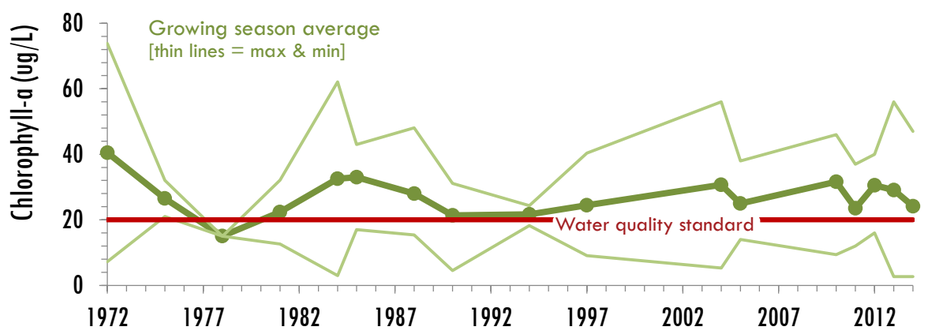


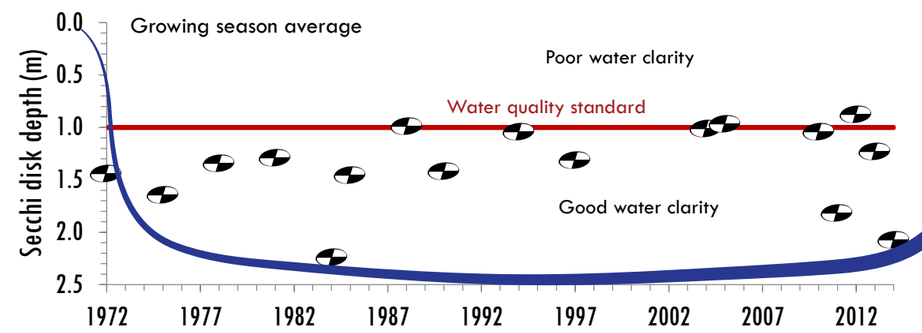
Did you know?

- Lake Lucy and Lake Ann serve as the headwaters of Riley Creek, which ultimately discharges into the Minnesota River
- There are no perennial streams that convey water into the lake
- Residence time is approximately five years
- Much of the watershed is developed, future landuse estimates show more development in the southwest corner



WATER QUALITY

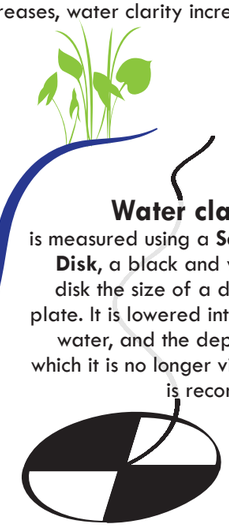




CHARTS

Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP) Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.

Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.

LAKE LUCY

WATER QUALITY SUMMARY

Lake Lucy has been monitored since 1972. Since that time, water quality has stayed relatively steady, oscillating around the Minnesota Pollution Control Agency (MPCA) standards for secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a (chl-a).

In 2014, samples were collected from Lake Lucy on 10 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Water clarity in 2014 was the best observed in the past five years, with the average secchi depth at twice the value neccessary to meet MPCA standards. Lucy also met the TP standard, but failed to meet the chl-a standard, though only by 0.03 µg/L. These values were similar to those from the last five years.

TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1972 - 2013 Average	1972 - 2013 Maximum	1972 - 2013 Minimum
TP	< 0.060 mg/L	0.06	0.08	0.03	0.06	0.1	0.03
Chl-a	< 20 µg/L	23	47	2.7	27	74	2.7
Secchi	> 1.0 m	2.1	6.9	0.9	1.3	4	0.5

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Lake Lucy is classified as a shallow lake, and the standards listed above are for a shallow lake.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Lake Lucy water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections In order to improve the water quality of Lake Lucy, it is important to control both the external and internal sources of phosphorus loading to the lake. Excess phosphorus in a lake can lead to increased algal growth, turbid water, and loss of biodiversity and desirable aquatic habitat.

Stormwater ponds are the most commonly used method for controlling pollutants, such as phosphorus and nitrogen. The district is completed an assessment of stormwater ponds to determine which might be contributors of phosphorus to Lucy.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Administrator Claire Bleser at 952-607-6512

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

PLANT MANAGEMENT PLAN

Plant managment plans address long-term managment of aquatic plants, espcially invasive species. In 2014, the district engaged residents in developing a plan for Mitchell Lake.

The objective of the plant management plan for Mitchell Lake was to develop an aquatic plant control program that defined the problems, set quantifiable management goals, and identified specific management actions to improve lake conditions.

In 2014, the district held four meetings for Mitchell Lake residents and other stakeholders. These meetings were an opportunity both to learn about plant management, and to help build the management plan.

Once the plan is finalized, it will be available on the district website (rpbcwd.org).

A sign at Mitchell Lake lets visitors know that Eurasian watermilfoil is present. Manageing invasive plants is one of the important goals of a plant managment plan.

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.

zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

MITCHELL LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	980 acres
Lake size	119 acres
Lake volume	632 acre-feet
Maximum lake depth	19 feet
Mean lake depth	5.8 feet
Direct land draining	154 acres
MPCA lake classification	Shallow

Most abundant common fish species

Black bullhead, Black crappie, Bluegill, N. pike, Pumpkinseed

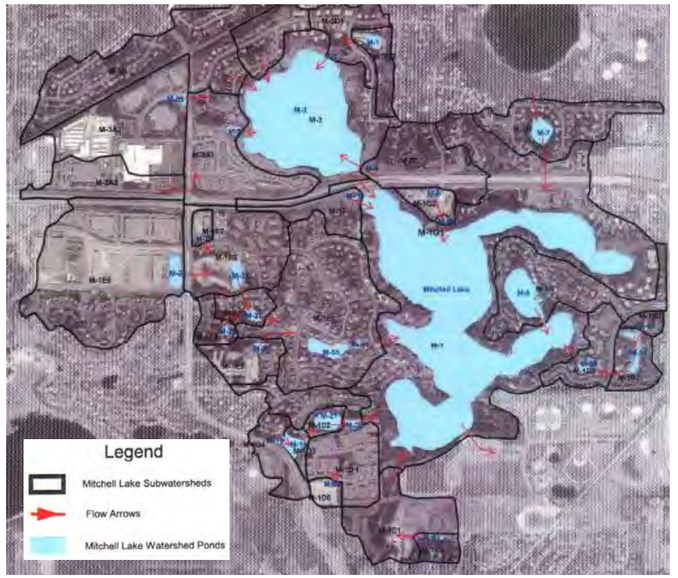
Invasive species

Curly leaf pondweed, Eurasion watermilfoil, Purple loosestrife

Trophic status	Impairment
Eutrophic (rich in nutrients)	Mercury, nutrients

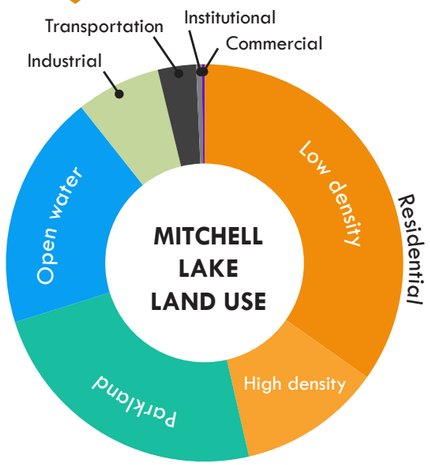
The high spring rains of 2014 raised lake levels and submerged many docks, like this one at the Mitchell Lake boat access.

LOCATION Mitchell Lake is located in Eden Prairie, south of Highway 212 and east of Eden Prairie Road. A city ordinance prevents operating motors larger than 10 horse power on the lake.



Did you know?

- Mitchell is a part of the Purgatory Creek Chain of Lakes. During high water level conditions, Round Lake flows to Mitchell, and Mitchell overflows to Red Rock Lake.
- The MN Department of Natural Resources manages the lake as a bluegill and largemouth bass recreational fishery.
- Miller Park, located along the south side of the lake, offers lake access and is a popular recreation location.



WATER QUALITY

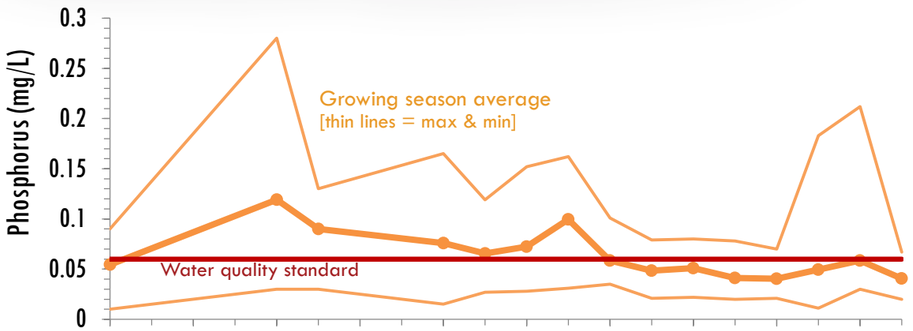
MITCHELL LAKE

WATER QUALITY SUMMARY

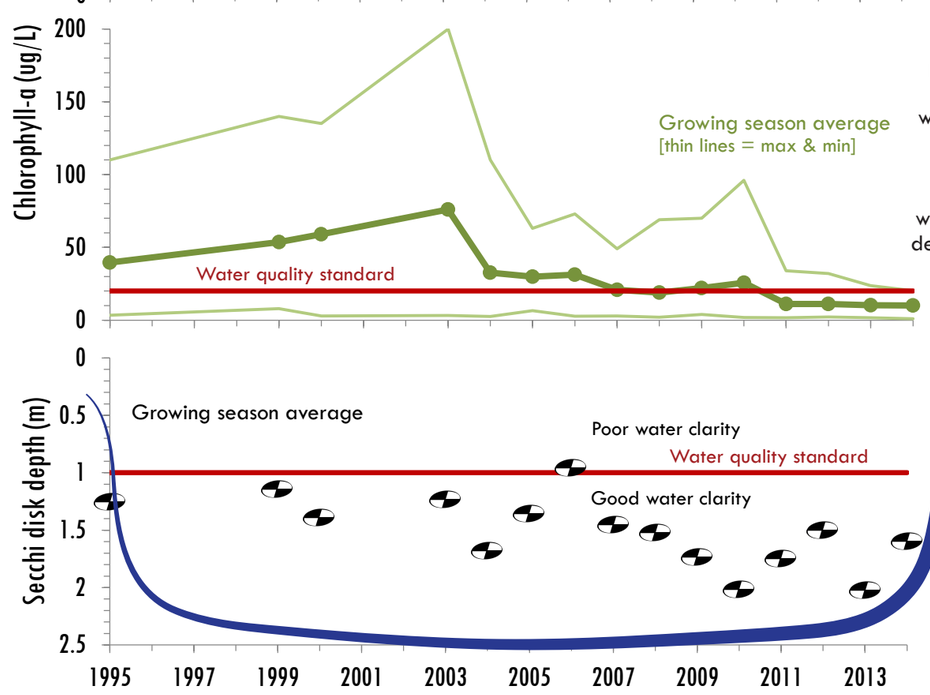
Mitchell Lake water quality has been monitored since 1995. Since that time water quality has often failed to meet the Minnesota Pollution Control Agency (MPCA) for total phosphorus (TP), and chlorophyll-a (chl-a), causing Mitchell to be added to the MPCA impaired waters list. Water quality has shown improvement since the mid 2000s however.

In 2014, the City of Eden Prairie collected samples from Mitchell Lake on 10 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Mitchell met MPCA water quality standards for all three parameters (TP, Chl-a, Secchi), and had values similar to those from the past five years.

CHARTS

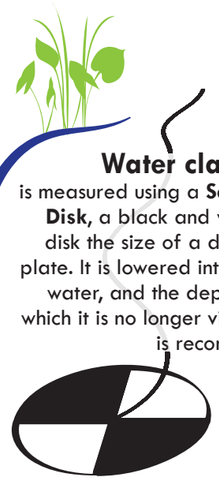


Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.

Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1995 - 2013 Average	1995 - 2013 Maximum	1995 - 2013 Minimum
TP	< 0.06 mg/L	0.04	0.07	0.02	0.06	0.28	0.01
Chl-a	< 20 µg/L	10	20	1	31	200	2
Secchi	> 1 m	1.6	4.8	0.8	1.5	4.8	0.4

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Mitchell Lake is classified as a deep lake, and the standards listed above are for deep lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Mitchell Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections A shoreline buffer provides a final defense in blocking unwanted nutrients and pollutants from entering the lake. An effective buffer prevents erosion, absorbs excess nutrients, stabilizes and shades the shoreline, and recharges the groundwater.

It also provides wildlife habitat for small animals and helps to deter waterfowl, such as Canada geese, from grazing on lawns accessed from the lake.

An egret hunts for fish near a shoreline buffer.

District in Action

PLANT MANAGEMENT PLAN

Plant managment plans address long-term managment of aquatic plants, espcially invasive species. In 2014, the district with the City of Eden Prairie engaged residents in developing a plan for Red Rock Lake.

The objective of the plant management plan for Red Rock lake was to develop an aquatic plant control program that defined the problems, set quantifiable management goals, and identified specific management actions to improve lake conditions.

In 2014, the district held four meetings for Red Rock Lake residents and other stakeholders. These meetings were an opportunity both to learn about plant management, and to help build the management plan.

Once the plan is finalized, it will be available on the district website (rpbcwd.org).

A sign at Red Rock Lake lets visitors know that Eurasian watermilfoil is present. Manageing invasive plants is one of the important goals of a plant managment plan.

COMMON CARP MANAGMENT STUDY

Following the successful management of common carp in the Riley Creek Chain of Lakes, a partnership with the University of Minnesota will develop a control strategy for the Purgatory Creek Chain of Lakes.

Through a seven-year partnership with the University of Minnesota, carp populations in the Riley Creek Watershed have been managed, and now efforts are being focused on the Purgatory Creek Chain of Lakes (Duck, Lotus, Idlewild, Mitchell, Red Rock, Round, Silver, Staring).

Carp are an invasive species that negatively impact water clarity and native fish and plant populations. Decreasing carp abundance can both improve lakes and creeks for recreation, and restore overall water quality. University researchers will determine a carp threshold below which these non-native fish do not impact water quality, and develop a management plan that will help the district control them at this level. The plan will include yearly monitoring, removal of adult carp through winter netting, and a fish barrier at the mouth of the Purgatory recreation area.

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.

zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley
Purgatory
Bluff Creek
Watershed District

RED ROCK LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	1262 acres
Lake size	97 acres
Lake volume	381 acre-feet
Maximum lake depth	15 feet
Mean lake depth	4 feet
Direct land draining	332 acres
MPCA lake classification	Shallow

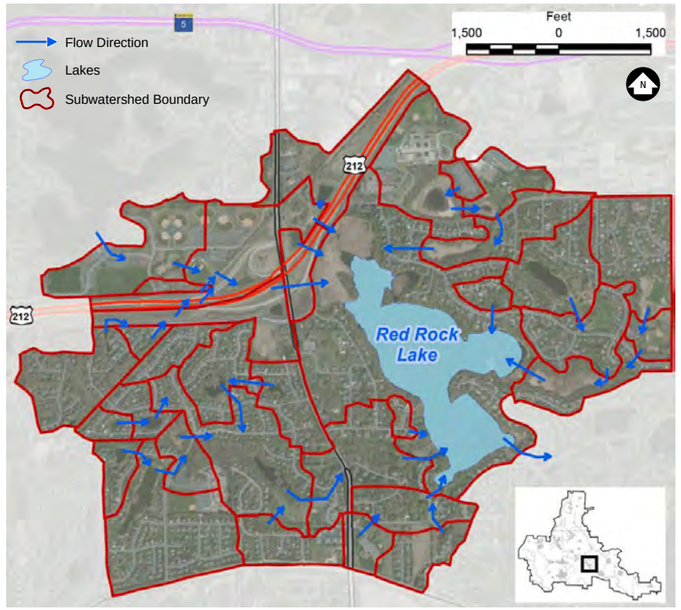
Most abundant common fish species
Yellow Perch, Bluegill, Northern Pike, Pumpkin Seed

Invasive species
Curlyleaf Pondweed, Purple Loosestrife

Trophic status	Impairment
Eutrophic (rich in nutrients)	Mercury and nutrients

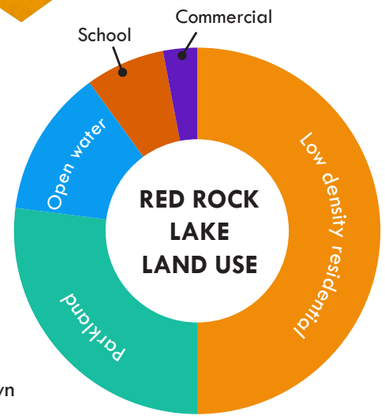
Large spring rains caused flooding and high water levels throughout the district. Here, a dock on Red Rock Lake sits submerged.

LOCATION Red Rock Lake is located in Eden Prairie, south of Highway 212 and east of Mitchell Road. Red Rock is at the down-stream end of the Eden Prairie 'Chain of Lakes' watershed, from which the waters ultimately drain into Purgatory Creek through a flood control conveyance system. The lake has a public boat launch at the south end of the lake and there is a motor restriction in place by the City of Eden Prairie limiting the size of a motor used on the lake to 10 horsepower.



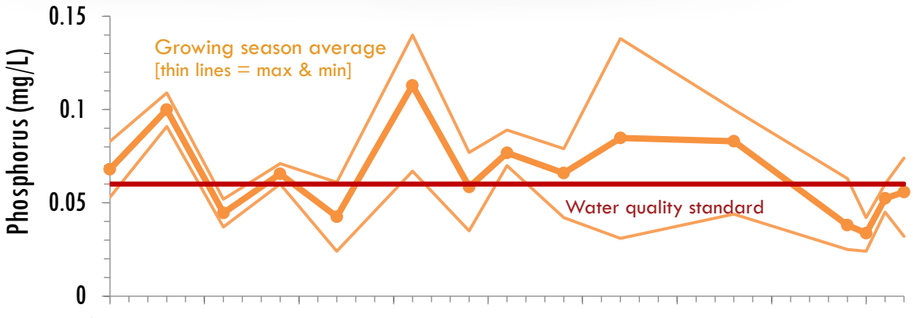
Did you know?

- Water enters Red Rock by direct precipitation, from stormwater inflow from lakeshore properties and parkland, and from Mitchell Lake
- Historical agricultural landuse practices may have an impact on the current internal phosphorus loading in the lake
- Water exits the lake through a piped outlet located in the southeast side, and continues down to Staring Lake

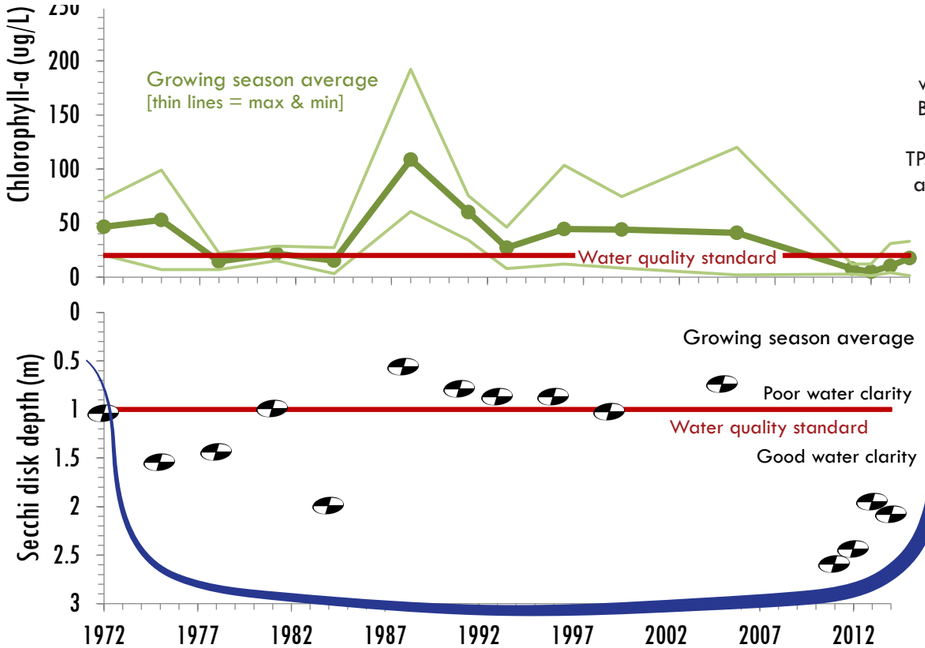


WATER QUALITY

CHARTS



Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less TP. Algae also cloud the water and as algae concentration decreases, water clarity increases.

Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.

RED ROCK LAKE

WATER QUALITY SUMMARY

Red Rock Lake has been monitored since 1972. Prior to 2008, Red Rock often did not meet the water quality standards set by the Minnesota Pollution Control Agency (MPCA) for secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a(chl-a), causing it to be placed on the MPCA list of water bodies impaired for nutrients. In recent years, quality has improved and standards have been met. In 2013 therefore, the district petitioned the MPCA to have Red Rock de-listed. The district is currently awaiting MPCA decision.

In 2014, samples were collected from Red Rock lake on 9 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. In 2014 all three water quality parameters (TP, chl-a, secchi) met MPCA standards.

TABLE

		2014			Historical		
	MPCA standard*	Average	Maximum	Minimum	Average	Maximum	Minimum
TP	< 0.060 mg/L	0.05	0.07	0.03	0.07	0.14	0.02
Chl-a	< 20 µg/L	15.7	32	1	33	192	1.3
Secchi	> 1.0 m	2.1	4.9	0.9	1.4	3.5	0.3

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Red Rock Lake is classified as a shallow lake, and the standards listed are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Red Rock Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections With winter, comes snowstorms. To help remove snow and ice from local streets, parking lots, and sidewalks, it is a common activity to apply salt, which contains chloride (a water pollutant) to help clear the surface. As the snow and ice begin to melt, the salt dissolves and will wash into the lakes and creeks of the District. It takes only one teaspoon of road salt to pollute 5 gallons of water permanently. There is no way to remove the salt once it is in the water, and high salt concentrations can have adverse impacts on aquatic plants and animals.

District in Action

CARP MANAGEMENT

A multi-year partnership with the University of Minnesota has succeeded in developing a carp management plan for the Riley Creek chain of lakes.

Rice Marsh Lake is a part of the Riley Creek chain of lakes which includes Lakes Lucy, Ann, Susan, and Riley. In 2014, the University of Minnesota completed its study of carp in the Riley chain. The research succeeded in determining a carp threshold below which these non-native fish do not impact water quality, and in developing methods for controlling populations at this level. The methods include aerating Rice Marsh Lake (sending compressed air through tubing into the lake, much like a fish tank) during winter to keep game fish alive. These fish eat the eggs of carp (which use the lake as a spawning ground) and preventing winter fishkills promotes a robust population of game fish that can control carp reproduction. The district has been operating an aeration unit on the Lake since 2010.

If you visit Rice Marsh Lake, note the location of thin ice signs. The agitation of the water by the aeration unit causes thin, weak ice, and even open water. Use caution.

PALEOLIMNOLOGY STUDY

Paleolimnology is the study of lake sediments. It can be a window into historic conditions.

researcher with a sediment core on Rice Marsh Lake

In spring of 2014, through a partnership with the St. Croix Watershed Research Station, a sediment core was collected from Rice Marsh Lake. The core was analyzed to reconstruct the phosphorus and sedimentation history of the lake. The results of the study suggest that Rice Marsh Lake should be managed to meet MPCA shallow lake standards. Historical reconstruction clearly showed an increase in sediment and nutrient loads after the construction of wastewater treatment plant (that discharged into the lake) in 1959. Since the plant was decommissioned in 1972, water quality has improved (see graphs on previous page).

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.

zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

RICE MARSH LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed Size	853 acres
Lake Size	81 acres
Lake Volume	350 acre-feet
Maximum Lake Depth	10 feet
Mean Lake Depth	5 feet
Direct Land Draining	280 acres
Stormwater Ponds	Shallow

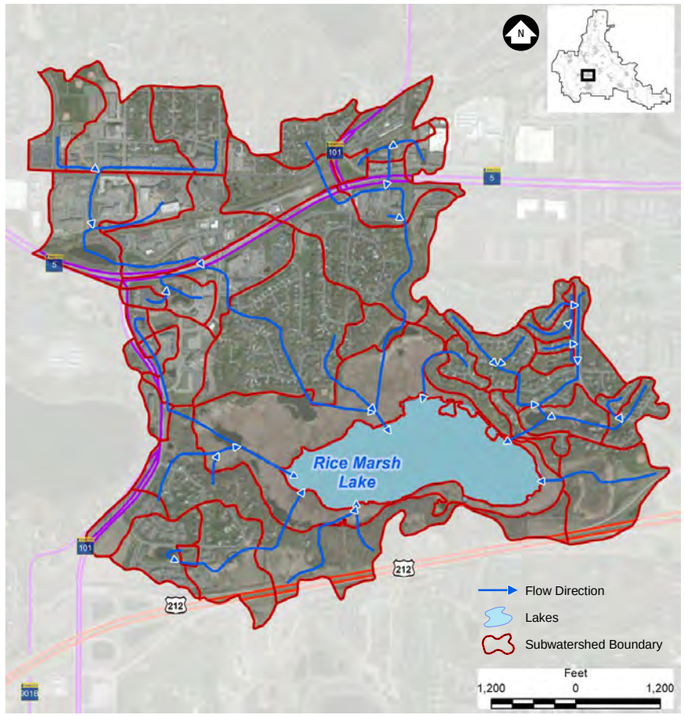
Most Abundant Common Fish Species
Bluegill, Northern Pike, White Sucker

Invasive Species
Curlyleaf Pondweed, Purple Loosetrife

Trophic Status	Impairment
Eutrophic (rich in nutrients)	Not Listed

The aeration unit on Rice Marsh Lake is important for native fishes, but it also causes thin ice. Use caution and note the posted signs.

LOCATION Rice Marsh Lake straddles the border between eastern Chanhassen and western Eden Prairie, located north of Highway 212 and west of Dell Road. A part of the Riley Creek chain, Rice Marsh Lake is immediately downstream of Lake Susan (connected by a small channel) and upstream of Lake Riley. The lake has an informal boat launch that is accessible from a walking path that circles the lake.

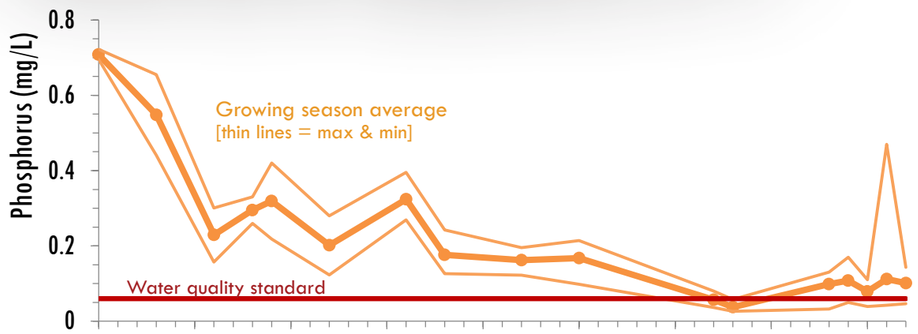


Did you know?

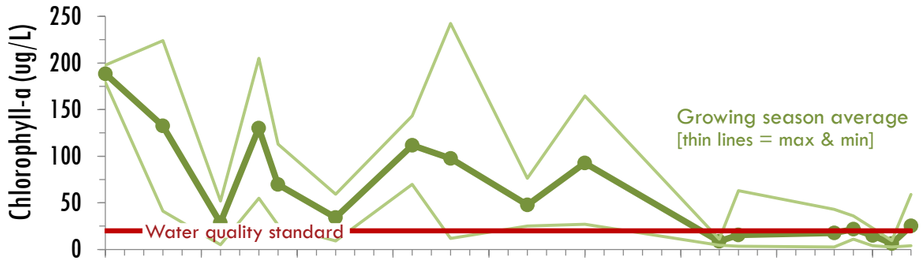
- Rice Marsh Lake is the only lake on the Riley Creek chain that does not have eurasian watermilfoil in it
- Rice Marsh Lake is an important fish spawning area for fish moving upstream from Lake Riley
- Rice Marsh Lake is prone to wind-driven mixing due to its large surface area and shallow depth
- The fringe wetland around the lake diffuses the incoming flow before it enters the open water area

WATER QUALITY

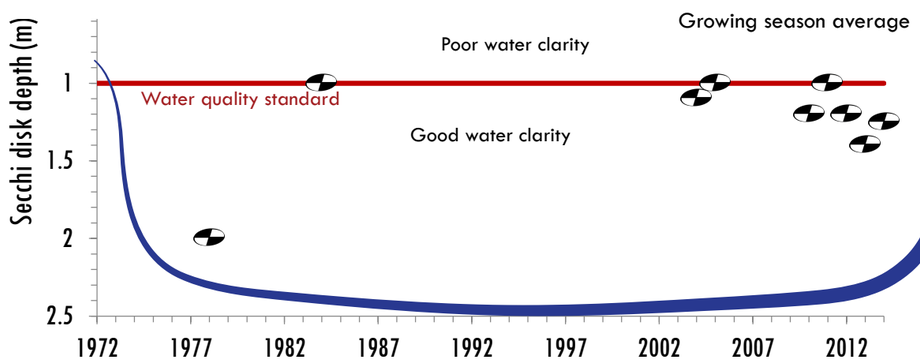
CHARTS



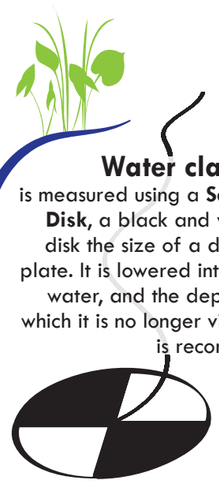
Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



RICE MARSH LAKE

WATER QUALITY SUMMARY

Rice Marsh Lake has been monitored since 1972. That year, the wastewater treatment plant that discharged to the lake closed. The plant was a source of phosphorus, and its closure resulted in a decrease in total phosphorus (TP) and Chlorophyll a (chl-a), and an increase in water clarity over the next 20 years.

In 2014, samples were collected from Rice Marsh lake on 10 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Average secchi depth (water clarity) was better than the MPCA standard, and the second best historically (1.98 m vs 2 m). Total phosphorus (TP) and chlorophyll-a (chl-a) averages were near, but did not meet the MPCA standards this year. TP has not met the standard for the past five years, and decreased slightly between 2013 and 2014.

TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	Historical Average	Historical Maximum	Historical Minimum
TP	< 0.060 mg/L	0.1	0.143	0.046	0.219	0.722	0.026
Chl-a	< 20 µg/L	24.8	59.0	4.0	61.3	242.4	2.7
Secchi	> 1.0 m	1.98	3.15	1.25	1.11	3.15	0.1

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Rice Marsh Lake is classified as a shallow lake, and the standards listed are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Rice Marsh Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our partner website www.bluethumb.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections

Rice Marsh Lake is a part of the Riley Creek system, connected to Lakes Lucy, Ann, Susan, and Riley by Riley Creek. Water quality improvements in the upstream lakes through the installation of best management practices around Lake Lucy or the reintroduction of aquatic plants in Lake Susan will help to improve water quality in Rice Marsh Lake.

Shoreline buffers along Riley Creek can play a role in improving Rice Marsh Lake. An effective buffer can help to prevent erosion by stabilizing the creekbank and absorb excess nutrients from getting into the creek and downstream waterbodies.

District in Action

COMMON CARP MANAGEMENT

A multi-year partnership with the University of Minnesota has succeeded in developing a carp management plan for the Riley Creek chain of lakes.

Lake Riley is a part of the Riley Creek chain of lakes which includes Lakes Lucy, Ann, Susan, and Rice Marsh Lake. In 2014, the University of Minnesota completed its study of carp in the Riley chain. The research succeeded in determining a carp threshold below which these non-native fish do not impact water quality, and in developing methods for controlling populations at this level. The methods include aerating Rice Marsh Lake (sending compressed air through tubing into the lake, much like a fish tank) during winter to keep game fish alive. These fish eat the eggs of carp (which use the lake as a spawning ground) and preventing winter fishkills promotes a robust population of game fish that can control carp reproduction. The district has been operating an aeration unit on the Lake since 2010.

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact Michelle Jordan at RPBCWD [mjordan@rpbcwd.org; 952-607-6481]

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant.

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.

zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

LAKE RILEY

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	1763 acres
Lake size	286 acres
Lake volume	6419 acre-feet
Maximum lake depth	49 feet
Mean lake depth	23 feet
Direct land draining	818 acres
MPCA lake classification	Deep

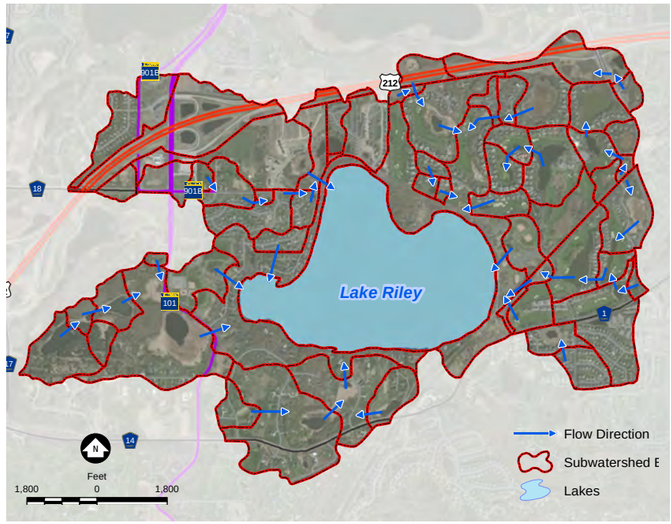
Most Abundant Common Fish Species
Bluegill, Northern pike, Yellow perch, Yellow bullhead

Invasive Species
Common carp, Curly leaf pondweed, Eurasion watermilfoil

Trophic Status	Impairment
Eutrophic (rich in nutrients)	Mercury, Nutrients

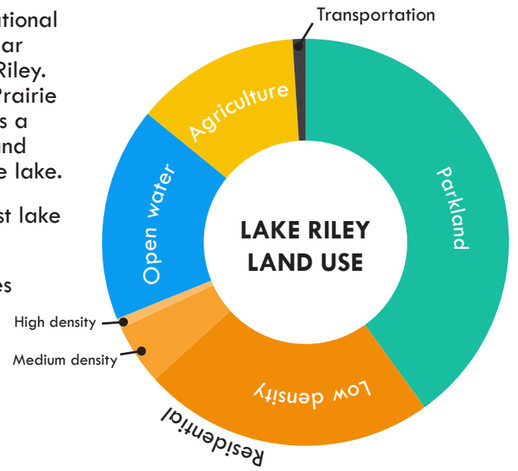
A butterfly rests in shoreline plants along Lake Riley.

LOCATION Lake Riley is located in Eden Prairie, south of Highway 212 and east of Great Plains Boulevard. Riley is part of the Riley Creek Chain of Lakes which originates at Lake Lucy. Lake Riley has a public boat ramp, a fishing pier, and a large public beach located in Riley Lake Park.



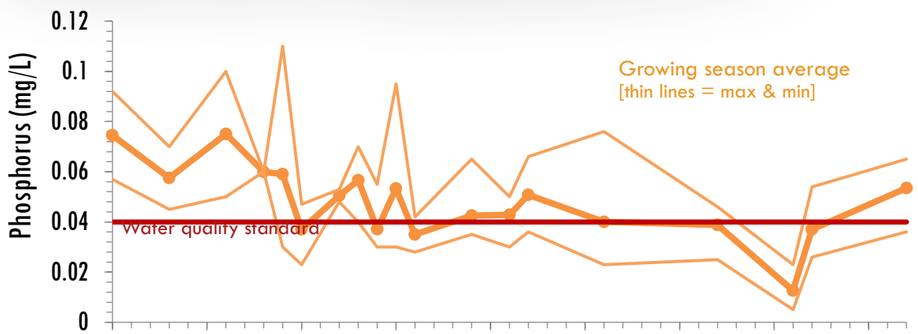
Did you know?

- Fishing and recreational boating are popular activities on Lake Riley. The City of Eden Prairie owns and operates a swimming beach and boat access for the lake.
- Riley is the deepest lake in the district.
- Lake Riley provides habitat for migrating ducks, geese, and other waterfowl.

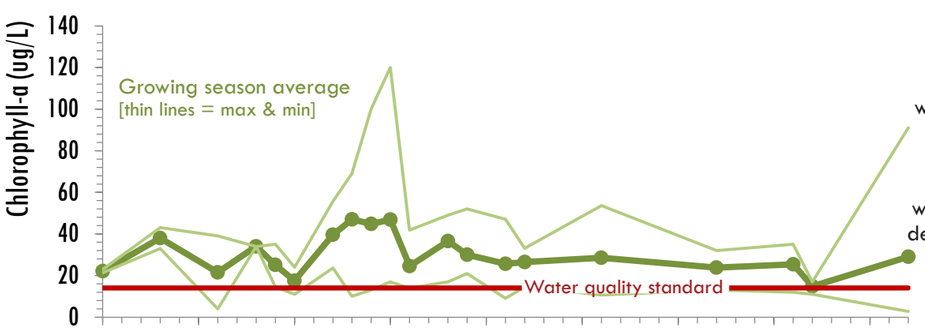


WATER QUALITY

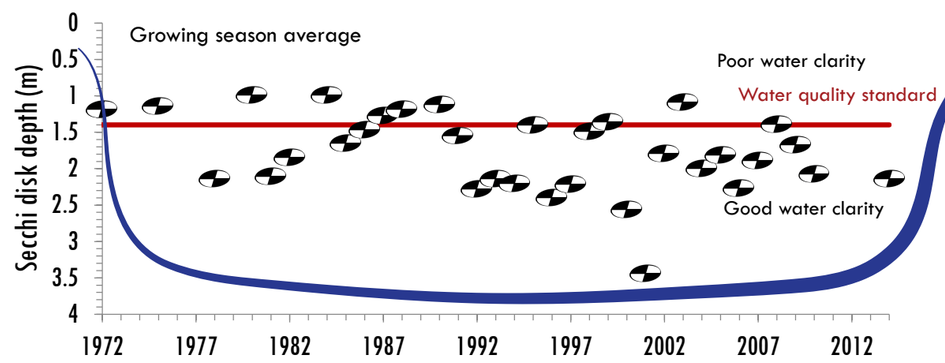
CHARTS



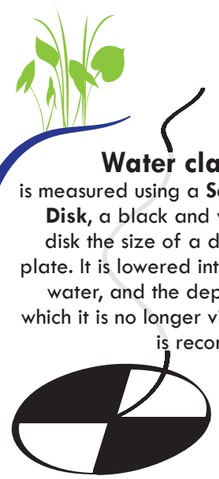
Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



LAKE RILEY

WATER QUALITY SUMMARYV

Lake Riley water quality has been monitored since 1972. Since that time water quality has consistently failed to meet the Minnesota Pollution Control Agency (MPCA) standards for secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a (chl-a). As a result, Lake Riley is listed on the MPCA impaired waters list.

In 2014, samples were collected from Riley on 9 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Average water clarity met MPCA standards, as it has done most years for the past decade. However, Lake Riley failed to meet the standards for TP and chl-a.

TABLE

		2014			1972 - 2013		
	MPCA standard*	Average	Maximum	Minimum	Average	Maximum	Minimum
TP	0.04 < mg/L	0.05	0.07	0.04	0.04	0.11	0.01
Chl-a	14 < µg/L	22.1	39	2.7	29	120	4
Secchi	1.4 > m	2.1	4.5	0.9	2	7.62	0.5

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Lake Riley is classified as a deep lake, and the standards listed above are for deep lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Lake Riley water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Every property connects to our water bodies through streets, sewers and rivers. Due to our ever changing landscape and the increase of impervious surfaces (such as roads and concrete where water cannot naturally soak in), we are all responsible for making a positive impact. An easy way to do this is by planting rain gardens and using native plants which can act as filters by trapping sediment and absorbing water, thereby decreasing the potential for flooding or other activities that can be detrimental to the landscape.

By planting native plants in your garden, the deep root systems help to anchor the soil, collect nutrient-rich stormwater runoff, and separate out pollutants before the water continues through the watershed, eventually into the main water body.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Grants are available for projects that:
- improve watershed resources
- foster water resource stewardship
- increase awareness of water resource vulnerability
- increase knowledge/acceptance of water sollutions

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Water Quality & Outreach Coordinator, Michelle Jordan [mjordan@rpbcwd.org; 952-607-6481]

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

AQUATIC INVASIVE SPECIES (AIS)

GOALS AND STRATEGIES DOCUMENT

District staff, with the input of the citizen advisory committee, are developing an AIS Goals & Strategies document, to guide prevention of and response to AIS.

Aquatic invasive species are both an ecologial and economic threat to lakes and streams. The detection of zebra mussles in neighboring Christmas Lake (Minnehaha Creek Watershed District) has caused increased concern about the spread of AIS.

At the suggestion of the RPBCWD citizen advisory committee (CAC), district staff are developing an AIS Goals & Strategies document, and a corresponding AIS Monitoring & Detection Protocol.

These documents will outline best practices for increasing awareness and education about AIS, preventing the spread of invasive spieces, and managing established populations. Once the documents are finalized, they will be available on the district website: rpbcwd.org

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

ROUND LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	444 acres
Lake size	32 acres
Lake volume	338 acre-feet
Maximum lake depth	37 feet
Mean lake depth	11 feet
MPCA lake classification	Deep

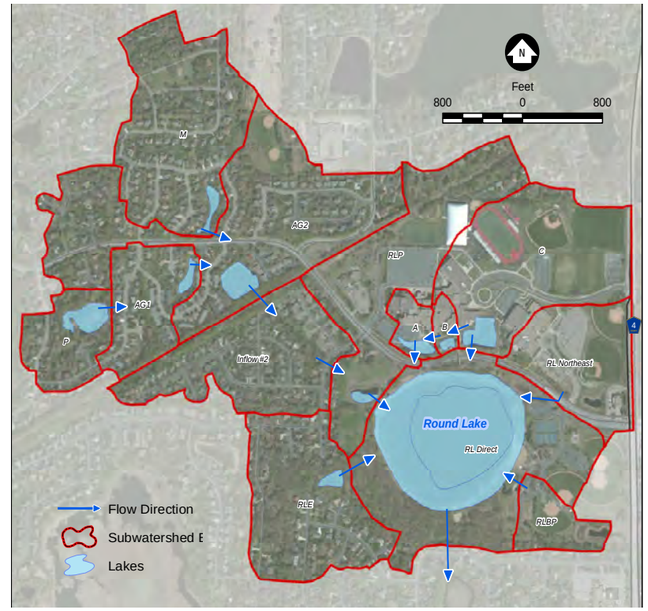
Most abundant common fish species
Bluegill, Northern pike, Yellow perch, Yellow bullhead

Invasive Species
Brittle niad, Curly leaf pondweed, Eurasion watermilfoil

Trophic Status	Impairment
Eutrophic (rich in nutrients)	Mercury, Perfluorooctane sulfanate

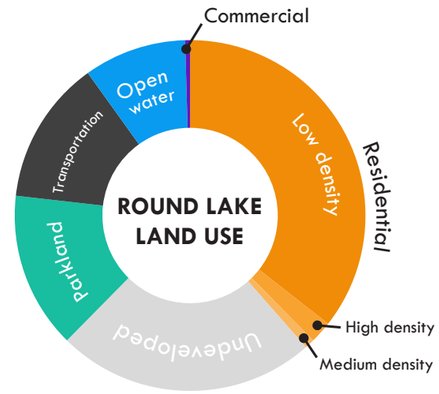
Lakes are important habitat for waterfowl.

LOCATION Round Lake is located in Eden Praire, south of Valley View Road and West of Eden Prairie Road. The lake is entriely contained within Round Lake Park which has a fishing pier, swimming beach, public boat launch, and a trail system around the lake.



Did you know?

- Round Lake is a part of the Purgatory Creek Chain of Lakes.
- There is a trail sytem around Round Lake that is used actively by district community members.
- Round Lake received an alum treatment in 2012. This type of lake management helps to reduce phosphorus in the water.



WATER QUALITY

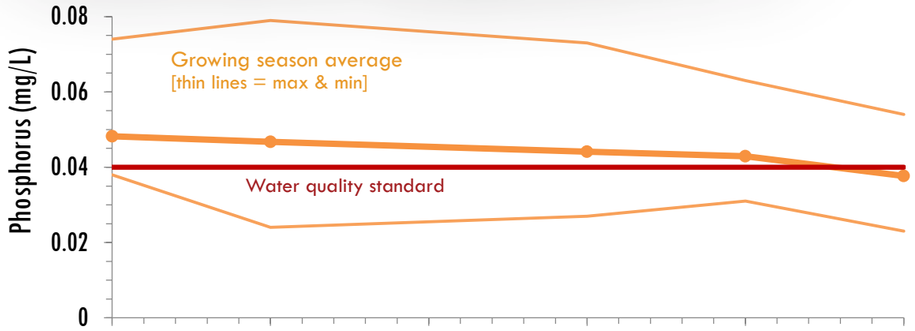
ROUND LAKE

WATER QUALITY SUMMARY

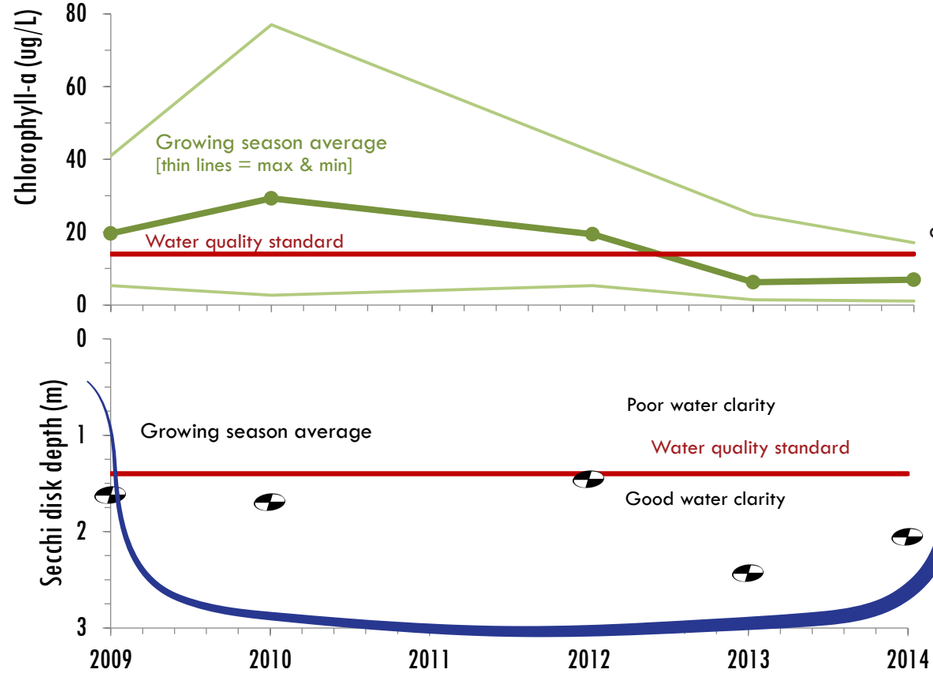
Round Lake water quality has been monitored since 2009. Since that time water quality has trended toward meeting the Minnesota Pollution Control Agency (MPCA) standards for secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a (chl-a).

In 2014, the City of Eden Prairie collected samples from Round Lake on 10 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. In 2014, water clarity met MPCA standards, continuing a trend toward improvement since 2009.

CHARTS

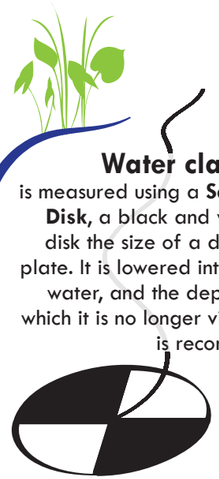


Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.

Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	2009 - 2013 Average	2009 - 2013 Maximum	2009 - 2013 Minimum
TP	< 0.06 mg/L	0.04	0.05	0.02	0.04	0.08	0.02
Chl-a	< 20 µg/L	6.95	17.1	1.1	16.3	77	1.1
Secchi	> 1 m	2.06	3.96	1.47	4.64	13.2	0.5

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Round Lake is classified as a shallow lake, and the standards listed above are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Round Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Every property connects to our water bodies through streets, sewers and rivers. Due to our ever changing landscape and the increase of impervious surfaces (such as roads and concrete where water cannot naturally soak in), we are all responsible for making a positive impact. An easy way to do this is by planting rain gardens and using native plants which can act as filters by trapping sediment and absorbing water, thereby decreasing the potential for flooding or other activities that can be detrimental to the landscape.

By planting native plants in your garden, the deep root systems help to anchor the soil, collect nutrient-rich stormwater runoff, and separate out pollutants before the water continues through the watershed, eventually into the main water body.

District in Action

PALEOLIMNOLOGY STUDY

Paleolimnology is the study of lake sediments. It can be a window into historic conditions.

researcher with a sediment core on Rice Marsh Lake

A paleolimnology study will be conducted on Silver Lake in 2015, through a partnership with the St. Croix Watershed Research Station. A sediment core will be collected from the lake and analyzed to reconstruct phosphorus and sedimentation history. These data give an idea of the lake conditions prior to development, and help in the process of setting goals for lake management and restoration. A similar study was conducted on Rice Marsh Lake in 2014, and the results of suggest that Rice Marsh Lake should be managed to meet MPCA shallow lake standards. Historical reconstruction clearly showed an increase in sediment and nutrient loads after the construction of wastewater treatment plant (that discharged into the lake) in 1959. Since the plant was decommissioned in 1972, water quality has improved.

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact Michelle Jordan at RPBCWD [mjordan@rpbcwd.org; 952-607-6481]

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

ADOPT A DOCK

A new program by the district partners with lakeshore residents to monitor for invasive mussels.

zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

SILVER LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

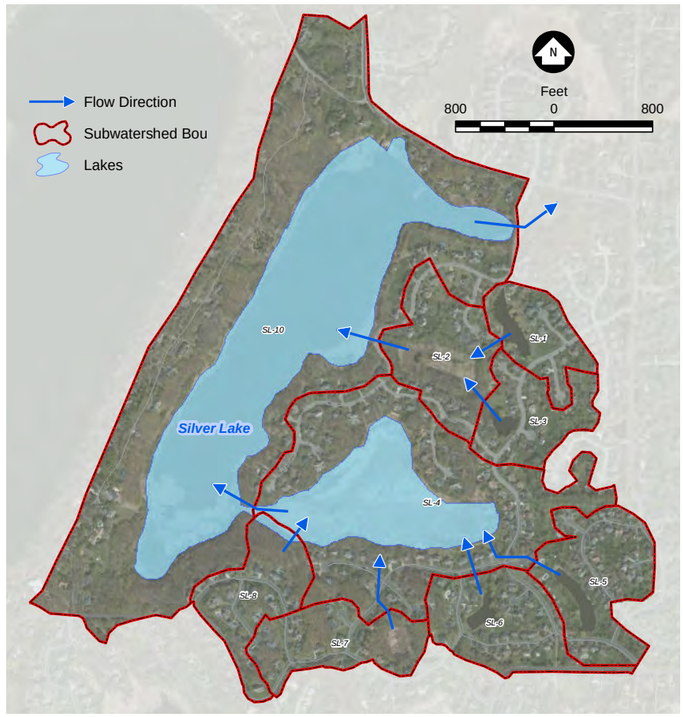
Watershed size	361 acres
Lake size	84 acres
Lake volume	201 acre-feet
Maximum lake depth	13 feet
Mean lake depth	3 feet
MPCA lake classification	Shallow

Most Abundant Common Fish Species
Unknown

Invasive Species
Curlyleaf pondweed, Purple loosestrife

Trophic Status	Impairment
Eutrophic-hypereutrophic (nutrient rich)	Not Listed

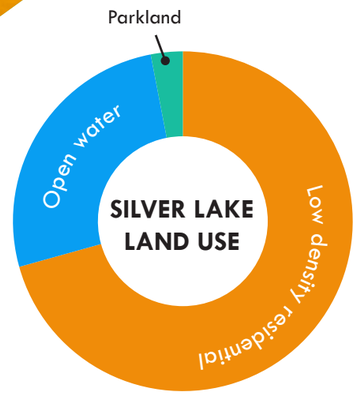
LOCATION Silver Lake is located in the City of Shorewood in the northwestern part of the Riley Purgatory Bluff Creek Watershed. The outlets to Silver and Lotus Lakes are the headwaters of Purgatory Creek, and merge to form a single stream.



An egret hunts along the cattail-lined shore of Silver Lake.

Did you know?

- Silver Lake is at the top of the Purgatory Chain of lakes, which includes Lotus, Duck, Round, Mitchell, Red Rock, Staring, and Idlewild.
- There are no public accesses on Silver Lake.
- Silver used to be stocked with gamefish, but the MN Department of Natural Resources discontinue this practice in 1943.
- The lake provides habitat to migrating waterfowl, like ducks, geese, herons, and egrets.



WATER QUALITY

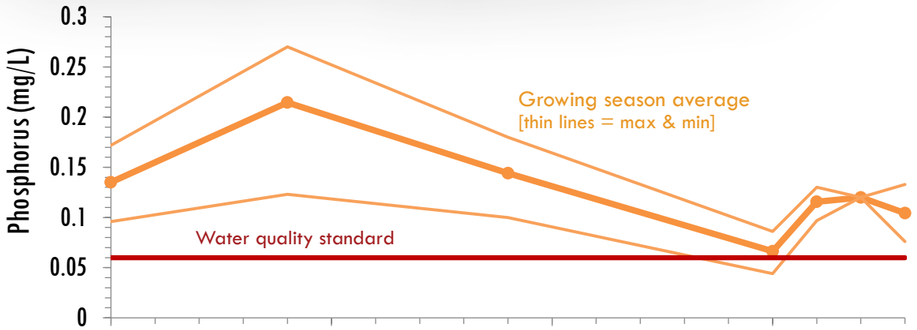
SILVER LAKE

WATER QUALITY SUMMARY

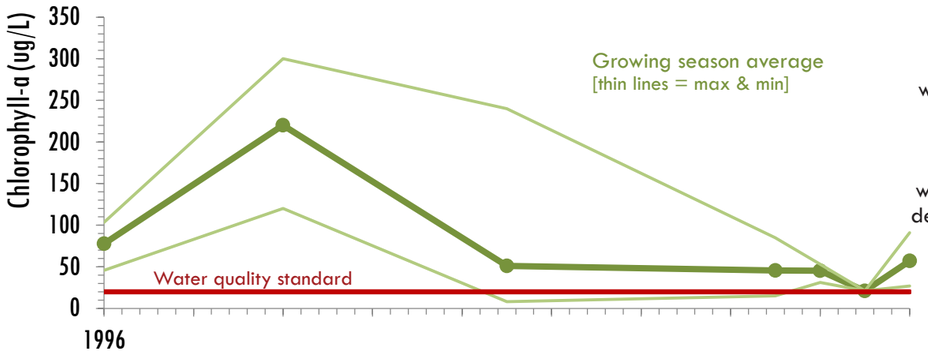
Silver Lake water quality has been monitored since 1996. Since that time, it has consistantly failed to meet the water quality standards set by the Minnesota Pollution Control Agency (MPCA) for secchi depth (water clarity), total phosphorus (TP) and chlorophyll a (chl-a).

In 2014, samples were collected from Silver lake on 10 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Average water clarity, TP, and chl-a did not meet the MPCA standards again this year, however all three parameters showed improvement compared to values from the early 2000s.

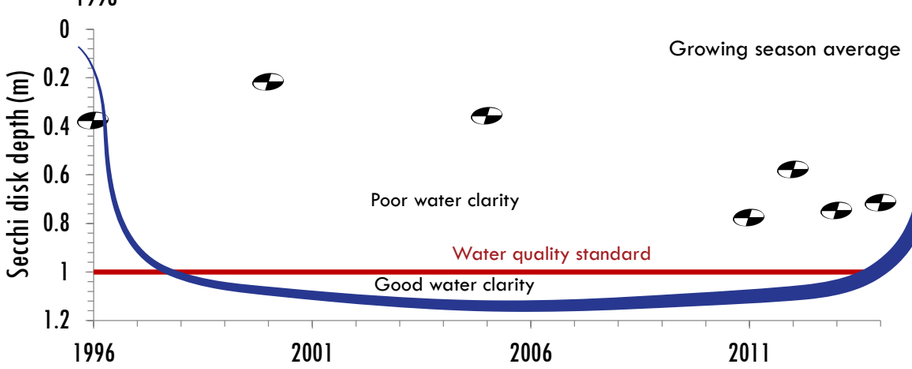
CHARTS



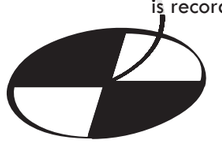
Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1996 - 2013 Average	1996 - 2013 Maximum	1996 - 2013 Minimum
TP	< 0.060 mg/L	0.11	0.13	0.01	0.14	0.27	0.05
Chl-a	< 20 µg/L	53	85	27	92	300	8
Secchi	> 1.0 m	0.72	0.85	0.55	0.44	0.9	0.2

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Silver Lake is classified as a shallow lake, and the standards listed above are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Silver Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections Every property connects to our water bodies through streets, sewers and rivers. Due to our ever changing landscape and the increase of impervious surfaces (such as roads and concrete where water cannot naturally soak in), we are all responsible for making a positive impact. An easy way to do this is by planting rain gardens and using native plants which can act as filters by trapping sediment and absorbing water, thereby decreasing the potential for flooding or other activities that can be detrimental to the landscape.

By planting native plants in your garden, the deep root systems help to anchor the soil, collect nutrient-rich stormwater runoff, and separate out pollutants before the water continues through the watershed, eventually into the main water body.

District in Action

COST SHARE GRANTS

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Administrator Claire Bleser at 952-607-6512

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

COMMON CARP MANAGMENT STUDY

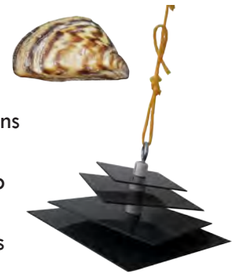
Following the successful managment of common carp in the Riley Creek Chain of Lakes, a partnership with the University of Minnesota will develop a control strategy for the Purgatory Creek Chain of Lakes, which includes Lake Staring.

Through a six-year partnership with the University of Minnesota, carp populations in the Riley Creek Watershed have been managed, and now efforts are being focused on the Purgatory Creek Chain of Lakes (Lotus, Mitchell, Red Rock, Silver, Staring).

Carp are an invasive species that negatively impact water clarity and native fish and plant populations. Decreasing carp abundance can both improve lakes and creeks for recreation, and restore overall water quality. University researchers will develope a managment plan that will help the district control carp. The plan will include yearly monitoring, removal of adult carp through winter netting, and a fish barrier at the mouth of the Purgatory recreation area.

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.



zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

STARING LAKE

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	10681 acres
Lake size	164 acres
Lake volume	1137 acre-feet
Maximum lake depth	16 feet
Mean lake depth	7 feet
Direct land draining	314 acres
MPCA lake Ccassification	Shallow

Most Abundant Common Fish Species

Bluegill, Black Crappie, Black Bullhead, Common Carp

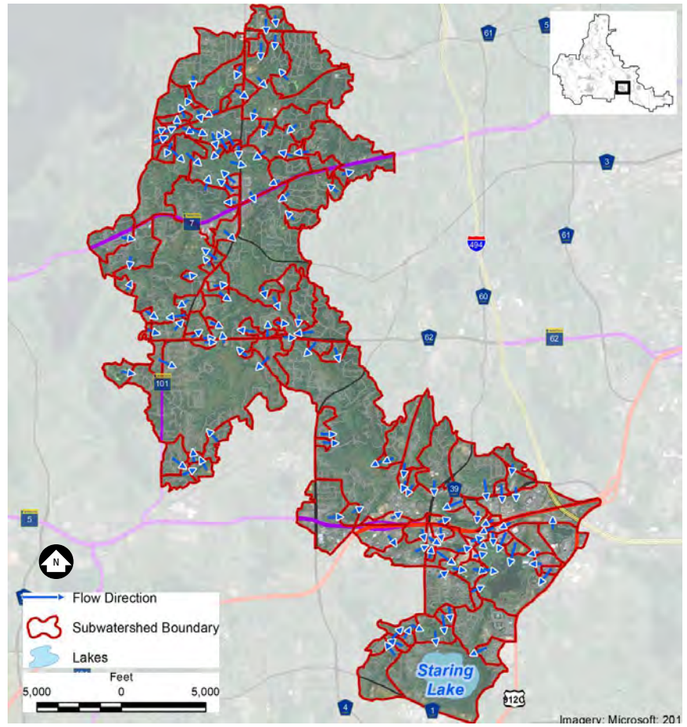
Invasive Species

Curlyleaf Pondweed, Eurasian Watermilfoil, Common Carp

Trophic Status	Impairment
Hypereutrophic (extremely rich in nutrients)	Mercury and nutrients

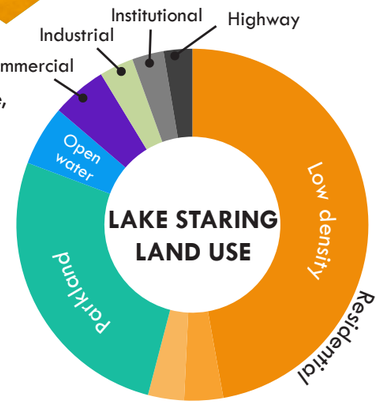
An eagle pearches in a dead tree, looking out over Lake Staring.

LOCATION Staring Lake is located in Eden Prairie, west of Flying Cloud Drive and north of Pioneer Trail. The headwaters of the Staring Lake watershed are located in Silver Lake and Lotus Lake. Staring has a public boat ramp, as well as a fishing pier and the Eden Prairie Outdoor Center are located off Staring Lake Parkway.



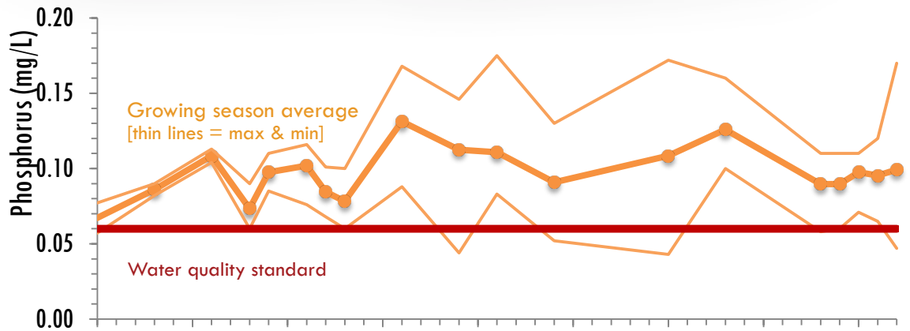
Did you know?

- The Staring Lake watershed encompasses parts of: Chanhassen, Deephaven, Eden Prairie, Minnetonka, and Shorewood
- Purgatory Creek is the major source of inflow, but Staring Lake is also connected to the Chain of Lakes watershed during high flow conditions
- A walking path links Staring Lake to the Purgatory Recreation Area, a great place for wildlife viewing

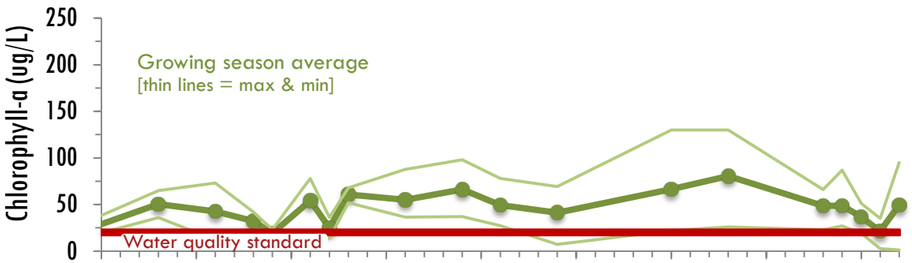


WATER QUALITY

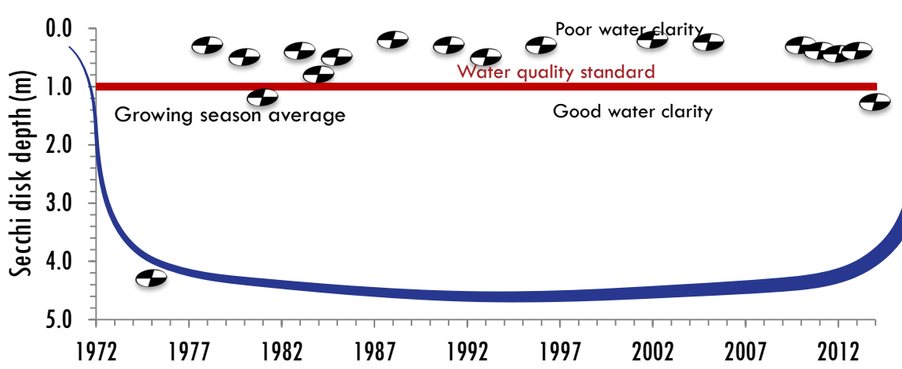
CHARTS



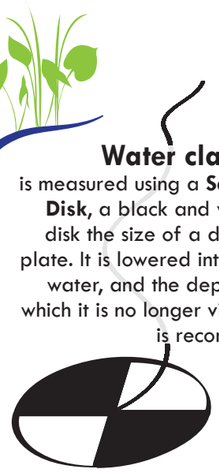
Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP).v Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.



Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.



Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



STARING LAKE

WATER QUALITY SUMMARY

Lake Staring has been monitored since 1971. Since that time, water quality has consistently failed to meet Minnesota Pollution Control Agency (MPCA) standards for secchi depth (water clarity), total phosphorus (TP), and chlorophyll-a (chl-a).

In 2014, samples were collected from Lake Staring on 8 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Staring did not meet MPCA water quality standards for TP or chl-a, but it did meet the standard for secchi depth for the first time since 1981.

TABLE

		2014			1972-2013		
	MPCA standard*	Average	Maximum	Minimum	Average	Maximum	Minimum
TP	< 0.06 mg/L	0.1	0.17	0.05	0.1	0.18	0.04
Chl-a	< 20 µg/L	52	95	1.3	47	130	2.7
Secchi	> 1 m	1.3	3.25	0.4	0.8	4.3	0.2

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Lake Staring is classified as a shallow lake, and the standards listed above are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

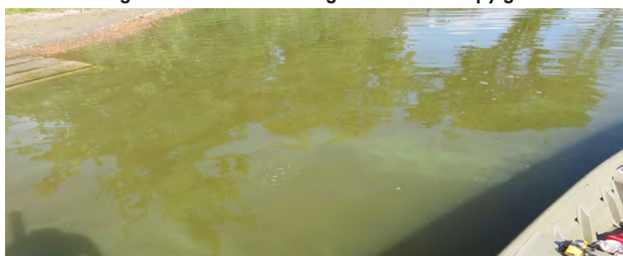
Simple actions by residents help to protect Staring Lake water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

Staring Lake is at the downstream end of the Purgatory Creek watershed. All the excess pollutants and sediment runoff in the area ultimately drain into Staring. In addition to the natural inflow, stormwater from the Eden Prairie Chain of Lakes watershed flows into Staring during high flow conditions.

Planting a rain garden will help trap sediment and provide infiltration for stormwater, which can help to lessen the potential for flooding or other activities that can be detrimental to the landscape. Using native plants to create a buffer along a creekbed or shoreline can also help to prevent erosion by stabilizing the bank and absorbing excess nutrients before they enter Staring Lake.

A summer algal bloom turned Staring Lake water soupy green.



District in Action

COST SHARE GRANTS AVAILABLE FOR 2015

2015 cost share grants are available for water quality projects. Deadline: April 15

The Riley Purgatory Bluff Creek Watershed District began offering a cost-share program in 2013. The program provides funding assistance for efforts to protect, restore, and conserve water resources within the district.

Project examples:
raingardens - pervious asphalt & pavers - shoreland & streambank restoration - volume reduction & runoff treatment practices - wetland restoration

For more information, and an application:
visit rpbcwd.org or contact the RPBCWD Administrator Claire Bleser at 952-607-6512

A 2013 cost-share grant helped to create this shoreline restoration project on Lake Lucy. [inset: Arrowhead, a native aquatic plant]

Grants are available for projects that:
- improve watershed resources
- foster water resource stewardship
- increase awareness of water resource vulnerability
- increase knowledge/acceptance of water sollutions

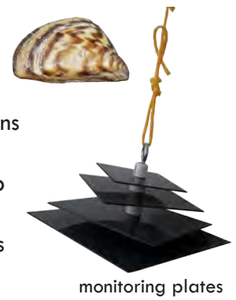
AQUATIC PLANT STUDY

In partnership with the University of Minnesota, aquatic plant surveys were conducted from 2009 to 2014.

Lake Susan had low plant diversity relative to the other lakes studied (Ann, Lotus, Lucy, Mitchell, RIley, Staring), but diversity increased over the sampling period. The amount of the invasive Eurasion watermilfoil has declined since 2011, while some natives haves hown stable or increasing populations since 2009. To read the full study, visit the district website at rpbcwd.org

ADOPT A DOCK

A new program by the district partners with lake-shore residents to monitor for invasive mussels.



zebra mussel with its distinctive stripes

monitoring plates

Invasive zebra mussels have not yet been detected in any lakes in the district, but recent infestations in nearby lakes have increased concern about their spread. The Adopt a Dock program will aide the district in monitoring for these aquatic invasive species. Lakeshore property owners can sign up to receive a monitoring kit, which includes early detection monitoring plates, and an observation log. Participants hang the plates from the end of their docks, check them regularly for any mussels growth, and report their findings to the district. **Contact the district to join the team!**

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

LAKE SUSAN

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Watershed size	1281 acres
Lake size	88 acres
Lake volume	885 acre-feet
Maximum lake depth	17 feet
Mean lake depth	10 feet
Direct land draining	66 acres
MPCA lake classification	Shallow

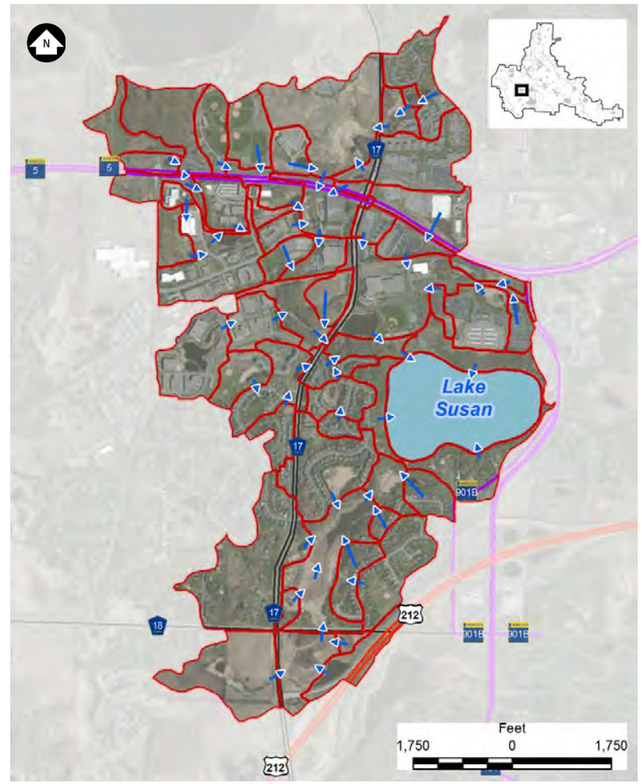
Most abundant common fish species
Black Crappie, Bluegill, Northern Pike, Black Bullhead

Invasive species
Common Carp, Curlyleaf Pondweed, Eurasion Watermilfoil

Trophic status	Impairment
Eutrophic (rich in nutrients)	Mercury and nutrients

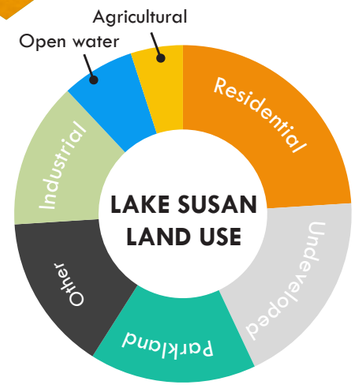
Staff collect water samples to monitor nutrient levels in Lake Susan.

LOCATION Lake Susan is located in Chanhassen, north of Highway 212 and west of Great Plains Blvd, part of the Riley Creek watershed. Lake Susan is a recreational lake used for both fishing and boating.The topography of the Lake Susan watershed is characterized by rolling hills with depressions filled with ponds and wetlands.

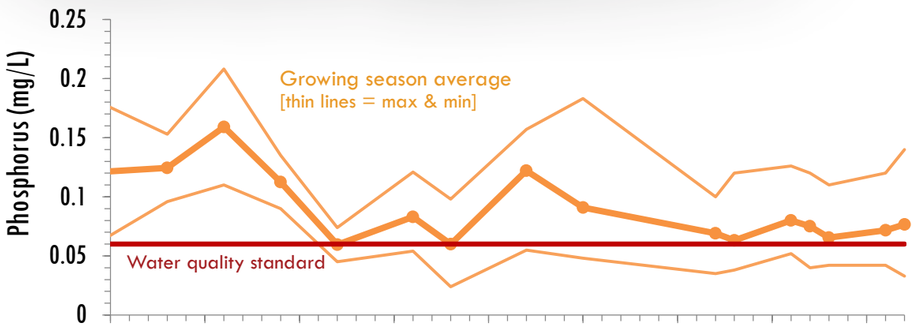


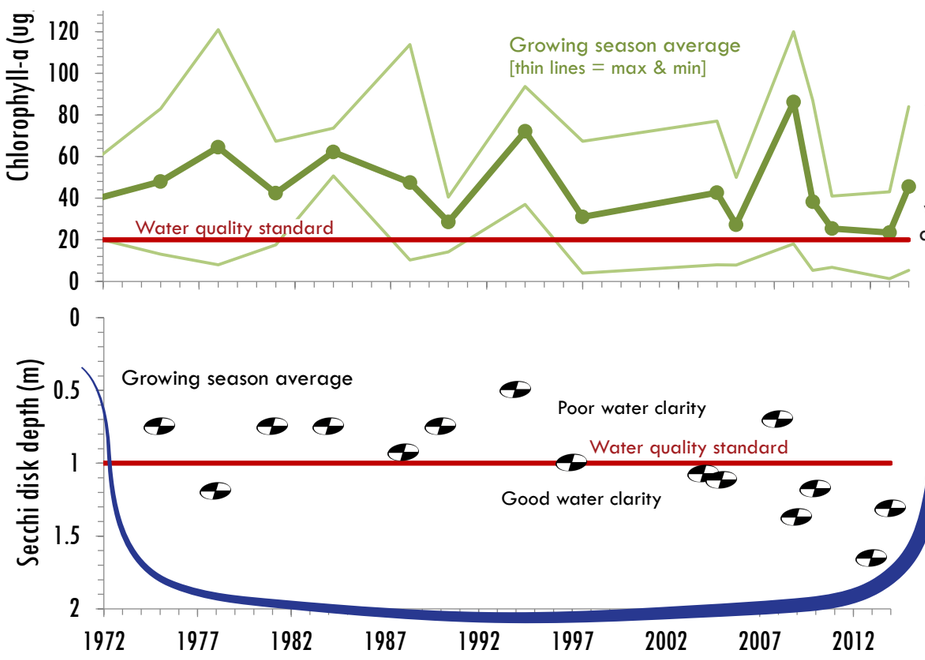
Did you know?

- Lake Susan receives stormwater runoff from over 2,553 acres, including the Lake Ann and Lake Lucy watersheds
- Further development of the watershed will result in increased runoff volumes and total phosphorus loads going ino Lake Susan
- Residence time is approximately one year
- Lake Susan has a littoral zone (< 15 ft deep) that covers > 95% of the lake



WATER QUALITY



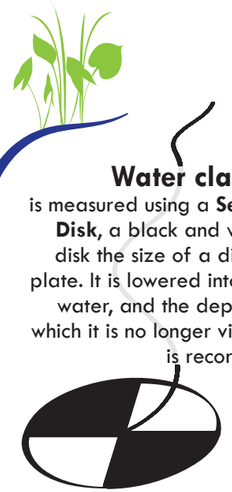


CHARTS

Phosphorus is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, phosphorus is typically the one that is limiting (controls growth). The red line shows the amount of phosphorus not to be exceeded for good water quality.

Chlorophyll a is the main pigment in algae. Therefore, the amount of chlorophyll a in the water indicates algal abundance. Because algae are dependent on TP, less TP typically results in less algae. Algae also cloud the water and as algae concentration decreases, water clarity increases.

Water clarity is measured using a **Secchi Disk**, a black and white disk the size of a dinner plate. It is lowered into the water, and the depth at which it is no longer visible is recorded.



LAKE SUSAN

WATER QUALITY SUMMARY

Lake Susan has been monitored since 1972. Since that time, water quality has consistently failed to meet Minnesota Pollution Control Agency (MPCA) standards for secchi depth (water clarity), total phosphorus (TP), or chlorophyll-a (chl-a).

In 2014, samples were collected from Lake Susan on 9 occasions from May through September. This period is called the 'growing season', because it is when plants and algae are most actively growing and reproducing. Susan did not meet MPCA water quality standards for any of the three parameters. However, secchi depth has continued to show a slight downward trend (toward better water clarity) since 2009 however.

TABLE

	MPCA standard*	2014 Average	2014 Maximum	2014 Minimum	1972-2013 Average	1972-2013 Maximum	1972-2013 Minimum
TP	< 0.06 mg/L	0.08	0.14	0.03	0.08	0.21	0.02
Chl-a	< 20 µg/L	48	84	5	41	121	1.3
Secchi	> 1 m	1.3	3.6	0.5	1.1	3.3	0.3

*The MPCA standards (Minnesota Pollution Control Agency) are a set of water quality standards set by the state of Minnesota, and to which local governments must adhere. Standards are based on the growing season average for each parameter. Lake Susan is classified as a shallow lake, and the standards listed above are for shallow lakes.

Join your neighbors in protecting water quality

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Lake Susan water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

See the connections In order to improve the water quality of Lake Susan, it is important to control both the external and internal sources of phosphorus in the lake. Excess phosphorus can lead to increased algal growth, turbid water, and loss of biodiversity and desirable aquatic habitat.

Stormwater ponds are the most commonly used method for controlling pollutants, such as phosphorus and nitrogen. The District is currently conducting an assessment of the stormwater ponds around Lake Susan to identify if any of these ponds are potential sources of phosphorus in the watershed.

A summer algal bloom turned Lake Susan water soupy green.

District in Action

CREEK RESTORATION ACTION STRATEGY(CRAS)

A new assessment strategy will help the district to develop restoration projects that target the highest priority creek sites.

The RPCWD has diverse water resources, including fifteen lakes and three creeks. Restoration projects are one important component of the work the district does, and determining which creek sites would benefit most from restoration is a neccessary and challenging task. To aide in the process of prioritizing restoration efforts, the district is developing an assessment process, the Creek Restoration Action Strategy (CRAS). CRAS will utilize a combination of creek visits, existing data review, and stakeholder input to rank sections of all three creeks (Riley, Purgatory, Bluff) in order of need for, and bennefit from, restoration projects. Some of the factors that will be considered are: threat to infrastructure, water quality, education potential, and cost.

STREAMBANK RESTORATION AND FISH PASSAGE

In 2014, the district was awarded four grants. A Clean Water Land & Legacy grant was awarded for the Bluff Creek Fish Passage and Streambank Resotration Project.

In 2002 and 2004, the Minnesota Pollution Control Agency listed Bluff Creek as impaired for turbidity and for low fish biological scores respectively. A Total Maximum Daily Load Report and Implementation Plan were finalized and approved in 2013. In this report, Site 1, located south of the Southwest Regional LRT Trail, was identified as a "severe: grade site. It was also listed as a "high priority" site needing a culvert restoration and bank repairs. Currently, the culvert is roughly 8 feet above the creek bed, creating a disconnection where fish can no longer move updstram. The culvert is also showing signs of failure. In addition, the stream channel is incised and banks are severely eroded and thus contributing to sediment loads to the Minnesota River. The district is partnering with the Lower Minnesota River Watershed District and the City of Chanhassen on this project.

CLEAN WATER LAND & LEGACY AMENDMENT

The streambank restoration and fish passage site on Bluff Creek.

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.607.6481

Riley Purgatory Bluff Creek Watershed District

BLUFF CREEK

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Drainage Area	5.8 sq. miles
No. Cities in Drainage Area	2
Creek Length	6.8 miles
Elevation Drop	232 feet
No. of Lakes Connected	0
No. of District Monitoring Sites	3
No. of Parks along the Creek	3

Most Abundant Common Fish Species

Brook Stickleback, Northern Fathead Minnow

Invasive Species

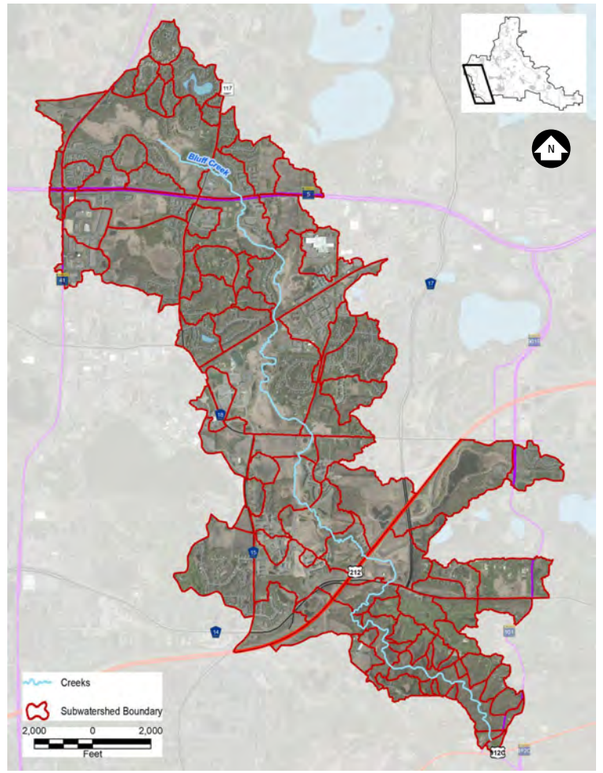
Reed Canary Grass, Buckthorn

Impairment

Fish Bioassessments, Turbidity

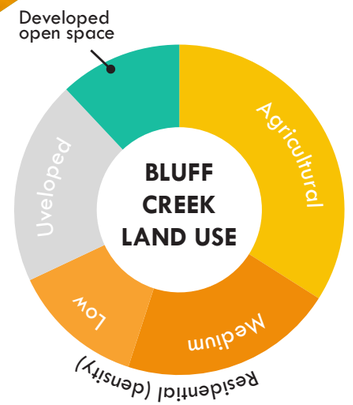
A beaver dam on Bluff Creek.

LOCATION The headwaters of Bluff Creek is located near Highway 41, east of the Minnesota Landscape Arboretum in Chanhassen and discharges into the Minnesota River floodplain south of Highway 212. Throughout much of the watershed, the creek is sinuous with tree-lined banks and has a relatively steep slope.



Did you know?

- Bluff Creek is moderately to fully entrenched for much of its course
- The transition from forested to agricultural landuse in the past has led to increased sediment and water movement towards the stream
- Almost 85% of the watershed is covered with glacial deposits of loamy till along with some localized deposits of muck



WATER QUALITY

2014 Sampling

In 2014, five sites were monitored on Bluff Creek (marked with green circles ●) from May through September. Every two weeks, district staff visited these locations, took water samples, measured water chemistry parameters, and calculated creek flow. The table and graphs report the values for some of these parameters.

Water quality and quantity parameters

Phosphorus (TP) is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, TP is typically the one that is limiting (controls growth). Some phosphorus is necessary, but when levels increase, green algal blooms can occur.

Sediment (TSS) enters the creek from stormwater, runoff, and erosion of the creek banks and bed. It is measured here as Total Suspended Solids (TSS) and high levels impair fish and insect habitat.

Flow is a measure of how much water is moving through the creek (ft^3/s, cfs). The greater the flow, the greater the potential to erode banks and transport sediments. Creek flow is influenced by rainfall.

Rain influences creek flow. In urban areas, much of the rain falls on roads, roofs, and other impervious surfaces. The rain can not soak into the ground, so it runs quickly into storm sewers and then lakes and creeks.

Join your neighbors in protecting Bluff Creek

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Bluff Creek water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

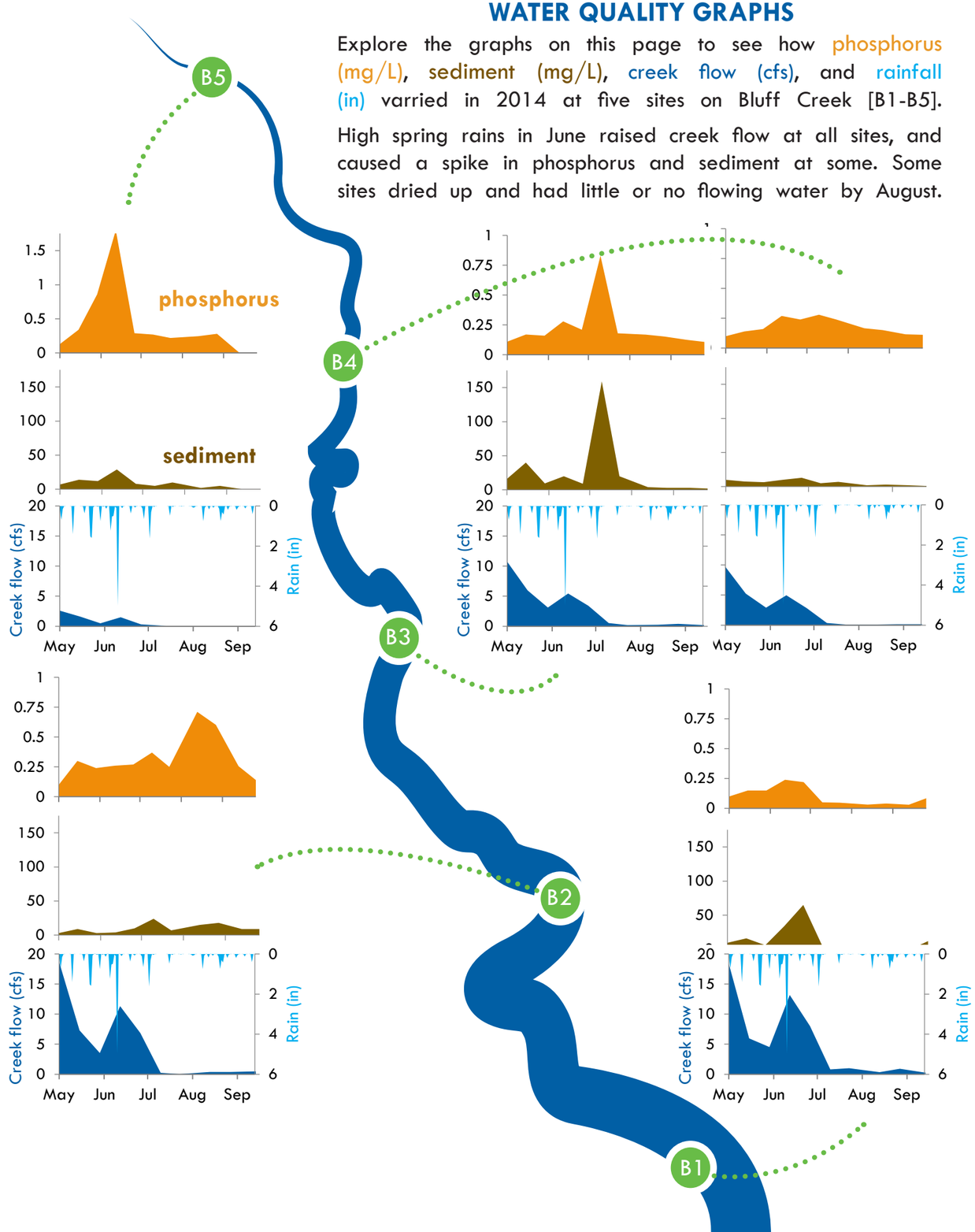
See the connections

Historical creek monitoring data has shown that Bluff Creek has the highest suspended solids yield for developed watersheds in the Twin Cities Metro Area. Planting a native plant buffer along the creekbank provides a final defense in blocking unwanted nutrients and pollutants from entering Bluff Creek. An effective buffer can help to prevent erosion, absorb excess nutrients caught up in stormwater runoff, stabilize and shade the riparian zone (the boundary between creek and land), and help to reduce stream flow spikes that occur during heavy rain events.

BLUFF CREEK
WATER QUALITY GRAPHS

Explore the graphs on this page to see how phosphorus (mg/L), sediment (mg/L), creek flow (cfs), and rainfall (in) varried in 2014 at five sites on Bluff Creek [B1-B5].

High spring rains in June raised creek flow at all sites, and caused a spike in phosphorus and sediment at some. Some sites dried up and had little or no flowing water by August.



District in Action

CARP MANAGEMENT STUDY

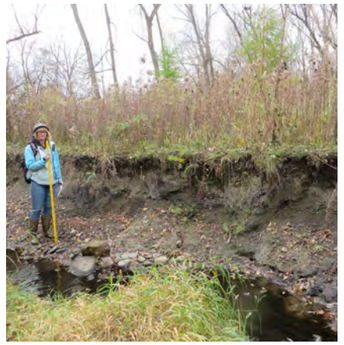
Following the successful management of common carp in the Riley Creek Chain of Lakes, a partnership with the University of Minnesota will develop a control strategy for the Purgatory Creek Chain of Lakes.

Through a seven-year partnership with the University of Minnesota, carp populations in the Riley Creek Watershed have been managed, and now efforts are being focused on the Purgatory Creek Chain of Lakes (Duck, Lotus, Idlewild, Mitchell, Red Rock, Round, Silver, Staring).

Carp are an invasive species that negatively impact water clarity and native fish and plant populations. Decreasing carp abundance can both improve lakes and creeks for recreation, and restore overall water quality. University researchers will determine a carp threshold below which these non-native fish do not impact water quality, and develop a management plan that will help the district control them at this level. The plan will include yearly monitoring, removal of adult carp through winter netting, and a fish barrier at the mouth of the Purgatory recreation area.

CREEK RESTORATION ACTION STRATEGY (CRAS)

A new assessment strategy will help the district to develop restoration projects that target the highest priority creek sites.



An eroded bank on Purgatory Creek that might benefit from stabilization.

The RPCWD has diverse water resources, including fifteen lakes and three creeks. Restoration projects are one important component of the work the district does, and determining which creek sites would benefit most from restoration is a neccessary and challenging task. To aide in the process of prioritizing restoration efforts, the district is developing an assessment process, the Creek Restoration Action Strategy (CRAS). CRAS will utilize a combination of creek visits, existing data review, and stakeholder input to rank sections of all three creeks (Riley, Purgatory, Bluff) in order of need for, and bennefit from, restoration projects. Some of the factors that will be considered are: threat to infrastructure, water quality, education potential, and cost.

Commercial fishermen catch and remove invasive carp from a lake.

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.294.6481

Riley Purgatory Bluff Creek Watershed District

PURGATORY CREEK

Riley Purgatory Bluff Creek Watershed District

2014

Quick Facts

Drainage Area	35.6 sq. miles
No. of Cities in Drainage Area	4
Creek Length	16 miles
Elevation Drop	178 feet
No. of Lakes Connected	8
No. of District Monitoring Sites	5
No. of Parks along to Creek	27

Most Abundant Common Fish Species

Blue Gill, Bullhead, Black Crappie

Invasive Species

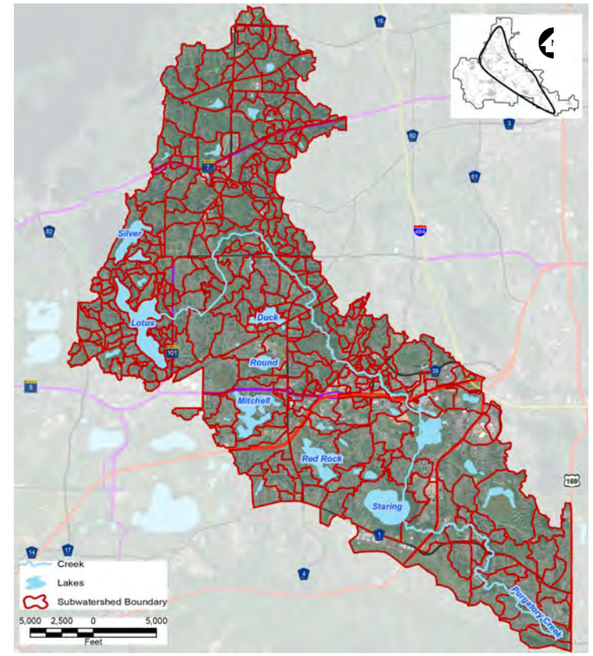
Reed Canary Grass, Purple Loosestrife, Buckthorn

Creek Impairment

Not Listed

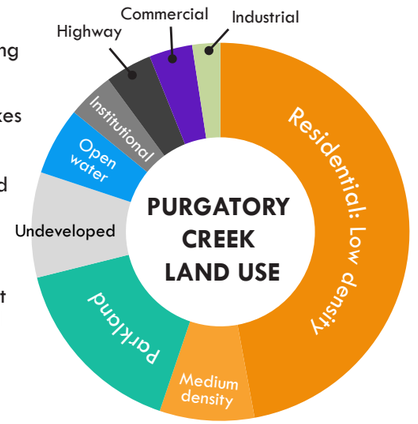
A woodpecker finds habitat along the banks of Purgatory Creek.

LOCATION The Purgatory Creek watershed is comprised of a large portion of Minnetonka, Chanhassen and Eden Prairie. The creek has three origins: draining from a wetland complex, Lotus Lake and Silver Lake. Purgatory Creek drains a land area of more than 35 square miles before entering the Minnesota River basin.



Did you know?

- Over 50% of the elevation decline occurs between Starring Lake and the Minnesota river
- The Eden Prairie Chain-of-Lakes Watershed (Round, Mitchell, and Red Rock Lakes) drains into Purgatory Creek via flood control conveyance system
- Due to its proximity to the metro area, the Purgatory Creek Watershed was the first in the District to see increased urbanization

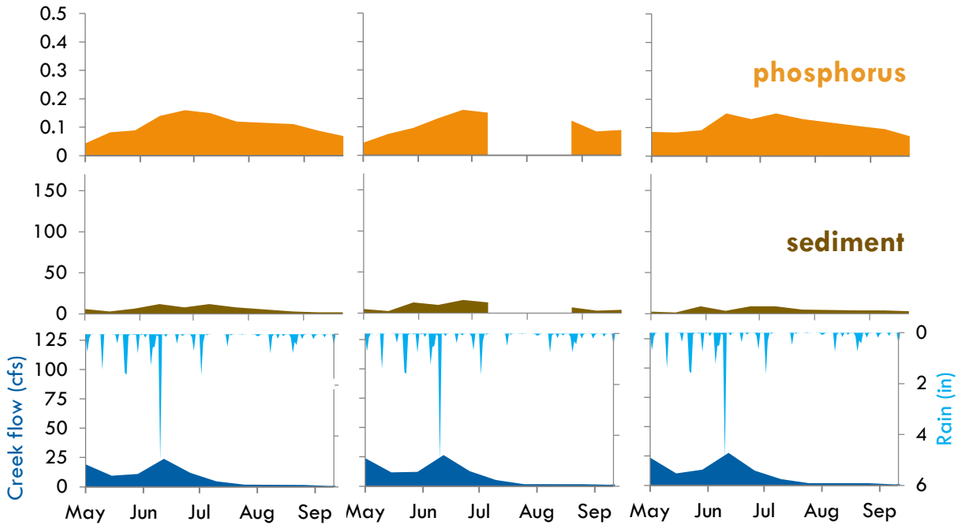


WATER QUALITY

PURGATORY CREEK
WATER QUALITY GRAPHS

Explore the graphs on this page to see how phosphorus (mg/L), sediment (mg/L), creek flow (cfs), and rainfall (in) varried in 2014 at eight sites on Purgatory Creek [P1-P8].

High spring rains in June raised creek flow at all sites, and caused a spike in phosphorus and sediment at some. Most sites dried up and had little or no flowing water by August.



2014 Sampling

In 2014, five sites were monitored on Riley Creek (marked with green circles ●) from May through September. Every two weeks, district staff visited these locations, took water samples, measured water chemistry parameters, and calculated creek flow. The table and graphs report the values for some of these parameters.

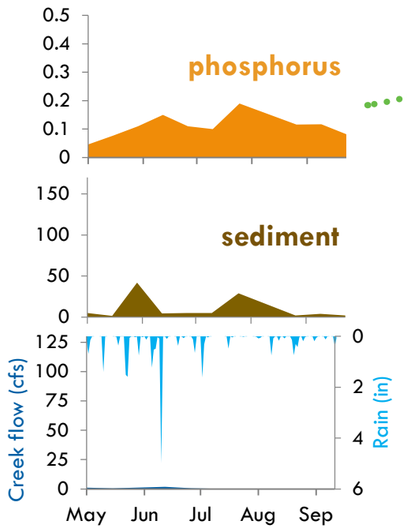
Parameters

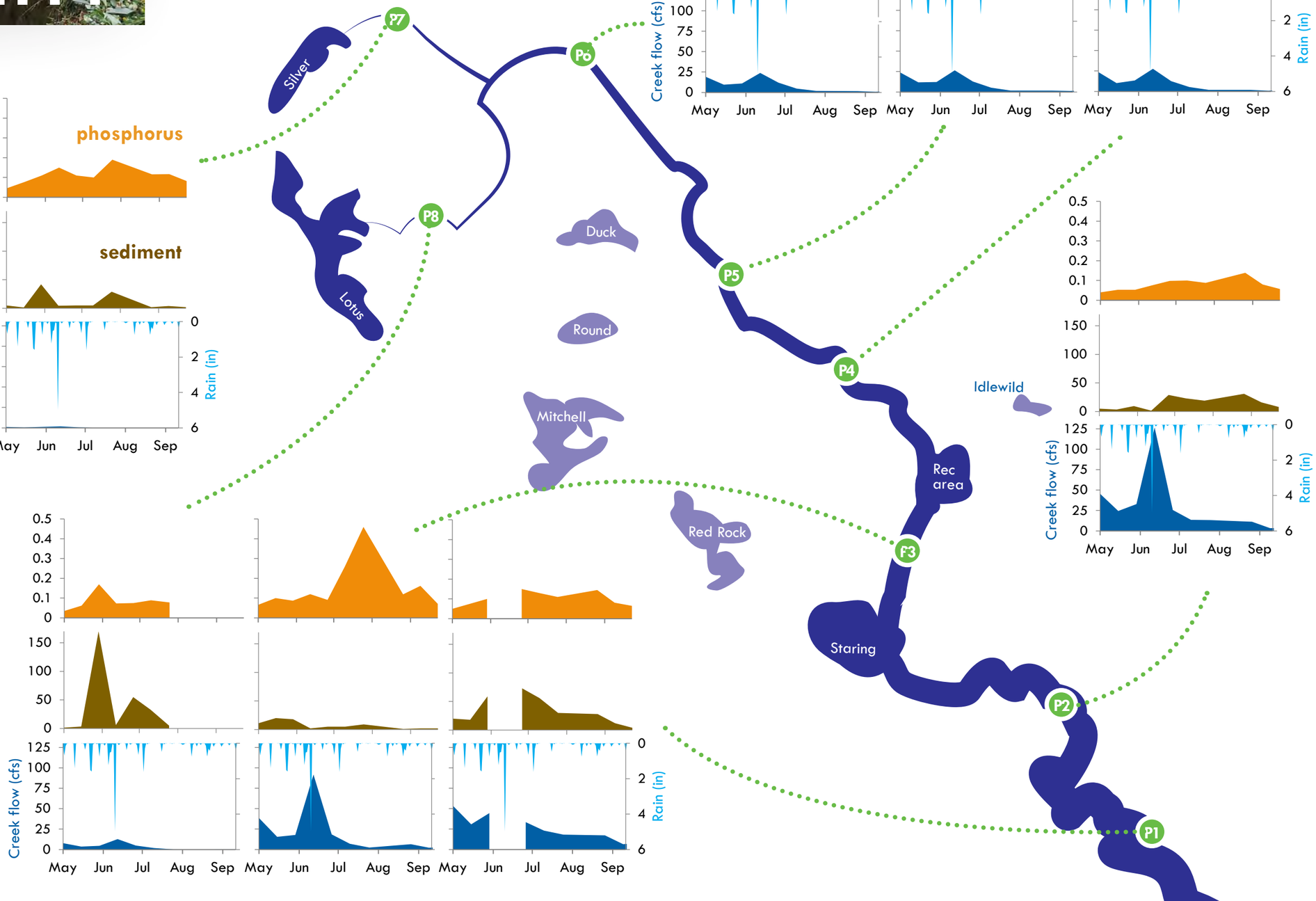
Phosphorus (TP) is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, TP is typically the one that is limiting (controls growth). Some phosphorus is necessary, but when levels increase, green algal blooms can occur.

Sediment (TSS) enters the creek from stormwater, runoff, and erosion of the creek banks and bed. It is measured here as Total Suspended Solids (TSS) and high levels impair fish and insect habitat.

Flow is a measure of how much water is moving through the creek (ft^3/s, cfs). The greater the flow, the greater the potential to erode banks and transport sediments. Creek flow is influenced by rainfall.

Rain influences creek flow. In urban areas, much of the rain falls on roads, roofs, and other impervious surfaces. The rain can not soak into the ground, so it runs quickly into storm sewers and then lakes and creeks.





District in Action

COMMON CARP MANAGEMENT

A multi-year partnership with the University of Minnesota has succeeded in developing a carp management plan for the Riley Creek chain of lakes.

Riley Creek connects five lakes: Lucy, Ann, Susan, Rice Marsh, and Riley. Carp, and invasive fish, move between lakes through Riley Creek. In 2014, the University of Minnesota completed a seven-year study of carp in the Riley chain. The research succeeded in determining a carp threshold below which these non-native fish do not impact water quality, and in developing methods for controlling populations at this level.

The methods include aerating Rice Marsh Lake (sending compressed air through tubing into the lake, much like a fish tank) during winter to keep game fish alive. These fish eat the eggs of carp (which use the lake as a spawning ground) and preventing winter fishkills promotes a robust population of game fish that can control carp reproduction. The district has been operating an aeration unit on the Lake since 2010. Carp populations are also monitored, and if numbers go above a threshold, winter seining is conducted. A hole is cut in the ice, and commercial fishermen catch and remove carp using large nets (seines).

Commercial fishermen catch and remove invasive carp from a lake.

CREEK RESTORATION ACTION STRATEGY (CRAS)

A new assessment strategy will help the district to develop restoration projects that target the highest priority creek sites.

An eroded bank on Riley Creek that might benefit from stabilization.

The RPCWD has diverse water resources, including fifteen lakes and three creeks. Restoration projects are one important component of the work the district does, and determining which creek sites would benefit most from restoration is a neccessary and challenging task. To aide in the process of prioritizing restoration efforts, the district is developing an assessment process, the Creek Restoration Action Strategy (CRAS). CRAS will utilize a combination of creek visits, existing data review, and stakeholder input to rank sections of all three creeks (Riley, Purgatory, Bluff) in order of need for, and bennefit from, restoration projects. Some of the factors that will be considered are: threat to infrastructure, water quality, education potential, and cost.

CONTACT US:

14500 Martin Drive, Suite 1500 | Eden Prairie, Minnesota 55344

www.rpbcwd.org info@rpbcwd.org 952.294.6481

Riley Purgatory Bluff Creek Watershed District

RILEY CREEK

Riley Purgatory Bluff Creek Watershed District 2014

Quick Facts

Drainage area	10 sq. miles
Cities in drainage area	2
Creek length	9.6 miles
Elevation drop	230 feet
# of lakes connected	5
District monitoring sites	5
Parks along the creek	11

Most abundant common fish species

Greensunfish, Fathead Minnow, Bluntnose Minnow

Invasive species

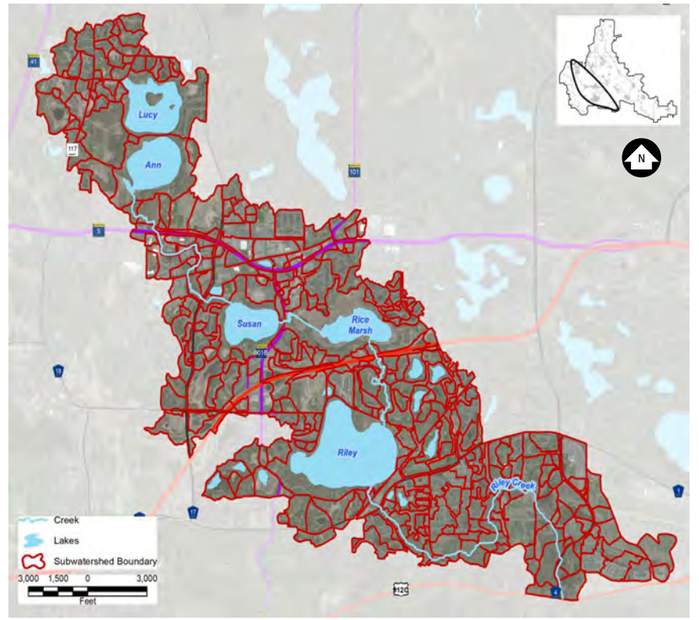
Carp

Creek impairment

Turbidity

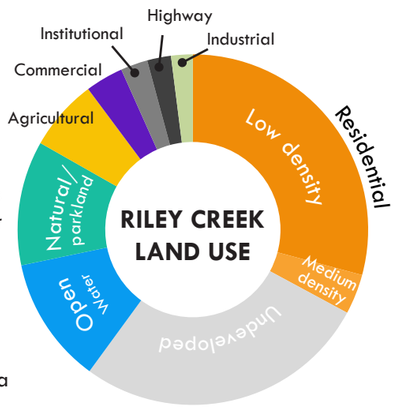
Staff measure velocities and calculate flow on Riley Creek. Measurements are conducted every two weeks from May to September at five sites.

LOCATION Riley Creek originates from Lakes Lucy and Ann in Chanhassen and flows through three downstream lakes in the District before descending towards the Minnesota River Valley. The creek has mild topography in the upper and middle portions of the watershed, but there is a steep, north-valley wall in the lower section.



Did you know?

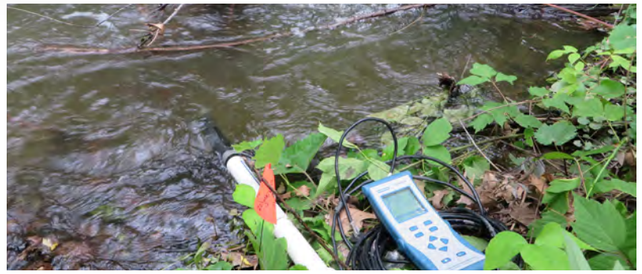
- Riley Creek originates in Lakes Lucy and Ann, and flows through Lakes Susan, Rice Marsh, and Riley before entering the Minnesota River
- The Riley Creek watershed has a storm sewer network that consists of a large number of stormwater retention basins that ultimately discharges into the creek
- The creek flows through glacial outwash deposits of sand and gravel upstream of the Minnesota River floodplain



WATER QUALITY

2014 Sampling

In 2014, five sites were monitored on Riley Creek (marked with green circles ●) from May through September. Every two weeks, district staff visited these locations, took water samples, measured water chemistry parameters, and calculated creek flow. The table and graphs report the values for some of these parameters.



Water quality and quantity parameters

Phosphorus (TP) is a nutrient that plants and algae need for growth. It is often measured as total phosphorus (TP). Of all the nutrients, TP is typically the one that is limiting (controls growth). Some phosphorus is necessary, but when levels increase, green algal blooms can occur.

Sediment (TSS) enters the creek from stormwater, runoff, and erosion of the creek banks and bed. It is measured here as Total Suspended Solids (TSS) and high levels impair fish and insect habitat.

Flow is a measure of how much water is moving through the creek (ft^3/s, cfs). The greater the flow, the greater the potential to erode banks and transport sediments. Creek flow is influenced by rainfall.

Rain influences creek flow. In urban areas, much of the rain falls on roads, roofs, and other impervious surfaces. The rain can not soak into the ground, so it runs quickly into storm sewers and then lakes and creeks.

Join your neighbors in protecting Riley Creek

Stormwater runoff, the water that flows from across yards and streets into storm drains, is one of the main causes of pollution in urban areas.

Simple actions by residents help to protect Riley Creek water quality:

- **KEEP THE STREETS CLEAN** Sweep up leaves, grass clippings and fertilizer from driveways and streets. Dispose of trash properly.
- **USE NATIVE PLANTS** Native plants have long roots that are more efficient at soaking up water.
- **BUILD A RAINGARDEN** To learn more on raingardens, please visit our website: rpbcwd.org
- **HARNESS THE RAIN** Collect water with a rain barrel
- **WATER WITH CARE** Actively growing grass requires 1-inch of water per week. This equals one hour of sprinkling per week if no rain has fallen.

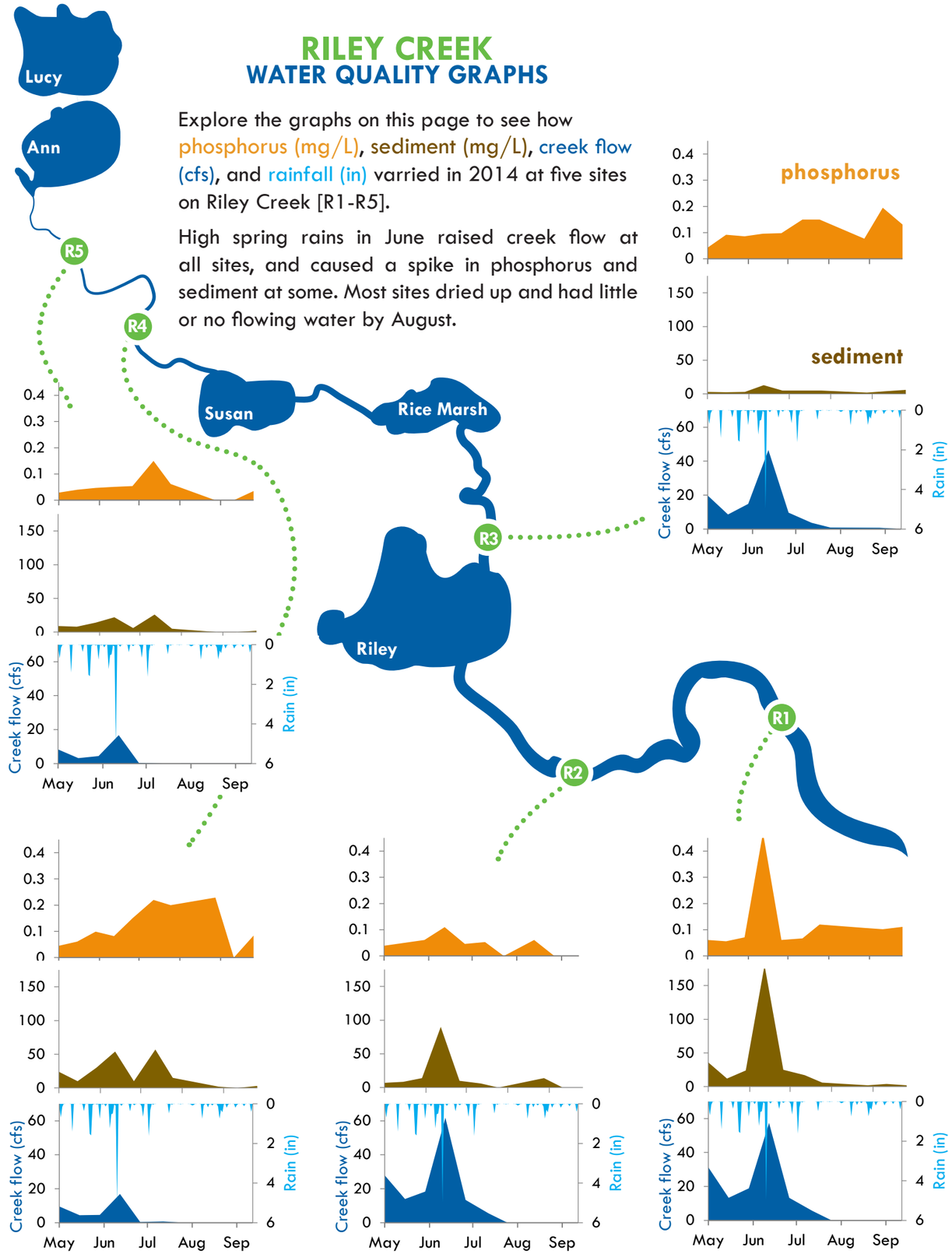
See the connections Phosphorus pollution is the primary component influencing eutrophication in freshwater resources. Excess phosphorus can lead to increased algal growth, turbid water, and loss of biodiversity and desirable aquatic habitat. Sources of phosphorus in the District include: sediment runoff from streambank erosion, grass clippings, and lawn fertilizer.

Stabilizing the riparian zone (the boundary between creek and land) by planting a native plant buffer along the creekbank is an effective way to prevent erosion and absorb excess nutrients from stormwater runoff.

RILEY CREEK
WATER QUALITY GRAPHS

Explore the graphs on this page to see how phosphorus (mg/L), sediment (mg/L), creek flow (cfs), and rainfall (in) varried in 2014 at five sites on Riley Creek [R1-R5].

High spring rains in June raised creek flow at all sites, and caused a spike in phosphorus and sediment at some. Most sites dried up and had little or no flowing water by August.



APPENDIX C: 2013 ANNUAL BUDGET

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

Treasurers Report

December 31, 2014

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
ALL Funds Performance Analysis
December 31, 2014

	2014 Budget	Year to Date Dec. 31, 2014
REVENUES		
Property Tax Levies	2,273,000.00	2,259,020.62
Other Income	0.00	4,745.64
Interest Income	0.00	37.70
Field Inspection Income	0.00	0.00
Grant Income	79,170.00	79,170.00
Clean Water Fund	0.00	0.00
Permit Income	0.00	0.00
Data Collection Income	0.00	4,500.00
E&O Project Income	0.00	240.00
TOTAL REVENUES	**$ 2,352,170.00**	**2,347,713.96**
EXPENDITURES		
Engineering Services	166,000.00	170474.70
Legal Services	82,000.00	160,399.66
Manager Expenses	18,500.00	12,488.61
Administrator Costs	115,500.00	117,959.39
Staff Costs	80,000.00	84,690.52
Accounting/Audit	32,200.00	30,367.73
Insurance and Bonds	8,000.00	6,362.00
Permit Reveiw & Inspection	0.00	32.90
Office Administration Costs	17,000.00	19,132.99
Office Costs	100,000.00	103,650.21
Dues and Memberships	3,500.00	5,232.00
Education & Outreach	60,000.00	34,168.22
Advisory Committee	4,500.00	0.00
Contingency Reserve	9,800.00	0.00
Projects	1,655,170.00	673,547.00
TOTAL EXPENDITURES	**$ 2,352,170.00**	**1,418,505.93**
Excess (Deficiency)	**$ 0.00**	**929,208.03**

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
ALL Funds Project Performance Analysis
December 31, 2014

Project	2014 Budget	Year to Date Dec. 31, 2014
AIS	50,000.00	49,935.31
CWF- Community Partners Grant	0.00	25,618.00
Cost Share Program	130,000.00	36,574.17
Purgatory Creek Restoration	300,000.00	44,512.04
Lake Riley/Susan- Curly- leaf treatment	9,491.00	9,490.95
Mitchell Lake Plant Management	4,893.00	7,765.83
Red Rock Lake Plant Management	4,893.00	7,765.85
Lake Lucy-Spent Lime	200,000.00	52,411.19
Lake Lucy-Plant Management	4,893.00	7,765.82
Lake Susan Improvements	225,000.00	32,294.18
Rice Marsh Lake	20,000.00	9,730.30
Fish Passage Bluff Creek Improvement	115,000.00	19,177.67
Stormwater Ponds Assessment	15,000.00	246.94
UAA	0.00	0.00
District Floodplain- Atlas 14	110,000.00	104,516.46
Data Collection	170,000.00	165,141.45
U of M	276,000.00	77,678.00
SWLRT	0.00	10,318.00
Mitchell Lake Harvesting	10,000.00	6,302.42
Red Rock Lake Harvesting	10,000.00	6,302.42
Total Project Costs	**1,655,170.00**	**673,547.00**

Appendix D: Annual Audited Financial Report and Audit Report

COMMUNICATION WITH THOSE CHARGED WITH GOVERNANCE

To the Honorable Managers of the
Riley Purgatory Bluff Creek Watershed District
Eden Prairie, Minnesota

We have audited the financial statements of the governmental activities and each major fund of Riley Purgatory Bluff Creek Watershed District (the District) as of and for the year ended December 31, 2014 and have issued our report thereon dated April 13, 2015. Professional standards require that we provide you with the information about our responsibilities under generally accepted auditing standards, as well as certain information related to the planned scope and timing of our audit. We have communicated such information in our letter to you dated January 6, 2015. Professional standards also require that we communicate to you the following information related to our audit.

Significant Audit Results

Qualitative Aspects of Accounting Practices

Management is responsible for the selection and use of appropriate accounting policies. The significant accounting policies used by the District are described in Note 1 to the financial statements. No new accounting policies were adopted and the application of existing policies was not changed during 2014. We noted no transactions entered into by the District during the year for which there is a lack of authoritative guidance or consensus. All significant transactions have been recognized in the financial statements in the proper period.

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ significantly from those expected. The District does not have any particularly significant sensitive estimates affecting the financial statements.

The financial statement disclosures are neutral, consistent, and clear.

Difficulties Encountered in Performing the Audit

We encountered no significant difficulties in dealing with management in performing and completing our audit.

Corrected and Uncorrected Misstatements

Professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that are clearly trivial, and communicate them to the appropriate level of management. There were no uncorrected misstatements that have an effect on our opinion on the financial statements. The following material misstatement detected as a result of audit procedures were corrected by management:

- Prior period adjustment of $35,812 related to a contract payable that was not recorded in the prior year.

Disagreements with Management

For purposes of this letter, a disagreement with management is a financial accounting, reporting or auditing matter, whether or not resolved to our satisfaction, that could be significant to the financial statements or the auditor's report. We are pleased to report that no such disagreements arose during the course of our audit.

Management Representations

We have requested certain representations from management that are included in the management representation letter dated April 13, 2015.

Management Consultations with Other Independent Accountants

In some cases, management may decide to consult with other accountants about auditing and accounting matters, similar to obtaining a "second opinion" in certain situations. If a consultation involves application of an accounting principle to the governmental unit's financial statements or a determination of the type of auditor's opinion that may be expressed on those statements, our professional standards require the consulting accountant to check with us to determine that the consultant has all the relevant facts. To our knowledge, there were no such consultations with other accountants.

Other Audit Findings or Issues

We generally discuss a variety of matters, including the application of accounting principles and auditing standards, with management each year prior to retention as the District's auditors. However, these discussions occurred in the normal course of our professional relationship and our responses were not a condition to our retention.

Other Matters

We applied certain limited procedures to the budgetary comparison schedules, which are required supplementary information (RSI) that supplements the basic financial statements. Our procedures consisted of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We did not audit the RSI and do not express an opinion or provide any assurance on the RSI.

We were not engaged to report on the introductory and other information sections, which accompany the financial statements but are not RSI. We did not audit or perform other procedures on this other information and we do not express an opinion or provide any assurance on it.

Restricted on Use

This information is intended solely for the use of management and Riley Purgatory Bluff Creek Watershed District's Board, and is not intended to be, and should not be used, by anyone other than these specified parties.

Redpath and Company, Ltd.

REDPATH AND COMPANY, LTD.
St. Paul, Minnesota

April 13, 2015

RILEY PURGATORY BLUFF CREEK
WATERSHED DISTRICT

ANNUAL FINANCIAL REPORT

December 31, 2014

- This page intentionally left blank -

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
TABLE OF CONTENTS

- This page intentionally left blank -

INTRODUCTORY SECTION

- This page intentionally left blank -

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
ORGANIZATION
December 31, 2014

Name	Position 2014
District Officers:	
Appointed:	
Board of Managers:	
Perry Forster	President
Mary Bisek	Vice-President
Jill Crafton	Treasurer
Kenneth Wencl	Secretary
Leslie Yetka	Manager
District Administrator:	
Claire Bleser	

- This page intentionally left blank -

FINANCIAL SECTION

- This page intentionally left blank -

REDPATH AND COMPANY

INDEPENDENT AUDITOR'S REPORT

To the Honorable Managers of the
Riley Purgatory Bluff Creek Watershed District
Eden Prairie, Minnesota

We have audited the accompanying financial statements of the governmental activities and each major fund of Riley Purgatory Bluff Creek Watershed District, as of and for the year ended December 31, 2014, and the related notes to the financial statements, which collectively comprise Riley Purgatory Bluff Creek Watershed District's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities and each major fund of Riley Purgatory Bluff Creek Watershed District, as of December 31, 2014, and the respective changes in financial position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Report on Summarized Comparative Information

We have previously audited Riley Purgatory Bluff Creek Watershed District's 2013 financial statements, and we expressed an unmodified audit opinion on the respective financial statements of the governmental activities and each major fund in our report dated March 14, 2014. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2013 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Matters

Required Supplementary Information

Management has omitted the management's discussion and analysis that accounting principles generally accepted in the United States of America require to be presented to supplement the basic financial statements. Such missing information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. Our opinion on the basic financial statements is not affected by this missing information.

Accounting principles generally accepted in the United States of America require that the budgetary comparison information on pages 34 through 39, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do

not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise Riley Purgatory Bluff Creek Watershed District's basic financial statements. The introductory and other information sections, as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The introductory and other information sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Redpath and Company, Ltd.

REDPATH AND COMPANY, LTD.
St. Paul, Minnesota

April 13, 2015

- This page intentionally left blank -

BASIC FINANCIAL STATEMENTS

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
STATEMENT OF NET POSITION **Statement 1**
December 31, 2014
With Comparative Amounts For December 31, 2013

	Primary Government	
	Governmental Activities	
	2014	2013
Assets:		
Cash and investments	$2,434,450	$1,760,989
Property taxes receivable:		
Delinquent	2,775	10,091
Due from county	12,538	9,376
Security deposit	2,500	400
Prepaid expenses	-	600
Capital assets - net:		
Nondepreciable	78,034	78,034
Depreciable	84,706	12,769
Total assets	2,615,003	1,872,259
Liabilities:		
Accounts payable	78,495	85,904
Contracts payable	36,339	232,562
Accrued payroll	8,283	7,576
Accrued rent	7,069	-
Unearned revenue	105,204	75,000
Loan payable:		
Due within one year	-	20,000
Compensated absences payable:		
Due within one year	3,673	-
Due in more than one year	3,821	-
Total liabilities	242,884	421,042
Net position:		
Investment in capital assets	162,740	90,803
Unrestricted	2,209,379	1,360,414
Total net position	$2,372,119	$1,451,217

The accompanying notes are an integral part of these financial statements.

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
STATEMENT OF ACTIVITIES **Statement 2**
For The Year Ended December 31, 2014
With Comparative Totals For The Year Ended December 31, 2013

Functions/Programs	Expenses	Program Revenues: Charges For Services	Program Revenues: Operating Grants and Contributions	Program Revenues: Capital Grants and Contributions	Net (Expense) Revenue and Changes in Net Position Primary Government Totals: 2014	Net (Expense) Revenue and Changes in Net Position Primary Government Totals: 2013
Primary government:						
Governmental activities:						
General government	$346,727	$ -	$ -	$ -	($346,727)	($212,804)
Programs	1,006,755	-	53,466	-	(953,289)	(1,335,594)
Projects	-	-	-	-	-	(31)
Interest on long-term debt	-	-	-	-	-	(2,035)
Total governmental activities	$1,353,482	$0	$53,466	$0	(1,300,016)	(1,550,464)
General revenues:						
Property taxes					2,251,706	1,816,995
Grants and contributions not restricted to specific programs					-	-
Unrestricted investment earnings					38	60
Other income					4,986	-
Total general revenues					2,256,730	1,817,055
Change in net position					956,714	266,591
Net position - January 1, as previously reported					1,451,217	1,184,626
Prior period adjustment					(35,812)	-
Net position - January 1, as restated					1,415,405	1,184,626
Net position - December 31					$2,372,119	$1,451,217

The accompanying notes are an integral part of these financial statements.

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
BALANCE SHEET
GOVERNMENTAL FUNDS
December 31, 2014
With Comparative Totals For December 31, 2013

Statement 3

Assets	General Fund	Basic Water Management	509 Plan Implementation	Water Maintenance and Repair	Survey and Data Acquisition	Total Governmental Funds 2014	Total Governmental Funds 2013
Cash and investments	$168,724	$1,432,291	$692,008	$94,740	$46,687	$2,434,450	$1,760,989
Taxes receivable:							
Delinquent	43	1,509	1,218	5	-	2,775	10,091
Due from county	1,423	1,655	9,377	83	-	12,538	9,376
Security deposit	2,500	-	-	-	-	2,500	400
Prepaid expense	-	-	-	-	-	-	600
Due from other funds	149,863	-	1,143,110	7,206	-	1,300,179	35,057
Total assets	$322,553	$1,435,455	$1,845,713	$102,034	$46,687	$3,752,442	$1,816,513
Liabilities, Deferred Inflow of Resources, and Fund Balance							
Liabilities:							
Accounts payable	$19,078	$ -	$59,417	$ -	$ -	$78,495	$85,904
Contracts payable	-	-	36,339	-	-	36,339	232,562
Accrued payroll	69	-	8,214	-	-	8,283	7,576
Due to other funds	251,410	1,022,852	25,917	-	-	1,300,179	35,057
Unearned revenue	-	-	105,204	-	-	105,204	75,000
Loan payable	-	-	-	-	-	-	20,000
Total liabilities	270,557	1,022,852	235,091	0	0	1,528,500	456,099
Deferred inflow of resources:							
Unavailable revenues	43	1,509	1,218	5	-	2,775	10,091
Fund balance:							
Nonspendable	2,500	-	-	-	-	2,500	1,000
Committed	-	410,951	1,609,404	102,029	46,687	2,169,071	1,216,423
Assigned	-	143	-	-	-	143	105
Unassigned	49,453	-	-	-	-	49,453	132,795
Total fund balance	51,953	411,094	1,609,404	102,029	46,687	2,221,167	1,350,323
Total liabilities, deferred inflow of resources, and fund balance	$322,553	$1,435,455	$1,845,713	$102,034	$46,687	$3,752,442	$1,816,513
Fund balance reported above						$2,221,167	$1,350,323
Amounts reported for governmental activities in the statement of net position are different because:							
Capital assets used in governmental activities are not financial resources and, therefore, are not reported in the funds.						162,740	90,803
Long-term liabilities, including compensated absences payable, are not due and payable in the current period and, therefore, are not reported in the funds.						(14,563)	-
Other long-term assets are not available to pay for current period expenditures and, therefore, are reported as unavailable revenue in the funds.						2,775	10,091
Net position of governmental activities						$2,372,119	$1,451,217

The accompanying notes are an integral part of these financial statements.

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
GOVERNMENTAL FUNDS
For The Year Ended December 31, 2014
With Comparative Totals For The Year Ended December 31, 2013

Statement 4

	General Fund	Basic Water Management	509 Plan Implementation	Water Maintenance and Repair	Survey and Data Acquisition	Total Governmental Funds	
						2014	2013
Revenues:							
General property taxes	$247,161	$307,531	$1,681,840	$14,831	($248)	$2,251,115	$1,813,018
Insurance levy	7,907	-	-	-	-	7,907	12,008
Intergovernmental	-	-	53,466	-	-	53,466	25,045
Investment income	-	38	-	-	-	38	60
Other income	899	-	4,087	-	-	4,986	-
Total revenues	255,967	307,569	1,739,393	14,831	(248)	2,317,512	1,850,131
Expenditures:							
Current:							
General government	337,809	-	-	-	-	337,809	212,804
Programs	-	-	995,157	-	3,203	998,360	1,360,423
Projects	-	-	-	-	-	-	31
Capital outlay:							
Programs	-	-	74,687	-	-	74,687	12,985
Debt service:							
Interest	-	-	-	-	-	-	2,035
Total expenditures	337,809	0	1,069,844	0	3,203	1,410,856	1,588,278
Revenues over (under) expenditures	(81,842)	307,569	669,549	14,831	(3,451)	906,656	261,853
Fund balance - January 1, as previously reported	133,795	103,525	975,667	87,198	50,138	1,350,323	1,088,470
Prior period adjustment	-	-	(35,812)	-	-	(35,812)	-
Fund balance - January 1, as restated	133,795	103,525	939,855	87,198	50,138	1,314,511	1,088,470
Fund balance - December 31	$51,953	$411,094	$1,609,404	$102,029	$46,687	$2,221,167	$1,350,323

The accompanying notes are an integral part of these financial statements.

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
RECONCILIATION OF THE STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE OF GOVERNMENTAL FUNDS
For The Year Ended December 31, 2014
With Comparative Amounts For The Year Ended December 31, 2013

Statement 5

	2014	2013
Amounts reported for governmental activities in the statement of activities (Statement 2) are different because:		
Net changes in fund balance - total governmental funds (Statement 4)	$906,656	$261,853
Governmental funds report capital outlays as expenditures. However, in the Statement of Net Position the costs of those assets is allocated over their estimated useful lives and reported as depreciation expense. This is the amount by which capital outlays exceeded depreciation in the curent period.		
Capital outlay	74,687	12,985
Depreciation	(2,750)	(216)
Some expenses reported in the Statement of Activities do not require the use of current financial resources and, therefore, are not reported as expenditures in governmental funds:		
Compensated absences	(7,494)	-
In governmental funds, an expenditure is recognized only as amounts become due and payable in accordance with a lease contract. However, in the Statement of Net Position, expense is recognized during periods when the terms of the lease provide for a "rent holiday".	(7,069)	-
Revenues in the statement of activities that do not provide current financial resources are not reported as revenues in the funds:		
Unavailable general property taxes revenue:		
At December 31, 2012	-	(18,122)
At December 31, 2013	(10,091)	10,091
At December 31, 2014	2,775	-
Change in net position of governmental activities (Statement 2)	$956,714	$266,591

The accompanying notes are an integral part of these financial statements.

Note 1 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accounting policies of Riley Purgatory Bluff Creek Watershed District (the District) conform to generally accepted accounting principles applicable to governmental units. The following is a summary of significant accounting policies.

A. FINANCIAL REPORTING ENTITY

The District was created under the provisions of Minnesota Statutes. The District is operated by a five member Board of Managers appointed by the Hennepin and Carver County Boards of Commissioners for three year terms.

The District's policy is to include in the financial statements all funds, account groups, departments, agencies, boards, commissions, and other component units for which the District is considered to be financially accountable.

Component units are legally separate entities for which the District (primary government) is financially accountable, or for which the exclusion of the component unit would render the financial statements of the primary government misleading. The criteria used to determine if the primary government is financially accountable for a component unit include whether or not the primary government appoints the voting majority of the potential component unit's governing body, is able to impose its will on the potential component unit, is in a relationship of financial benefit or burden with the potential component unit, or is fiscally dependent upon by the potential component unit.

Based on these criteria, there are no organizations considered to be component units of the District.

B. GOVERNMENT-WIDE AND FUND FINANCIAL STATEMENTS

The government-wide financial statements (i.e., the statement of net position and the statement of activities) report information on all of the nonfiduciary activities of the primary government. For the most part, the effect of interfund activity has been removed from these statements. *Governmental activities*, which normally are supported by taxes and intergovernmental revenues, are reported separately from *business-type activities*. There are no *business-type activities*, which rely to a significant extent on fees and charges for support.

The statement of activities demonstrates the degree to which the direct expenses of a given function are offset by program revenues. *Direct expenses* are those that are clearly identifiable with a specific function. *Program revenues* include: 1) charges to customers or applicants who purchase, use, or directly benefit from goods, services, or privileges provided by a given function; and, 2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular function. Taxes and other items not included among program revenues are reported instead as *general revenues*.

Separate financial statements are provided for governmental funds. Major individual governmental funds are reported as separate columns in the fund financial statements.

C. MEASUREMENT FOCUS, BASIS OF ACCOUNTING AND FINANCIAL STATEMENT PRESENTATION

The government-wide financial statements are reported using the *economic resources measurement focus* and the *accrual basis of accounting*. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Property taxes are recognized as revenues in the year for which they are levied. Grants and similar items are recognized as revenue as soon as all eligibility requirements imposed by the provider have been met.

Governmental fund financial statements are reported using the *current financial resources measurement focus* and the *modified accrual basis of accounting*. Revenues are recognized as soon as they are both measurable and available. Revenues are considered to be *available* when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period. For this purpose, the District considers all revenues, except reimbursement grants, to be available if they are collected within 60 days of the end of the current fiscal period. Reimbursement grants are considered available if they are collected within one year of the end of the current fiscal period. Expenditures generally are recorded when a liability is incurred, as under accrual accounting. However, debt service expenditures are recorded only when payment is due.

Property taxes, intergovernmental revenues and interest associated with the current fiscal period are all considered to be susceptible to accrual and so have been recognized as revenues of the current fiscal period. All other revenue items are considered to be measurable and available only when cash is received by the District.

The District reports the following major governmental funds:

General Fund – Pursuant to Minnesota Statute 103D.905, a general fund, consisting of an ad valorem tax levy may not exceed 0.048 percent of taxable market value, or $250,000, whichever is less. The money in the fund shall be used for general administrative expenses and for the construction or implementation and maintenance of projects of common benefit to the watershed district.

Basic Water Management (special revenue fund) – Pursuant to Minnesota Statute 103D.905, in addition to the annual general levy, the managers may annually levy a tax not to exceed 0.00798 percent of taxable market value for a period not to exceed 15 consecutive years to pay the cost attributable to the basic water management features of projects initiated by petition of a political subdivision within the watershed district or by petition of at least 50 resident owners whose property is within the watershed district.

509 Plan Implementation (special revenue fund) – Notwithstanding chapter 103D, a local government unit or watershed management organization may levy a tax to pay the increased costs of preparing a plan under sections 103B.231 and 103B.235 or for projects identified in an approved and adopted plan necessary to implement the purposes of section 103B.201. The proceeds of any tax levied under this section shall be deposited in a separate fund and expended only for the purposes authorized by this section. Watershed management organizations and local government units may accumulate the proceeds of levies as an alternative to issuing bonds to finance improvements.

Water Maintenance and Repair (special revenue fund) – The water maintenance and repair fund may be used for any maintenance, repair, restoration, upkeep and rehabilitation of any public ditch, drain, dams, sewer, river, stream, watercourse, and waterbody, natural or artificial, lying wholly or partly within the District. Any work performed in accordance with the purposes of this act may include, but is not limited to, stream and watercourse clean up and maintenance and stream and watercourse bank and bed repair and stabilization. Financing is provided by property taxes.

Survey and Data Acquisition (special revenue fund) – Pursuant to Minnesota Statute 103D.905:

a. A survey and data acquisition fund is established and used only if other funds are not available to the watershed district to pay for making necessary surveys and acquiring data.
b. The survey and data acquisition fund consists of the proceeds of a property tax that can be levied only once every five years. The levy may not exceed 0.02418 percent of taxable market value.
c. The balance of the survey and data acquisition fund may not exceed $50,000.
d. In a subsequent proceeding for a project where a survey has been made, the attributable cost of the survey as determined by the managers shall be included as a part of the cost of the work and the sum shall be repaid to the survey and data acquisition fund.

As a general rule the effect of interfund activity has been eliminated from the government-wide financial statements. Exceptions to this general rule are transactions that would be treated as revenues, expenditures or expenses if they involved external organizations, such as buying goods and services or payments in lieu of taxes, are similarly treated when they involve other funds of the District. Elimination of these charges would distort the direct costs and program revenues reported for the various functions concerned.

Amounts reported as *program revenues* include 1) charges to customers or applicants for goods, services, or privileges provided, 2) operating grants and contributions, and 3) capital grants and contributions, including special assessments. Internally dedicated resources are reported as *general revenues* rather than as program revenues. Likewise, general revenues include all taxes.

When both restricted and unrestricted resources are available for an allowable use, it is the District's policy to use restricted resources first, then unrestricted resources as they are needed.

D. BUDGETARY DATA

The Board of Managers adopts an annual budget for the General Fund and all Special Revenue Funds. During the budget year, supplemental appropriations and deletions are or may be authorized by the Board. The modified accrual basis of accounting is used by the District for budgeting data. All appropriations end with the fiscal year for which they were made.

The Board of Managers annually adopts a tax levy for collection during the calendar year. The District's records are maintained on a calendar year ending December 31.

The District monitors budget performance on the fund basis. All amounts over budget have been approved by the Board through the disbursement approval process.

The District prepares a revenue and expenditure budget for all funds. Encumbrance accounting, under which purchase orders, contracts, and other commitments of monies are recorded in order to reserve that portion of the applicable appropriation, is not employed by the District.

E. CASH AND INVESTMENTS

Cash and investment balances from all funds are pooled and invested to the extent available in authorized investments. Investment income is allocated to individual funds on the basis of the fund's equity in the cash and investment pool.

In accordance with the provisions of GASB No. 31, the District reports investments at fair value, based upon quoted market prices, in the financial statements. Also in accordance with the provisions of GASB No. 31, the District has reported all investment income, including changes in fair value of investments, as revenue in the operating statements.

F. PROPERTY TAX REVENUE RECOGNITION

The Board of Managers annually adopts a tax levy and certifies it to the Counties on September 15 (levy/assessment date) of each year for collection in the following year. The Counties are responsible for billing and collecting all property taxes for itself, the District, the local School District and other taxing authorities. Such taxes become a lien on January 1 and are recorded as receivables by the District at that date. Real property taxes are payable (by property owners) on May 15 and October 15 of each calendar year. Personal property taxes are payable by taxpayers on February 28 and June 30 of each year. These taxes are collected by the Counties and remitted to the District on or before July 7 and December 2 of the same year. Delinquent collections for November and December are received the following January. The District has no ability to enforce payment of property taxes by property owners. The Counties possess this authority.

GOVERNMENT-WIDE FINANCIAL STATEMENTS
The District recognizes property tax revenue in the period for which the taxes were levied. Uncollectible property taxes are not material and have not been reported.

GOVERNMENTAL FUND FINANCIAL STATEMENTS
The District recognizes property tax revenue when it becomes both measurable and available to finance expenditures of the current period. In practice, current and delinquent taxes and State credits received by the District in July, December and January are recognized as revenue for the current year. Taxes collected by the Counties by December 31 (remitted to the District the following January) and taxes and credits not received at year end are classified as delinquent and due from County taxes receivable. The portion of delinquent taxes not collected by the District in January is fully offset by deferred inflow of resources because they are not available to finance current expenditures.

G. INVENTORIES

The original cost of materials and supplies has been recorded as expenditures at the time of purchase. The District does not maintain material amounts of inventories of goods and supplies.

H. PREPAIDS

Certain payments to vendors reflect costs applicable to future accounting periods and are recorded as prepaid items in both government-wide and fund financial statements. Prepaid items are reported using the consumption method and recorded as expenditures/expenses at the time of consumption.

I. CAPITAL ASSETS

Capital assets, which include property, plant, equipment, intangibles, and infrastructure assets (e.g., storm sewers, manholes, control structures and similar items), are reported in the governmental activities columns in the government-wide financial statements. Capital assets (including intangible assets) are defined by the District as assets with an initial, individual cost of more than $5,000 (amount not rounded) and an estimated useful life in excess of one year. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets are recorded at estimated fair market value at the date of donation.

The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend asset lives are not capitalized.

GASB Statement No. 34 required the District to report and depreciate new infrastructure assets effective in 2004. Infrastructure assets include lake improvements, dams and drainage systems. Neither their historical cost nor related depreciation has historically been reported in the financial statements. For governmental entities with total annual revenues of less than $10 million for the fiscal year ended December 31, 1999, the retroactive reporting of infrastructure is not required under the provisions of GASB Statement No. 34. The District has elected to implement the general provisions of GASB Statement No. 34 in the current year and has elected not to report infrastructure assets acquired in years prior to 2004. The District did not acquire any infrastructure assets from 2004 through 2014.

The District implemented GASB Statement No. 51, *Accounting and Financial Reporting for Intangible Assets* effective January 1, 2010. GASB Statement No. 51 required the District to capitalize and amortize intangible assets. Intangible assets include easements and computer software. For governmental entities with total annual revenues of less than $10 million for the fiscal year ended December 31, 1999, the retroactive reporting of intangible assets in not required under the provision of GASB Statement No. 51. The District has elected not to report intangible assets acquired in years prior to 2010. The District did not acquire any intangible assets from 2010 through 2014.

Property, plant and equipment of the District, is depreciated using the straight-line method over the following estimated useful lives:

Building	30 years
Equipment	5-10 years

J. COMPENSATED ABSENCES

It is the District's policy to permit employees to accumulate earned but unused vacation and personal leave benefits. All vacation pay and personal leave that is payable at termination is accrued when incurred in the government-wide financial statements. A liability for these amounts is reported in governmental funds only if they have matured, for example, as a result of employee resignations and retirements. In accordance with the provisions of Statement of Government Accounting Standards No. 16, *Accounting for Compensated Absences*, no liability is recorded for nonvesting accumulating rights to receive sick pay benefits.

K. FUND EQUITY

In the fund financial statements, governmental funds report fund balance in classifications that disclose constraints for which amounts in those funds can be spent. These classifications are as follows:

Nonspendable - consists of amounts that are not in spendable form, such as prepaid items.

Restricted - consists of amounts related to externally imposed constraints established by creditors, grantors or contributors; or constraints imposed by state statutory provisions.

Committed - consists of internally imposed constraints. These constraints are established by Resolution of the District's Board.

Assigned - consists of internally imposed constraints. These constraints reflect the specific purpose for which it is the District's intended use. These constraints are established by the District's Board and/or management.

Unassigned - is the residual classification for the general fund and also reflects negative residual amounts in other funds.

When both restricted and unrestricted resources are available for use, it is the District's policy to first use restricted resources, then use unrestricted resources as they are needed.

When committed, assigned or unassigned resources are available for use, it is the District's policy to use resources in the following order; 1) assigned 2) committed, and 3) unassigned.

L. USE OF ESTIMATES

The preparation of financial statements in accordance with generally accepted accounting principles (GAAP) requires management to make estimates that affect amounts reported in the financial statements during the reporting period. Actual results could differ from such estimates.

M. COMPARATIVE TOTALS

The basic financial statements and individual fund financial statements include certain prior-year summarized comparative information in total but not at the level of detail required for a presentation in conformity with generally accepted accounting principles. Accordingly, such information should be read in conjunction with the District's financial statements for the year ended December 31, 2013, from which the summarized information was derived.

N. RECLASSIFICATIONS

Certain reclassifications were made to prior year amounts to conform to current year presentation.

O. DEFERRED OUTFLOWS/INFLOWS OF RESOURCES

In addition to assets, the statement of financial position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element, *deferred outflows of resources*, represents a consumption of net position that applies to a future period(s) and so will *not* be recognized as an outflow of resources (expense/expenditure) until then. The government has no items that qualify for reporting in this category.

In addition to liabilities, the statement of financial position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, *deferred inflows of resources*, represents an acquisition of net position that applies to a future period(s) and so will *not* be recognized as an inflow of resources (revenue) until that time. The government has one type of item, which arises only under a modified accrual basis of accounting, that qualifies for reporting in this category. Accordingly, the item, unavailable revenue, is reported only in the governmental fund balance sheet. The governmental funds report unavailable revenues from property taxes.

Note 2 DEPOSITS AND INVESTMENTS

A. DEPOSITS

In accordance with Minnesota Statutes, the District maintains deposits at those depository banks authorized by the District Board, all of which are members of the Federal Reserve System.

Minnesota Statutes require that all District deposits be protected by insurance, surety bond, or collateral. The market value of collateral pledged must equal 110% of the deposits not covered by insurance or bonds.

Minnesota Statutes require that securities pledged as collateral be held in safekeeping by the District Treasurer or in a financial institution other than that furnishing the collateral. Authorized collateral includes the following:

a) United States government treasury bills, treasury notes and treasury bonds;

b) Issues of United States government agencies and instrumentalities as quoted by a recognized industry quotation service available to the government entity;

c) General obligation securities of any state or local government with taxing powers which is rated "A" or better by a national bond rating service, or revenue obligation securities of any state or local government with taxing powers which is rated "AA" or better by a national bond rating service;

d) General obligation securities of a local government with taxing powers may be pledged as collateral against funds deposited by that same local government entity;

e) Irrevocable standby letters of credit issued by Federal Home Loan Banks to a municipality accompanied by written evidence that the bank's public debt is rated "AA" or better by Moody's Investors Service, Inc. or Standard & Poor's Corporation; and

f) Time deposits that are fully insured by any federal agency.

Custodial Credit Risk - Deposits. Custodial credit risk is the risk that in the event of a bank failure, the District's deposits may not be returned to it. State Statutes require that insurance, surety bonds or collateral protect all District deposits. The market value of collateral pledged must equal 110% of deposits not covered by insurance or bonds.

At year end the carrying amount of the District's deposit was $2,434,450 and the bank balance was $2,514,124. The entire bank balance was covered by federal depository insurance or perfected collateral provided by the financial institution and held in the District's name.

B. INVESTMENTS

Minnesota Statutes authorize the District to invest in the following:

a) Direct obligations or obligations guaranteed by the United States or its agencies, its instrumentalities or organizations created by an act of congress, excluding mortgage-backed securities defined as high risk.

b) Shares of investment companies registered under the Federal Investment Company Act of 1940 and whose only investments are in securities described in (a) above, general obligation tax-exempt securities, or repurchase or reverse repurchase agreements.

c) Obligations of the State of Minnesota or any of its municipalities as follows:
   1) any security which is a general obligation of any state or local government with taxing powers which is rated "A" or better by a national bond rating service;
   2) any security which is a revenue obligation of any state or local government with taxing powers which is rated "AA" or better by a national bond rating service; and
   3) a general obligation of the Minnesota Housing Finance Agency which is a moral obligation of the State of Minnesota and is rated "A" or better by a national bond rating agency.

d) Bankers acceptances of United States banks.

e) Commercial paper issued by United States corporations or their Canadian subsidiaries, of the highest quality, and maturing in 270 days or less.

f) Repurchase or reverse repurchase agreements with banks that are members of the Federal Reserve System with capitalization exceeding $10,000,000; a primary reporting dealer in U.S. government securities to the Federal Reserve Bank of New York; certain Minnesota securities broker-dealers; or, a bank qualified as a depositor.

g) General obligation temporary bonds of the same governmental entity issued under section 429.091, subdivision 7; 469.178, subdivision 5; or 475.61, subdivision 6.

The District did not invest in any of the above listed investments during 2014.

Custodial Credit Risk – Investments. For investments in securities, custodial credit risk is the risk that in the event of failure of the counterparty, the District will not be able to recover the value of its investment securities that are in the possession of an outside party. The District does not have an investment policy which addresses the custodial credit risk of investments.

Credit Risk. Credit risk is the risk that an issuer or other counterparty to an investment will be unable to fulfill its obligation to the holder of the investment. The District follows State Statutes in regards to credit risk of investments. The District does not have an investment policy which further limits its investment choices.

Interest Rate Risk. Interest rate risk is the risk that changes in the interest rates of debt investments could adversely affect the fair value of an investment. The District does not have an investment policy which limits investment maturities as a means of managing its exposure to fair value losses arising from increasing interest rates.

Concentration of Credit Risk. Concentration of credit risk is the risk of loss that may be attributed to the magnitude of the District's investment in a single issuer. The District does not have an investment policy which addresses the concentration of credit risk.

Note 3 UNAVAILABLE REVENUES

Governmental funds report deferred inflows of resources in connection with receivables for revenues that are not considered to be available to liquidate liabilities of the current period. At the end of the current fiscal year, the various components of unavailable revenue reported in the governmental funds were as follows:

	Property taxes
General Fund	$43
Basic Water Management Fund	1,509
509 Plan Implementation Fund	1,218
Water Maintenance and Repair Fund	5
Total governmental funds	$2,775

Note 4 CAPITAL ASSETS

Capital asset activity for the year ended December 31, 2014 was as follows:

	Beginning Balance	Increases	Decreases	Ending Balance
Governmental activities:				
Capital assets, not being depreciated:				
Land	$78,034	$ -	$ -	$78,034
Total capital assets, not being depreciated	78,034	-	-	78,034
Capital assets, being depreciated:				
Building	-	50,856	-	50,856
Equipment and Vehicles	12,985	23,831	-	36,816
Total capital assets, being depreciated	12,985	74,687	-	87,672
Less accumulated depreciation for:				
Building	-	706	-	706
Equipment and Vehicles	216	2,044	-	2,260
Total accumulated depreciation	216	2,750	-	2,966
Total capital assets being depreciated - net	12,769	71,937	-	84,706
Governmental activities capital assets - net	$90,803	$71,937	$0	$162,740

Depreciation expense was charged to function/programs of the District as follows:

Governmental activities:	
Programs	$2,750

Note 5 COMMITMENTS AND CONTINGENCIES

The District had no committed contracts at December 31, 2014.

The District's management has indicated that there are no pending lawsuits or other actions in which the District is a defendant.

Note 6 LONG-TERM DEBT

Changes in general long-term liabilities for the year ended December 31, 2014 is as follows:

	Balance 12/31/13	Additions	Deletions	Balance 12/31/14	Due Within One Year
Governmental activities:					
Compensated payable	$ -	$12,087	($4,593)	$7,494	$3,673

It is not practicable to determine specific year of payment of long-term accrued compensated absences. Compensated absences are generally liquidated by the General Fund.

Note 7 FUND BALANCE

At December 31, 2014, the District had the following fund balance:

	General Fund	Basic Water Management	509 Plan Implementation	Water Maintenance and Repair	Survey and Data Acquisition	Total
Nonspendable:						
Security deposit	$2,500	$ -	$ -	$ -	$ -	$2,500
Total nonspendable	2,500	-	-	-	-	2,500
Committed to:						
Water management	-	410,951	-	-	-	410,951
509 plan implementation	-	-	1,609,404	-	-	1,609,404
Water maintenance and repair	-	-	-	102,029	-	102,029
Survey and data acquisition	-	-	-	-	46,687	46,687
Total committed	-	410,951	1,609,404	102,029	46,687	2,169,071
Assigned to:						
Water management	-	143	-	-	-	143
Unassigned	49,453	-	-	-	-	49,453
Total	$51,953	$411,094	$1,609,404	$102,029	$46,687	$2,221,167

Note 8 RISK MANAGEMENT

The District is exposed to various risks of loss related to torts; theft of, damage to, and destruction of assets; errors and omissions; and natural disasters. Property and casualty liabilities are insured. The District retains risk for the deductible portions of the insurance. The amounts of these deductibles are considered immaterial to the financial statements.

There were no significant reductions in insurance from the previous year or settlements in excess of insurance coverage for any of the past three fiscal years.

Note 9 DEFINED BENEFIT PENSION PLANS - STATEWIDE

A. PLAN DESCRIPTION

All full-time and certain part-time employees of the District are covered by defined benefit plans administered by the Public Employees Retirement Association of Minnesota (PERA). PERA administers the General Employees Retirement Fund (GERF) which is a cost-sharing, multiple-employer retirement plan. This plan is established and administered in accordance with Minnesota Statute, Chapters 353 and 356.

GERF members belong to either the Coordinated Plan or the Basic Plan. Coordinated Plan members are covered by Social Security and Basic Plan members are not. All new members must participate in the Coordinated Plan.

PERA provides retirement benefits as well as disability benefits to members, and benefits to survivors upon death of eligible members. Benefits are established by State Statute, and vest after three years of credited service. The defined retirement benefits are based on a member's highest average salary for any five successive years of allowable service, age, and years of credit at termination of service.

PERA issues a publicly available financial report that includes financial statements and required supplementary information for GERF. That report may be obtained on the internet at www.mnpera.org, by writing to PERA, 60 Empire Drive #200, St. Paul, Minnesota, 55103-2088 or by calling (651)296-7460 or 1-800-652-9026.

B. FUNDING POLICY

Minnesota Statutes Chapter 353 sets the rates for employer and employee contributions. These Statutes are established and amended by the State legislature. The District makes annual contributions to the pension plans equal to the amount required by State Statutes. GERF Basic Plan members and Coordinated Plan members were required to contribute 9.10% and 6.25%, respectively, of their annual covered salary in 2014. The District was required to contribute the following percentages of annual covered payroll in 2014: 11.78% for Basic Plan GERF members and 7.25% for Coordinated Plan GERF members. The District's contributions for the years ended December 31, 2014, 2013 and 2012 were $10,945, $6,186 and $1,887, respectively, equal to the contractually required contributions for each year as set by State Statute. Contribution rates will increase on January 1, 2015 in the Coordinated Plan (6.5% for members and 7.5% for employers).

Note 10 DEBT

Short term debt is used for cash flow needs when necessary. The line of credit is liquidated by the General Fund. Line of credit activity for the year ended December 31, 2014 was as follows:

	Balance 01/01/14	Additions	Deletions	Balance 12/31/14	Due Within One Year
Governmental activities:					
Line of credit	$20,000	$ -	($20,000)	$ -	$ -

The maturity date of the line of credit was January 15, 2014 and was paid off on February 10, 2014.

Note 11 INTERFUND RECEIVABLES/PAYABLES

Individual fund interfund receivable and payable balances at December 31, 2014 are as follows:

Fund	Receivable	Payable
General Fund	$149,863	$251,410
Basic Water Management	-	1,022,852
509 Plan Implementation	1,143,110	25,917
Water Maintenance and Repair	7,206	-
Total	$1,300,179	$1,300,179

Interfund receivables and payables are representative of per diem related activity during December 31, 2014, and the allocation of property taxes.

Note 12 OPERATING LEASE

The District leased building space under an operating lease that expired during 2014. The lease called for monthly payments of $200. Starting in July of 2014 the District entered into a new lease with required base monthly payments that vary from year to year and an initial estimated monthly operating charge of $1,496. The district received 12 months of $0 monthly base payments that began on September 1st, 2014. Total rent paid for the year ended December 31, 2014 was $7,816. Total rent expense for the year ended December 31, 2014 was $14,885.

Future minimum lease payments are as follows:

	Payment
2015	$8,000
2016	24,167
2017	24,792
2018	25,667
2019	26,542
After 5 years	18,082
Total	$127,250

The district will have the option to extend the lease an additional 3 years when the current lease expires on June 30, 2020.

Note 13 PRIOR PERIOD ADJUSTMENT

During 2014, corrections to prior year financial statements were made to record a previously unrecorded payable.

A summary of this change is as follows:

	Governmental Activities December 31, 2013	509 Plan Implementation December 31, 2013
Net position/fund balance - as previously reported	$1,451,217	$975,667
Prior period adjustment:		
Program expense	(35,812)	(35,812)
Net position/fund balance - as restated	$1,415,405	$939,855

Note 14 RECENTLY ISSUED ACCOUNTING STANDARDS

The Governmental Accounting Standards Boards (GASB) recently approved the following statements which were not implemented for these financial statements:

Statement No. 68 *Accounting and Financial Reporting for Pensions – an amendment of GASB Statement 27.* The provisions of this Statement are effective for financial statements for periods beginning after June 15, 2014. Statement No. 68 requires governments providing defined benefit pensions to recognize their long-term obligation for pension benefits as a liability for the first time.

Statement No. 71 *Pension Transition for Contributions Made Subsequent to the Measurement Date – an amendment of GASB No. 68*. The provisions of this Statement should be applied simultaneously with the provisions of Statement 68.

Statement No. 72 *Fair Value Measurement and Application*. The provisions of this Statement are effective for financial statements for periods beginning after June 15, 2015.

The effect these standards may have on future financial statements is not determinable at this time, but it is expected that Statements 68 and 71 will have a material impact.

- This page intentionally left blank -

REQUIRED SUPPLEMENTARY INFORMATION

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
REQUIRED SUPPLEMENTARY INFORMATION **Statement 6**
BUDGETARY COMPARISON SCHEDULE - GENERAL FUND
For The Year Ended December 31, 2014
With Comparative Actual Amounts For The Year Ended December 31, 2013

	Budgeted Amounts		2014 Actual Amounts	Variance with Final Budget - Positive (Negative)	2013 Actual Amounts
	Original	Final			
Revenues:					
General property taxes	$250,000	$250,000	$247,161	($2,839)	$249,917
Insurance levy	8,000	8,000	7,907	(93)	12,008
Other income	-	-	899	899	-
Total revenues	258,000	258,000	255,967	(2,033)	261,925
Expenditures:					
Current:					
General government:					
Engineering	97,000	97,000	100,444	(3,444)	78,835
Legal	40,000	40,000	149,287	(109,287)	47,901
Other district administration:					
Manager's per diem and expenses	7,000	7,000	677	6,323	4,938
Administrator expenses	57,500	57,500	48,260	9,240	44,092
Accounting and audit	12,500	12,500	10,357	2,143	8,600
Insurance	8,000	8,000	6,362	1,638	5,919
State association	3,500	3,500	5,232	(1,732)	5,111
Office and communication expenses	11,000	19,500	16,974	2,526	17,408
Contingency reserve	11,500	1,500	-	1,500	-
Education and outreach	11,000	6,000	216	5,784	-
Debt service:					
Interest	-	-	-	-	2,035
Total expenditures	259,000	252,500	337,809	(85,309)	214,839
Revenues over (under) expenditures	($1,000)	$5,500	(81,842)	($87,342)	47,086
Fund balance - January 1			133,795		86,709
Fund balance - December 31			$51,953		$133,795

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
REQUIRED SUPPLEMENTARY INFORMATION **Statement 7**
BUDGETARY COMPARISON SCHEDULE - BASIC WATER MANAGEMENT
For The Year Ended December 31, 2014
With Comparative Actual Amounts For The Year Ended December 31, 2013

	Budgeted Amounts		2014 Actual Amounts	Variance with Final Budget - Positive (Negative)	2013 Actual Amounts
	Original	Final			
Revenues:					
General property taxes	$300,000	$300,000	307,531	7,531	$ -
Intergovernmental	-	75,000	-	(75,000)	-
Investment income	-	-	38	38	60
Total revenues	300,000	375,000	307,569	(67,431)	60
Expenditures:					
Current:					
Projects	10,000	10,000	-	10,000	31
Revenues over expenditures	$290,000	$365,000	307,569	($57,431)	29
Fund balance - January 1			103,525		103,496
Fund balance - December 31			$411,094		$103,525

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
REQUIRED SUPPLEMENTARY INFORMATION **Statement 8**
BUDGETARY COMPARISON SCHEDULE - 509 PLAN IMPLEMENTATION
For The Year Ended December 31, 2014
With Comparative Actual Amounts For The Year Ended December 31, 2013

	Budgeted Amounts		2014 Actual Amounts	Variance with Final Budget - Positive (Negative)	2013 Actual Amounts
	Original	Final			
Revenues:					
General property taxes	$1,700,000	$1,700,000	$1,681,840	($18,160)	$1,499,568
Intergovernmental	-	4,170	53,466	49,296	25,045
Other income	-	-	4,087	4,087	-
Total revenues	1,700,000	1,704,170	1,739,393	35,223	1,524,613
Expenditures:					
Current:					
Programs	2,004,000	2,089,670	995,157	1,094,513	1,340,351
Capital outlay:					
Programs	-	-	74,687	(74,687)	12,985
Total expenditures	2,004,000	2,089,670	1,069,844	1,019,826	1,353,336
Revenues over (under) expenditures	($304,000)	($385,500)	669,549	$1,055,049	171,277
Fund balance - January 1, as previously reported			975,667		804,390
Prior period adjustment			(35,812)		-
Fund balance - January 1, as restated			939,855		804,390
Fund balance - December 31			$1,609,404		$975,667

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
REQUIRED SUPPLEMENTARY INFORMATION **Statement 9**
BUDGETARY COMPARISON SCHEDULE - WATER MAINTENANCE AND REPAIR
For The Year Ended December 31, 2014
With Comparative Actual Amounts For The Year Ended December 31, 2013

	Budgeted Amounts		2014 Actual Amounts	Variance with Final Budget - Positive (Negative)	2013 Actual Amounts
	Original	Final			
Revenues:					
General property taxes	$15,000	$15,000	$14,831	($169)	$14,995
Expenditures:					
Current:					
Programs	-	-	-	-	19,999
Revenues over (under) expenditures	$15,000	$15,000	14,831	($169)	(5,004)
Fund balance - January 1			87,198		92,202
Fund balance - December 31			$102,029		$87,198

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
REQUIRED SUPPLEMENTARY INFORMATION **Statement 10**
BUDGETARY COMPARISON SCHEDULE - SURVEY AND DATA ACQUISITION
For The Year Ended December 31, 2014
With Comparative Actual Amounts For The Year Ended December 31, 2013

	Budgeted Amounts		2014 Actual Amounts	Variance with Final Budget - Positive (Negative)	2013 Actual Amounts
	Original	Final			
Revenues:					
General property taxes	$ -	$ -	($248)	($248)	$48,538
Expenditures:					
Programs	-	-	3,203	(3,203)	73
Revenues over (under) expenditures	$0	$0	(3,451)	($3,451)	48,465
Fund balance - January 1			50,138		1,673
Fund balance - December 31			$46,687		$50,138

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
REQUIRED SUPPLEMENTARY INFORMATION
BUDGETARY COMPARISON SCHEDULE
NOTE TO RSI
December 31, 2014

Note A BUDGETS

All fund budgets are legally adopted on a basis consistent with accounting principles generally accepted in the United States of America. The legal level of budgetary control is at the fund level.

- This page intentionally left blank -

OTHER INFORMATION - UNAUDITED

RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT
MARKET VALUES BY WATERSHED - UNAUDITED **Exhibit 1**

	For Taxes Payable in 2014	Proposed For Taxes Payable in 2015
Estimate market value:		
Personal	$79,688,740	$81,890,200
Real	8,963,250,100	9,476,631,100
Total	$9,042,938,840	$9,558,521,300
Taxable market value:		
Personal	$79,688,740	$81,890,200
Real	8,669,098,140	9,476,631,100
Total	$8,748,786,880	$9,558,521,300
Referendum market value:		
Personal	$79,688,740	$81,890,200
Real	9,013,487,790	9,476,631,100
Total	$9,093,176,530	$9,558,521,300

Source: Hennepin County Taxpayer Services - Property Tax - Tax Accounting
Carver County information is not available.

OTHER REPORTS

- This page intentionally left blank -

REDPATH AND COMPANY

REPORT ON INTERNAL CONTROL

To the Honorable Managers of the
Riley Purgatory Bluff Creek Watershed District and Management
Eden Prairie, Minnesota

In planning and performing our audit of the financial statements of the governmental activities and each major fund of Riley Purgatory Bluff Creek Watershed District as of and for the year ended December 31, 2014, in accordance with auditing standards generally accepted in the United States of America, we considered Riley Purgatory Bluff Creek Watershed District's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Riley Purgatory Bluff Creek Watershed District's internal control. Accordingly, we do not express an opinion on the effectiveness of Riley Purgatory Bluff Creek Watershed District's internal control.

Our consideration of internal control was for the limited purpose described in the preceding paragraph and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies and therefore material weaknesses or significant deficiencies may exist that were not identified. However, as discussed in the Schedule of Findings and Responses, we identified a deficiency in internal control that we consider to be a material weakness.

A *deficiency* in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or combination of deficiencies in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a timely basis. We consider the deficiency described in the accompanying Schedule of Findings and Responses as finding 2014-001 to be a material weakness.

Riley Purgatory Bluff Creek Watershed District's written response to the material weakness identified in our audit has not been subject to the auditing procedures applied in the audit of the financial statements and, accordingly, we express no opinion on it.

This communication is intended solely for the information and use of management, Riley Purgatory Bluff Creek Watershed District's Board and others within the organization, and is not intended to be, and should not be, used by anyone other than these specified parties.

Redpath and Company, Ltd.

REDPATH AND COMPANY, LTD.
St. Paul, Minnesota

April 13, 2015

2014-001 Prior Period Adjustment

Criteria: The District's internal controls should allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis.

Condition: During the course of our audit, a prior period adjustment was recorded for a previously unrecorded payable in the amount of $35,812.

Cause: Information relating to the payable was not received by the District or the Auditor in a timely manner for it to be reflected in the audited financials.

Effect: Accounts payable and expenditures were understated in the financial statements for December 31, 2013.

Recommendation: We recommend the District's accountant and auditor verify ending fund balances reconcile prior to issuing audited financial statements.

Management Response: We do not believe there was a deficiency in our internal controls. The expense in question relates to a U of M contract, of which a contracted schedule of payments was previously provided. We did not catch that the expense was not included in the audited report. To prevent this issue in the future, we will reconcile our fund balance to the audited fund balance before approving the issuance of the reports. To do so, we request a draft be presented at least one week prior to the due date of the reports to give us adequate time to perform the reconciliation.

REDPATH AND COMPANY

MINNESOTA LEGAL COMPLIANCE REPORT

To the Honorable Managers of the
Riley Purgatory Bluff Creek Watershed District
Eden Prairie, Minnesota

We have audited in accordance with auditing standards generally accepted in the United States of America, the financial statements of Riley Purgatory Bluff Creek Watershed District, as of and for the year ended December 31, 2014, and the related notes to the financial statements, and have issued our report thereon dated April 13, 2015.

The *Minnesota Legal Compliance Audit Guide for Political Subdivisions* promulgated by the State Auditor Pursuant to Minn. Stat. § 6.65, contains six categories of compliance to be tested: deposits and investments, conflicts of interest, public indebtedness, contracting and bidding, claims and disbursements, and miscellaneous provisions. Our study included all of the above listed categories, except we did not test for compliance with the provisions for public indebtedness because Riley Purgatory Bluff Creek Watershed District has no debt.

In connection with our audit, nothing came to our attention that caused us to believe that Riley Purgatory Bluff Creek Watershed District failed to comply with the provisions of the *Minnesota Legal Compliance Audit Guide for Political Subdivisions*. However, our audit was not directed primarily toward obtaining knowledge of such noncompliance. Accordingly, had we performed additional procedures, other matters may have come to our attention regarding the Riley Purgatory Bluff Creek Watershed District's noncompliance with the above referenced provisions.

This report is intended solely for the information and use of management, Riley Purgatory Bluff Creek Watershed District's Board and the State Auditor, and is not intended to be, and should not be, used by anyone other than these specified parties.

Redpath and Company, Ltd.

REDPATH AND COMPANY, LTD.
St. Paul, Minnesota

April 13, 2015

- This page intentionally left blank -