RILEY
PURGATORY
BLUFF CREEK
WATERSHED DISTRICT

TABLE OF CONTENTS

CONTACTS

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

BOARD OF MANAGERS

The board of managers are listed by their position, and with their appointing county and term end-date noted. Four managers are appointed by the Hennepin County Commissioners and one by the Carver County Commissioners. They serve three-year terms. In 2018, two managers retired (Chadwick & Yetka), and two new managers were appointed (Koch & Ziegler).

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

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

Treasurer (far right)
Jill Crafton - Hennepin 7/31/21
10351 Decatur Avenue South
Bloomington, MN 55438
Home: (952) 944-5583
Email: jcrafton@rpbcwd.org

Secretary (left)
David Ziegler - Hennepin 7/31/19
16729 Baywood Terr.
Eden Prairie, MN 55346
Home: (952) 905-1889
Email: dziegler@rpbcwd.org

Manager (Far left)
Larry Koch – Carver 7/31/21
471 Bighorn Drive
Chanhassen, MN 55317
Home: (612) 210-5001
lkoch@rpbcwd.org

Retired manager
Leslie Yetka - Hennepin 7/31/19
17452 Hampton Court
Minnetonka, MN 55345
Home: (952) 933-3281

Richard Chadwick - Carver 7/31/18
9530 Foxford Road
Chanhassen, MN 55317
Home: (952) 445 2425

CITIZEN ADVISORY COMMITTEE

The CAC is a volunteer advisory board comprised of community members. As representatives of citizen interests, members support the district's board of managers in their mission to protect, manage, and restore water resources. They provide recommendations to aid decision making, communicate concerns from the public, and help educate the community. The board of managers annually appoints members to the CAC. The 2018 CAC members were:

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

Secretary
Anne Deuring
17149 Chiltern Hills Road
Minnetonka, MN 55345

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

Member
Peter Iversen
8002 Island Road
Eden Prairie, MN 55347

Member
Marilynn Torkelson
8956 Braxton Drive
Eden Prairie, MN 55347

Vice Chair
Sharon McCotter
7000 Utica Lane
Chanhassen, MN 55317

Member
Jim Boettcher
7476 Crocus Court
Chanhassen, MN55317

Member
Matt Lindon
9026 Belvedere Drive
Eden Prairie, MN 55347

Member
Lori Tritz
10346 Englewood Drive
Eden Prairie, MN 55347

Member
Curt Kobilarcsik
9149 Springfield Drive
Chanhassen, MN 55317

Member (appointed to board)
David Ziegler
16729 Baywood Terrace
Eden Prairie, MN 55346

TECHNICAL ADVISORY COMMITTEE

The technical advisory committee (TAC) includes representatives of cities, counties, state and other agencies. Agencies represented on the committee vary from the Metropolitan Council, to the Minnesota Department of Natural Resources, and local cities. They provide technical advice on district projects and programs, including its regulatory program. The board of managers annually appoints members to the TAC. The 2018 TAC members were:

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

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

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

2018 TAC Members:

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

EMPLOYEES AND CONSULTANTS

The watershed district employs six full-time staff members.

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

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

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

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

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

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

Office and Outreach Assistant (2018 new hire)
Maya Swope
mswope@rpbcwd.org
952-687-1348

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

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

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

Accounting
Nancy Martinson, Redpath and Company
4810 White Bear Parkway
White Bear Lake, MN 55110
Telephone: (651) 426-5844
Email: pmoeller@hlbtr.com

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

INTRODUCTION

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

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

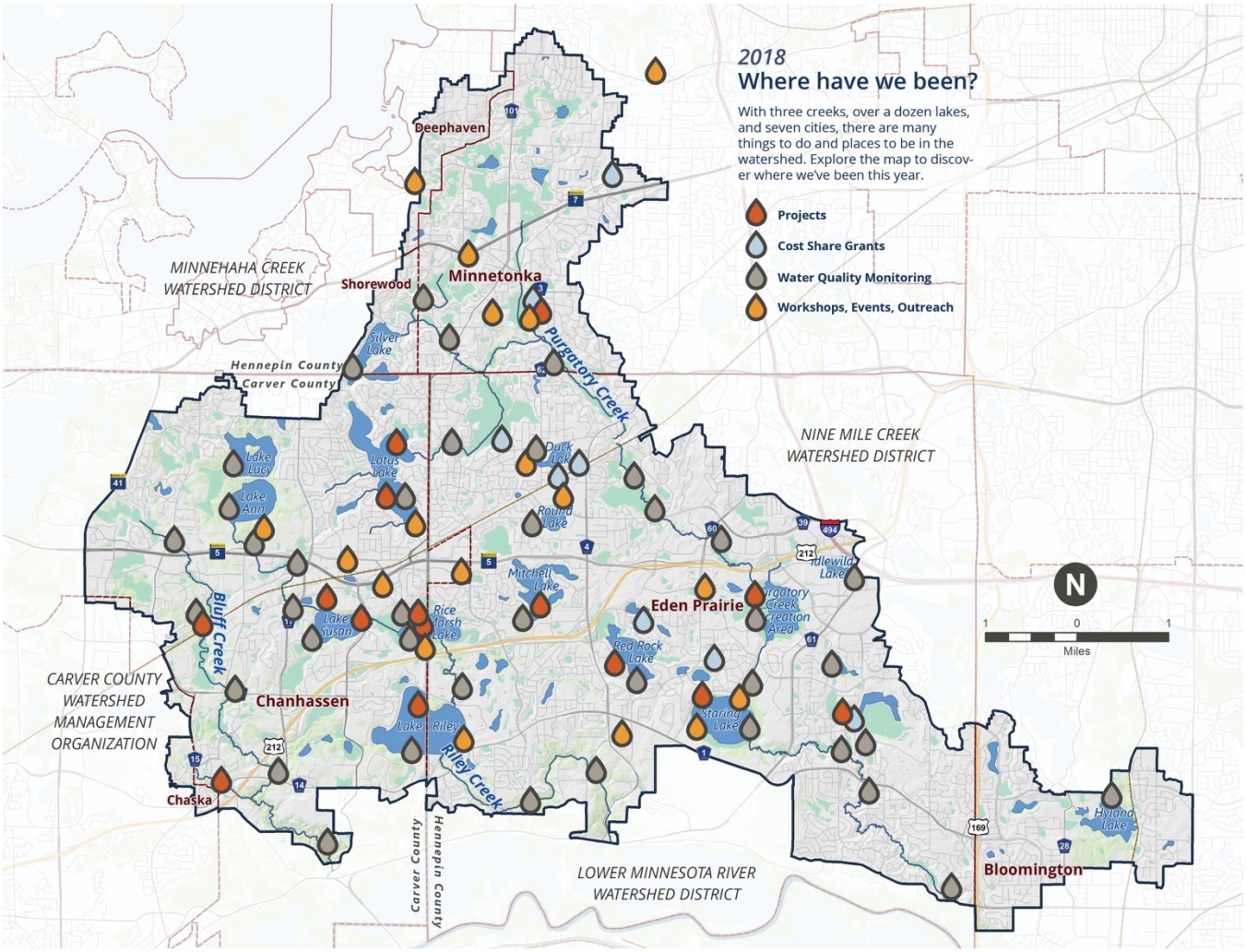
The following report is a summary of District activities in 2018.

2018 SUMMARY

Each year, the watershed district creates a work-plan with goals and objectives for its projects and programs. The plan is a guide for the year, and a way to track progress. This summary describes the district's accomplishments toward fulfilling its 2018 work-plan. The map below highlights the locations of projects, cost-share grants, data collection, and education and outreach activities.

The summary has nine sections:

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



ADMINISTRATION & PLANNING

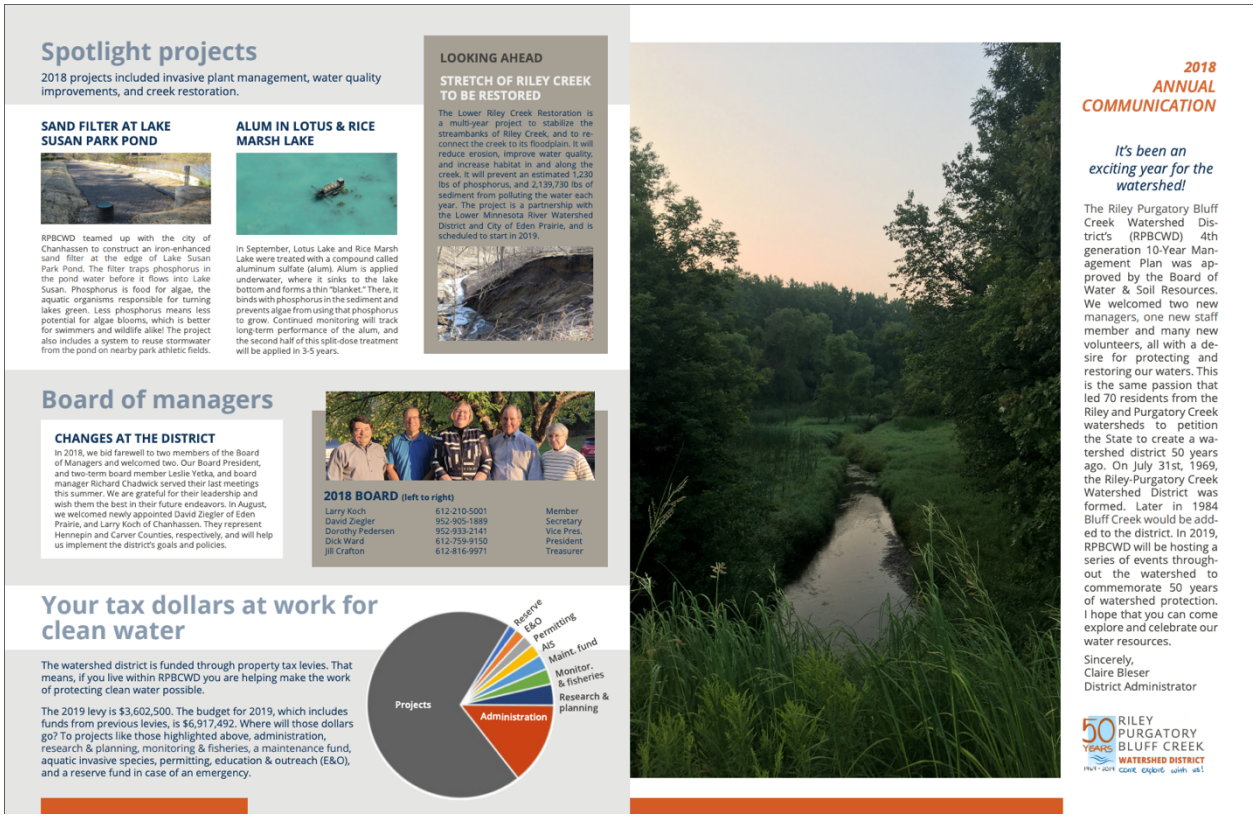
The District's administration and planning efforts are integral to achieve the goals set by the RPBCWD Plan and the Board of Managers. Effective execution of RPBCWD projects, programs, and other strategies requires sound fiscal management, adequate staff capacity and expertise, and planning efforts that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

ANNUAL COMMUNICATION

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

This year, the annual communication was in the form of a 11" by 17" folded brochure. Approximately 1500 copies were distributed. These were sent to local leaders, placed at local gathering spaces like city centers and libraries, and handed out at community events.

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



Spotlight projects

2018 projects included invasive plant management, water quality improvements, and creek restoration.

SAND FILTER AT LAKE SUSAN PARK POND

RPBCWD teamed up with the city of Chanhassen to construct an iron-enhanced sand filter at the edge of Lake Susan Park Pond. The filter traps phosphorus in the pond water before it flows into Lake Susan. Phosphorus is food for algae, the aquatic organisms responsible for turning lakes green. Less phosphorus means less potential for algae blooms, which is better for swimmers and wildlife alike! The project also includes a system to reuse stormwater from the pond on nearby park athletic fields.

ALUM IN LOTUS & RICE MARSH LAKE

In September, Lotus Lake and Rice Marsh Lake were treated with a compound called aluminum sulfate (alum). Alum is applied underwater, where it sinks to the lake bottom and forms a thin "blanket." There, it binds with phosphorus in the sediment and prevents algae from using that phosphorus to grow. Continued monitoring will track long-term performance of the alum, and the second half of this split-dose treatment will be applied in 3-5 years.

LOOKING AHEAD

STRETCH OF RILEY CREEK TO BE RESTORED

The Lower Riley Creek Restoration is a multi-year project to stabilize the streambanks of Riley Creek, and to reconnect the creek to its floodplain. It will reduce erosion, improve water quality, and increase habitat in and along the creek. It will prevent an estimated 1,230 lbs of phosphorus, and 2,139,730 lbs of sediment from polluting the water each year. The project is a partnership with the Lower Minnesota River Watershed District and City of Eden Prairie, and is scheduled to start in 2019.

Board of managers

CHANGES AT THE DISTRICT

In 2018, we bid farewell to two members of the Board of Managers and welcomed two. Our Board President, and two-term board member Leslie Yetka, and board manager Richard Chadwick served their last meetings this summer. We are grateful for their leadership and wish them the best in their future endeavors. In August, we welcomed newly appointed David Ziegler of Eden Prairie, and Larry Koch of Chanhassen. They represent Hennepin and Carver Counties, respectively, and will help us implement the district's goals and policies.

2018 BOARD (left to right)

Larry Koch	612-210-5001	Member
David Ziegler	952-905-1889	Secretary
Dorothy Pedersen	952-933-2141	Vice Pres.
Dick Ward	612-759-9150	President
Jill Crafton	612-816-9971	Treasurer

Your tax dollars at work for clean water

The watershed district is funded through property tax levies. That means, if you live within RPBCWD you are helping make the work of protecting clean water possible.

The 2019 levy is $3,602,500. The budget for 2019, which includes funds from previous levies, is $6,917,492. Where will those dollars go? To projects like those highlighted above, administration, research & planning, monitoring & fisheries, a maintenance fund, aquatic invasive species, permitting, education & outreach (E&O), and a reserve fund in case of an emergency.

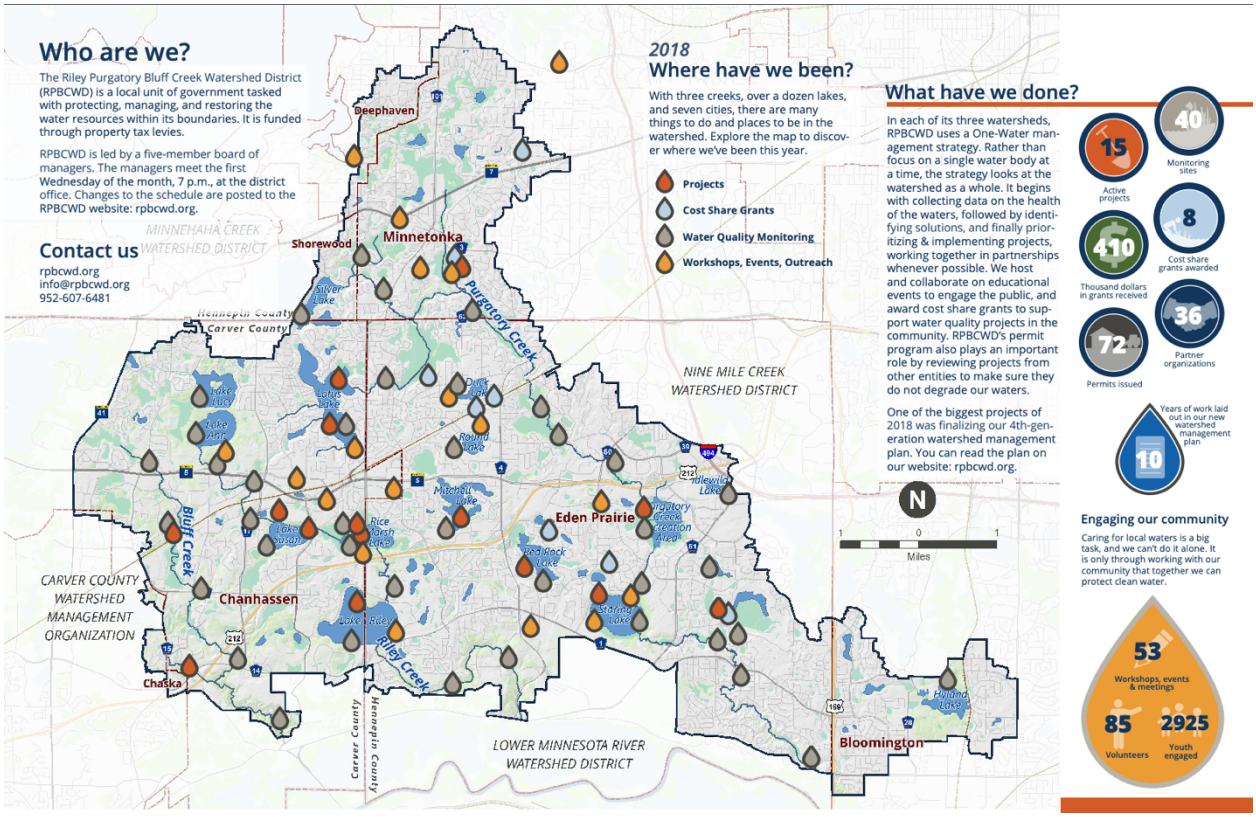
2018 ANNUAL COMMUNICATION

It's been an exciting year for the watershed!

The Riley Purgatory Bluff Creek Watershed District's (RPBCWD) 4th generation 10-Year Management Plan was approved by the Board of Water & Soil Resources. We welcomed two new managers, one new staff member and many new volunteers, all with a desire for protecting and restoring our waters. This is the same passion that led 70 residents from the Riley and Purgatory Creek watersheds to petition the State to create a watershed district 50 years ago. On July 31st, 1969, the Riley-Purgatory Creek Watershed District was formed. Later in 1984 Bluff Creek would be added to the district. In 2019, RPBCWD will be hosting a series of events throughout the watershed to commemorate 50 years of watershed protection. I hope that you can come explore and celebrate our water resources.

Sincerely,
Claire Bleser
District Administrator

50 YEARS RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT



BIENNIAL SOLICIATION OF INTEREST PROPOSALS

Under Minnesota Statutes §103B.227, subd 5, the District must issue a biennial solicitation for legal, technical, and other professional services. The District issued a formal solicitation for accounting, engineering, and legal service in 2017. The District retained JMSC Futurity as its accountant and Smith Partners, PLLP as its legal counsel. BARR Engineering was selected as District Engineer in May 2017. Included in our pool of consultant were Wenck Associates, Limnotech, SRF, HDR, Next solicitation will be issued in 2019. In 2018, the District switched accountant and selected the accounting department at Redpath and Company to be the District's accountant. Redpath and Company conducted the District's annual financial audit. The next solicitation of services will be in 2019.

EVALUATION OF CAPITAL IMPROVEMENT PROGRAM

As part of the District's development of the 2018 10-year management plan, the District has evaluated and prioritized all District capital improvement projects. Out of 175 projects identified, the District with input from our partners was able to identify 34 projects to be implemented within the next 10 years beginning in 2018. Three projects (Lotus

Lake Internal Control, Rice Marsh Lake Internal Control, Duck Lake Watershed Load Control) were identified for the 2018 year in addition to completing projects that were active in 2017 (Bluff Creek Stabilization, Fire Station 2, Chanhassen High School Reuse, Lake Susan Water Quality Improvement Phase 2, Lower Riley Creek Restoration and Stabilization, and Scenic Heights Habitat Restoration). Please find below the status of the projects:

- Bluff Creek Watershed
  - Bluff Creek Tributary Stabilization (delayed due to additional permitting material requested by USACE)
  - Chanhassen High Scholl (substantially completed)
- Riley Creek Watershed
  - Rice Marsh Lake Internal Control (completed)
  - Lower Riley Creek Restoration and Stabilization (design completed)
  - Lake Susan Water Quality Improvement Phase 2 (substantially completed)
- Purgatory Creek Watershed
  - Fire Station 2 (completed)
  - Purgatory Creek berm (in progress)
  - Lotus Lake Internal Control (completed)
  - Purgatory Creek at 101 Restoration (completed)
  - Silver Lake Phase 1 Feasability (completed)
  - Scenic Heights Restoration (in progress)
  - Hyland Lake Internal Control (partner completed)
  - Duck Lake Watershed Load (in progress)

STATUS OF LOCAL PLAN ADOPTION AND IMPLEMENTATION

The District received 4 Local Surface Water Management Plans to review. The City of Deephaven, Shorewood, Minnetonka and Chanhassen all submitted their plans. The City of Deephaven and Shorewood were approved. The City of Minnetonka and Chanhassen are approved pending meeting conditions.

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 bal-

ance sheet, an analysis of changes in final balances, and all additional statements neces-sary for full financial disclosures. The 2018 Audited Financial Report may be found on our website at http://www.rpbcwd.org/library/annual-reports-andcommunications/. (Posted when finalized and available.)

2018 ANNUAL AUDIT

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

2018 ANNUAL BUDGET

The District adopted its 2018 Annual Budget in September 2017 (see following figure).

	2018 Budget	Fund Transfers	Revised 2018 Budget	Current Month	Year-to-Date	Year-to Date Percent of Budget
REVENUES						
Plan Implementation Levy	$3,420,000.00		$3,420,000.00	-	3,408,872.90	99.67%
Permit	20,000.00		20,000.00	-	57,001.50	285.01%
Grant Income	373,175.00		475,475.00	-	309,775.27	65.15%
Data Collection Income	-		-	-	6,921.78	---
Other Income	-		-	-	23,729.26	---
Investment Income	-		-	-	35,309.43	---
Past Levies	1,736,968.00		1,736,968.00	-	-	0.00%
Partner Funds	445,000.00		594,091.00	-	214,091.00	36.04%
TOTAL REVENUE	**$5,995,143.00**	**$0.00**	**$6,246,534.00**	**$0.00**	**$4,055,701.14**	**64.93%**
EXPENDITURES						
Administration						
Accounting and Audit	40,000.00		40,000.00	-	37,637.39	94.09%
Advisory Committees	4,000.00		4,000.00	-	2,803.95	70.10%
Insurance and bonds	12,000.00		12,000.00	-	20,862.00	173.85%
Engineering Services	103,000.00		103,000.00	-	94,001.42	91.26%
Legal Services	75,000.00		75,000.00	-	63,177.92	84.24%
Manager Per Diem/Expense	19,000.00		19,000.00	-	14,139.87	74.42%
Dues and Publications	8,000.00		8,000.00	-	9,288.00	116.10%
Office Cost	100,000.00		100,000.00	-	121,350.60	121.35%
Permit Review and Inspection	90,000.00		90,000.00	-	154,851.24	172.06%
Recording Services	15,000.00		15,000.00	-	7,901.25	52.68%
Staff Cost	434,000.00		434,000.00	-	442,878.73	102.05%
Subtotal	**$900,000.00**	**$0.00**	**$900,000.00**	**$0.00**	**$968,892.37**	**107.65%**
Programs and Projects						
District Wide						
10-year Management Plan	9,662.00		9,662.00	-	34,542.25	357.51%
AIS Inspection and early response	75,000.00		75,000.00	-	55,759.73	74.35%
Cost-share	200,000.00		200,000.00	-	32,807.40	16.40%
Creek Restoration Action Strategies Phase	20,000.00		20,000.00	-	-	0.00%
Data Collection and Monitoring	180,000.00		180,000.00	-	183,154.39	101.75%
District Wide Floodplain Evaluation - Atlas 14/SMM model	30,000.00		30,000.00	-	-	0.00%
Education and Outreach	115,000.00		115,000.00	-	119,680.95	104.07%
Plant Restoration - U of M	40,000.00		40,000.00	-	19,474.28	48.69%
Repair and Maintenance Fund *	177,005.00		177,005.00	-	-	0.00%
Survey and Analysis Fund *	13,464.00	(13,464.00)	-	-	-	---
Wetland Management*	150,000.00		150,000.00	-	29,728.31	19.82%
District Groundwater Assessment	-		-	-	166.38	---
Groundwater Conservation*	130,000.00		130,000.00	-	-	0.00%
Lake Vegetation Implementation	75,000.00		75,000.00	-	17,368.26	23.16%
Opportunity Project*	100,000.00		100,000.00	-	-	0.00%
TMDL - MPCA	10,000.00		10,000.00	-	-	0.00%
Stormwater Ponds - U of M	-	22,092.00	22,092.00	-	-	0.00%
Subtotal	**$1,325,131.00**	**$8,628.00**	**$1,333,759.00**	**$0.00**	**$492,681.95**	**36.94%**
Bluff Creek						
Bluff Creek Tributary*	236,741.00		282,129.00	-	41,038.08	14.55%
Chanhassen High School *	282,478.00	50,000.00	382,478.00	-	340,573.23	89.04%
Subtotal	**$519,219.00**	**$50,000.00**	**$664,607.00**	**$0.00**	**$381,611.31**	**57.42%**
Riley Creek						
Lake Riley - Alum Treatment*	22,424.00		22,424.00	-	17,423.96	77.70%
Lake Susan Improvement Phase 1 *	7,106.00		7,106.00	-	-	0.00%
Lake Susan Water Quality Improvement Phase 2 *	353,365.00	100,000.00	552,456.00	-	539,036.38	97.57%
Rice Marsh Lake in-lake phosphorus load	150,000.00		150,000.00	-	76,017.94	50.68%
Riley Creek Restoration (Reach E and D3) *	1,427,987.00		1,427,987.00	-	119,269.55	8.35%
Subtotal	**$1,960,882.00**	**$100,000.00**	**$2,159,973.00**	**$0.00**	**$751,747.83**	**34.80%**
Purgatory Creek						
Fire Station 2 (Eden Prairie)	100,262.00		100,262.00	-	101,318.90	101.05%
Purgatory Creek Rec Area- Berm/retention area - feasibility/design	50,000.00		50,000.00	-	-	0.00%
Lotus Lake in-lake phosphorus load control	345,000.00		345,000.00	-	239,227.04	69.34%
Lotus Lake - Feasability Phase 1	18,802.00		18,802.00	-	-	0.00%
Purgatory Creek at 101*	246,259.00	(100,000.00)	146,259.00	-	24,414.38	16.69%
Silver Lake Restoration - Feasibility Phase 1	11,003.00		11,003.00	-	10,489.50	95.33%
Scenic Heights	208,957.00		208,957.00	-	97,730.82	46.77%
Hyland Lake in-lake phosphorus load control	20,000.00		20,000.00	-	-	0.00%
Duck Lake watershed load	220,000.00		220,000.00	-	6,044.50	2.75%
Subtotal	**$1,220,283.00**	**($100,000.00)**	**$1,120,283.00**	**$0.00**	**$479,225.14**	**42.78%**
Reserve	**$99,628.00**	**($58,628.00)**	**41,000.00**	-	-	0.00%
TOTAL EXPENDITURE	**$6,025,143.00**	**$0.00**	**$6,219,622.00**	**$0.00**	**$3,074,158.60**	**49.43%**
EXCESS REVENUES OVER (UNDER) EXPENDITURES	**($30,000.00)**	**$0.00**	**$26,912.00**	**$0.00**	**$981,542.54**	

10-YEAR MANAGEMENT PLAN

In 2018, the District's 10 year management plan was adopted. This was preceded by a 2-year process that required a lot of data, analysis and prioritization, and input from stakeholders like city and state organizations, and the community. The plan guides all the District's actions, from monitoring to water quality projects, over a 10 year period.

2019 WORKPLAN

Administration	
Accounting and Audit	Coordinate with Accountant for the development of financial reports. Coordinate with the Auditor. Continue to work with the Treasurer to maximize on fund investments.
Internal Policies	Work with Governance Manual and Personnel Committees to review bylaws and manuals as necessary
Advisory Committees	Engage with the Technical Advisory Committee on water conservation, chloride management and emerging topics Engage with the Citizen Advisory Committee on water conservation, annual budget and emerging topics. Facilitate recruitment of CAC members for 2019.
District-Wide	
Regulatory Program	Review regulatory program to maximize efficiency. Engage Technical Advisory Committee and Citizen Advisory Committee on possible rule changes. Implement regulatory program.
Aquatic Invasive Species	Review AIS monitoring program Develop and implement Rapid Response Plan as appropriate Coordinate with LGUs and keep stakeholders aware of AIS management activities. Manage and maintain the aeration system on Rice Marsh Lake as per the Riley Chain of Lakes Carp Management Plan. Review AIS inspection program. Keep abreast in technology and research in AIS.
Cost-Share	Review program to determine efficiencies and needs. Recommend modification as necessary. Review applications and recommend implementation.
Creek Restoration Action Strategy	Review updates to the field CRAS analysis.
Data Collection	Continue Data Collection in permanent sites.

	Identify monitoring sites to assess future project sites.
District Hydrology and Hydraulics Model	Coordinate maintenance of Hydrology and Hydraulics Model. Coordinate model update with LGUs if additional information is collected. Partner and implement with the City of Bloomington on Flood Evaluation and Water Quality Feasibility.
Education and Outreach	Implement Education & Outreach Plan, review at year end. Manage partnership activities with other organizations. Coordinate Public Engagement with District projects.
Groundwater Conservation	Work with other LGUs to monitor assess and identify gaps. Engage with the Technical Advisory Committee to identify potential projects. Develop a water conservation program (look at Woodbury model)
Lake Vegetation Management	Work with the University of Minnesota or Aquatic Plant Biologist, Cities of Chanhassen and Eden Prairie, lake association, and residents as well the Minnesota Department of Natural Resources on potential treatment. Implement herbicide treatment as needed. Secure DNR permits and contract with herbicide applicator. Lakes the District is monitoring for treatment include: Lake Susan, Lake Riley, Lotus Lake, Mitchell Lake, Red Rock Lake and Staring Lake. Work with Three Rivers Park District for Hyland Lake
Opportunity Projects	Assess potential projects as they are presented to the District
Total Maximum Daily Load	Continue working with Minnesota Pollution Control Agency on the Watershed Restoration And Protection Strategies (WRAPS). Engage the Technical Advisory Committee .
Repair and Maintenance Grant	Develop and formalize grant program.

University of Minnesota	Review and monitor progress on University of Minnesota grant. Support Dr John Gulliver and Dr Ray Newman research and coordinate with local partners. Keep the manager abreast to progress in the research. Identify next management steps.
Watershed 50 year Anniversary	Come explore with us! Finalize anniversary program for 2019. Implement anniversary events.
Watershed Plan	Review and identify needs for amendments.
Wetland Conservation Act (WCA)	Administer WCA within the Cities of Shorewood and Deephaven. Represent the District on Technical Evaluation Panel throughout the District
Wetland Management	Identify potential restoration/rehabilitate wetlands and wetland requiring protection.
Bluff Creek Watershed	
Chanhassen High School Re-use	Continue to work with all partners. Complete site restoration and start system. Finalize and implement E and O for project. Monitor Project.
Bluff Creek Tributary Restoration	Implement and finalize restoration. Monitor Project.
Wetland Restoration at 101	Remove 3 properties from flood zone, restore a minimum 7 acres and as many as 16 acres of wetlands, connect public with resource, reduce volume, rate, pollution loads to Bluff Creek
Riley Creek Watershed	
Lake Riley Alum	Continue to monitor the waters.
Lake Susan Improvement Phase 1	Continue to monitor spent lime treatment facility. (This item will be rolled into our Data Collection Program)
Lake Susan Improvement Phase 2	Complete final site stabilization and spring start up. Finalize and implement E and O for project. Monitor Project.
Lower Riley Creek Stabilization	Coordinate agreement and acquire easements if needed for the restoration of Lower Riley Creek reach D3 and E. Implement Project.

	Continue Public Engagement for project and develop signage of restoration.
Rice Marsh Lake Alum Treatment	Monitor Project.
Rice Marsh Lake Watershed Load Project 1	Conduct feasibility. Develop cooperative agreement with City of Chanhassen
Upper Riley Creek	Work with City to develop scope of work (in addition to stabilizing the creek can we mitigate for climate change) Conduct feasibility Develop cooperative agreement with the City of Chanhassen Order Project Start design
Purgatory Creek Watershed	
Duck Lake Raingarden Project	Work with the City to implement neighborhood BMP. Identify neighborhood BMP to help improve water resources to Duck Lake. Implement neighborhood BMPs.
Fires Station 2	Monitor Project.
Hyland Lake Internal Load control	Implement Hyland Lake Alum application.
Lotus Lake – Internal Load Control	Monitor treatment and plant populations.
Scenic Heights	Continue implementing restoration effort. Work with the City of Minnetonka and Minnetonka School District on Public Engagement for project as well as signage.
Silver Lake Restoration	Order project Design Project Work with the City of Chanhassen for Design, cooperative agreement and implementation

REGULATORY PROGRAM

Regulation plays an important role in managing water resource problems. For instance, municipal land use planning and zoning powers are invaluable for ensuring that land uses are compatible with the surrounding environment. The District's current regulatory program was adopted by the Board of Managers in November of 2014. These rules were amended on August 8th 2018 to address stakeholder concerns. It implements a watershed approach to potential impacts to water resources that ensures a consist level of protection across the watershed.

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

REGULATORY PROGRAM

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

The District received 76 permit applications in 2018. Seventy permits were approved in 2018 and none were denied. It is estimated that more than nine (9) tons of Total Suspended Solids (TSS) and approximately 85 lbs of Total Phosphorus were prevented from entering our stormwater sewers and ultimately our water resources. In addition, approximately 89,300 cubic feet of water was abstracted during every 1.1-inch rainfall event. There were twelve projects which included buffers.

Summary		Estimated		
Permit Type	Number	Total TSS (lbs)	Total TP (lbs)	Volume (cft)
Governmental	33	11,540	59.7	47,263
Private Development	19	7,152	25.0	42,065
Ex. Single Family	18	Not Computed		
Withdrawn/ Review in Progress	6	Not Computed		
TOTAL	76	18,692	84.7	89,328

While TSS and TP removals were similar in 2018 to 2017, government projects accounted for the majority of the removals. This is consistent with the fact that government permits outpaced private developments at an almost 2:1 ratio. Although pollutant removal remained consistent, the volume of stormwater abstracted reduced almost 30% from the preceding year. This is most likely a reflection of recent changes to the NPDES permit which resulted in more restricted sites,

Six applications requested a variance from District rules.

The District hosted two workshops targeting property manager and builders.

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

90
Dump trucks of sediment/yr

110
Tons less algae/yr

8350
Bathtub full of water infiltrated per 1.1" rainfall

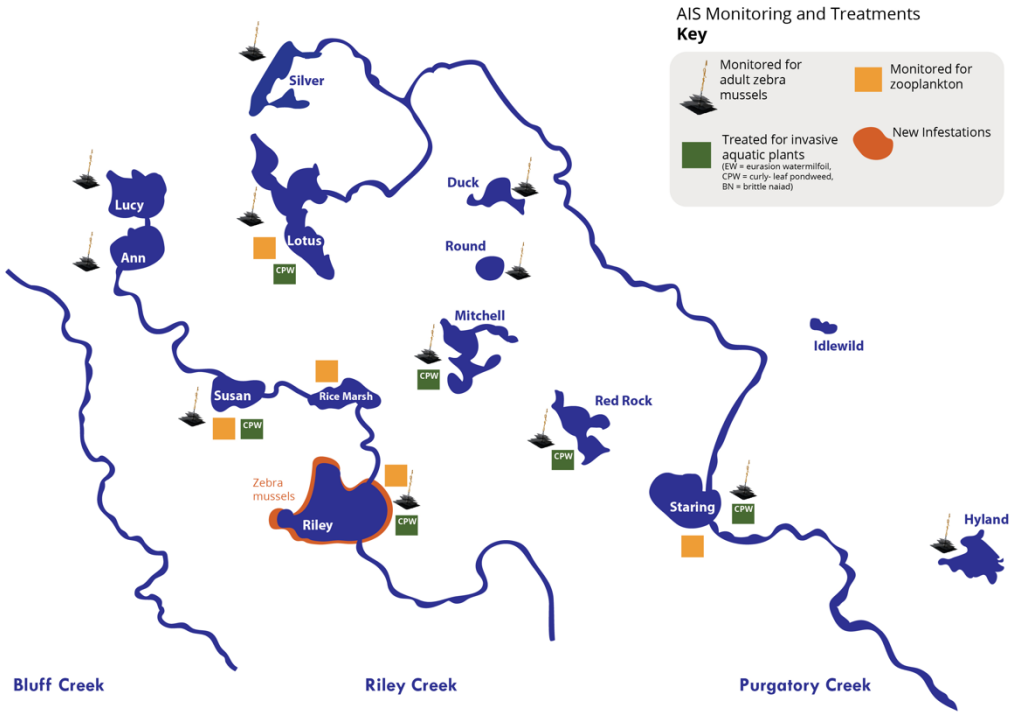
AQUATIC INVASIVE SPECIES

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

AQUATIC INVASIVE SPECIES

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

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



The District, with help of 14 volunteers, monitored our lakes for zebra mussels. Unfortunately, Zebra Mussels were detected in Lake Riley in October. The District worked with the MN DNR to determine the extent of spread and identify if rapid response could occur. However, the spread was too large. The District notified all lake shore owners throughout the District and held an informational session.

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

Don't Forget!

Clean, Drain, Dry

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

LAKE VEGETATION MANAGEMENT

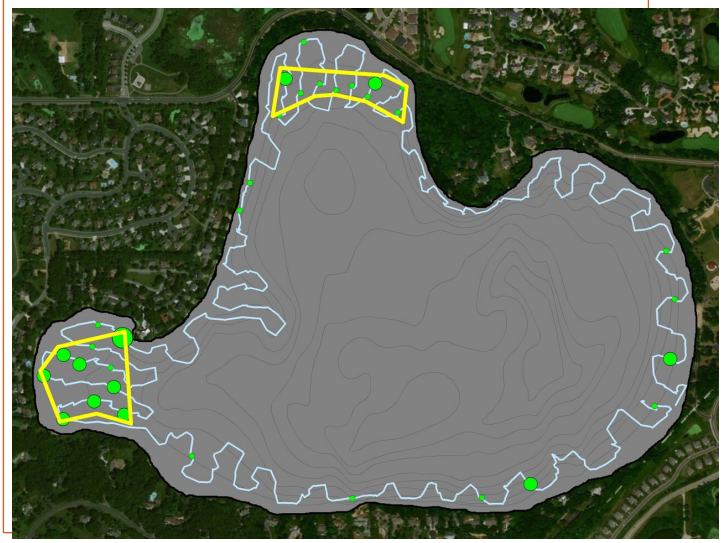
In 2018, the District conducted herbicide treatments on aquatic invasive species as part of 4 vegetation management plans and 1 rapid response plan.

Lake Vegetation Management Plans

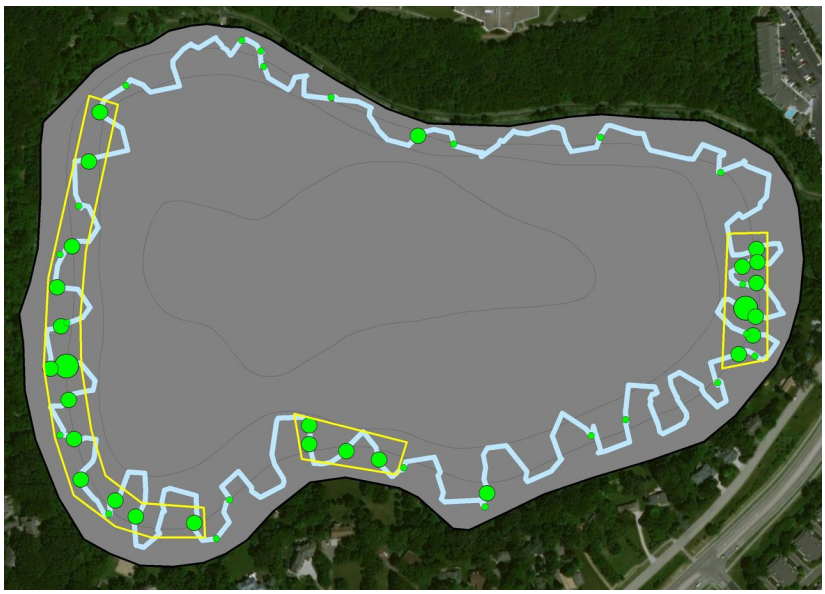
Lake Riley

As part of a restoration effort post-carp removal and after the alum treatment, the District has been monitoring and targeting herbicide treatments for both curlyleaf pondweed and eurasian watermilfoil. In 2018, the District conducted one herbicide treatment on Lake Riley. The first treatment treated 15 acres for curlyleaf pondweed. The treatment are part of an effort to restore the native vegetation post carp removal and management. The District will continue to monitor and assess the need for herbicide treatment for these invasive species.

Curlyleaf pondweed treatment areas

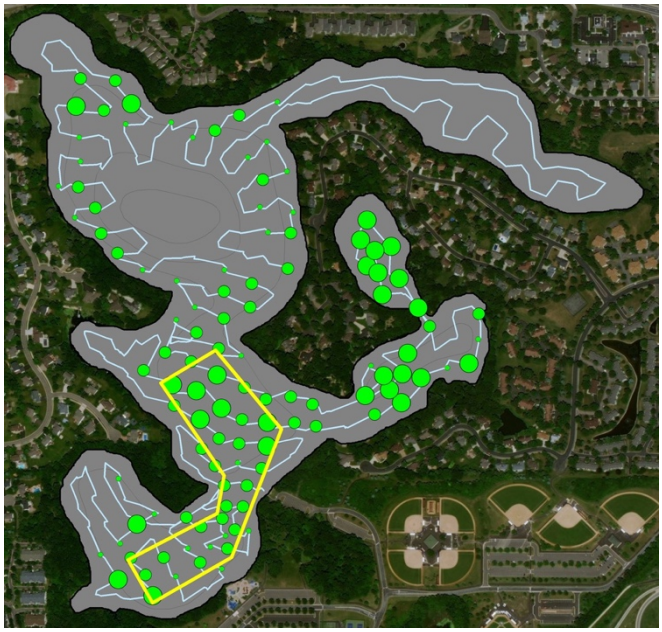


Lake Susan



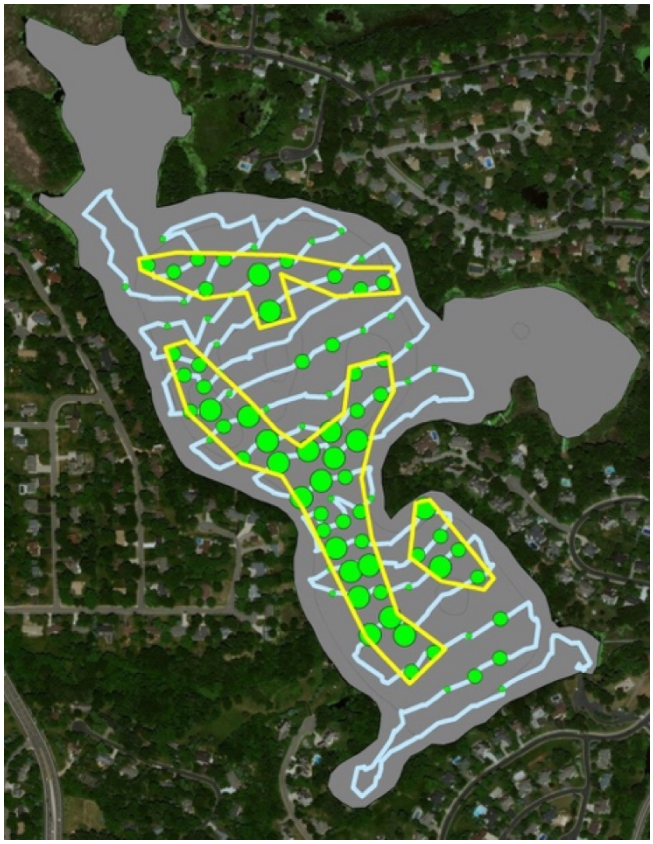
Over 6 acres of curleyleaf pondweed were treated on Lake Susan. The treatment is part of an effort to restore the native plant population in Lake Susan post carp control and prior to a future alum treatment. We will continue to monitor curlyleaf pondweed in 2019 to determine if there is a need to do additional treatments.

Mitchell Lake



In 2018, the District treated 13 acres of Mitchell Lake for curlyleaf pondweed. In addition, the City of Eden Prairie conducted mechanical harvesting. This treatment is part of a vegetation management plan to manage curlyleaf pondweed drafted between the City of Eden Prairie and the Watershed District. The District and the City of Eden Prairie will reevaluate the plan in 2019.

Red Rock Lake



Red Rock Lake is classified as a shallow lake by the Minnesota Pollution Control Agency. In 2015, the District along with the city of Eden Prairie completed a public engagement process to develop a plant management plan for Red Rock Lake. Part of the plan identified the need for managing curlyleaf pondweed and as such the District has taken leadership in managing for this invasive plant. Thirteen acres were treated for curlyleaf pondweed. The District will be surveying the aquatic plant community to determine if there is a need to treat in 2019.

DISTRICT FLOODPLAINS

In 2017, the District conducted community resilience workshops focusing on our changing climate. Through the workshops, the following climate hazards were identified as top concerns:

- Extreme precipitation
- Drought
- Extreme heat
- Warmer winters

The District in 2018 worked with the TAC to identify ways to further our understandings of climate hazards in the District. The District took on two projects. One of which was to include higher definition in our monitoring of seasonal streams to determine potential flooding challenges. The District will continue to monitor a tributary to Purgatory Creek in 2019. The other project is in partnership with the City of Bloomington, specifically looking at the Hyland Lake watershed. The project is closely looking at the flooding potentials of homes in that region as well as looking at opportunities to mitigate and reduce pollutant impacts due to the increase rain precipitations. The project will begin in 2019.

GROUNDWATER CONSERVATION

The District continues to explore practices that promote groundwater conservation. In September 2018, the District hosted an educational groundwater conservation presentation in which staff from the City of Woodbury spoke about an innovative groundwater conservation program in their city. In order to extend the capacity of a local groundwater supply, city staff developed a program to encourage city residents to use "smart" irrigation controllers. These systems sense moisture and limit unnecessary irrigation.

Twenty-two people attended this presentation, including members of the RPBCWD Board of Managers, Citizen Advisory Committee, and Technical Advisory Committee.

In 2019, the District will further explore ideas and identify how it will engage in groundwater conservation.

INCENTIVE PROGRAM

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

COST-SHARE PROGRAM

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

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

In 2018, the watershed district's cost-share program funded nine projects including three raingardens and 10,000 ft^2 of habitat restoration. The watershed also provided technical guidance to community members through a partnership with the Carver County Soil and Water Conservation District. Some of these community members did not apply for a cost-share grant, but still went on to engage with the district in other meaningful ways.

District staff also worked together with the citizens advisory committee to begin the process of the updating the cost-share program. It is anticipated that the updated program will be ready to open in spring of 2019.

In 2018, the watershed district's cost-share program funded nine community projects to protect and improve water resources:

9 projects

10,000 ft^2 of habitat restored

EARTH DAY MINI-GRANTS

Ten applications were received for the mini-grants. Nine of the applications were approved. The approved grants included requests to purchase snow-shoes to hike frozen Duck Lake in the winter, sampling nets to investigate insects living in Bluff Creek, rain boots to explore a tributary, and books to learn about water use. Other grants included creating terrariums to study the water cycle, and visiting a nature center to learn about wetlands and rivers. The increase in interest in the program led staff to look into expanding it for 2019, renaming it Educator Mini-Grants and hosting rolling deadlines.

Prairie View Elementary students use their new grant-purchased snow-shoes to explore frozen duck Lake

REPAIR & MAINTENANCE FUND

In 2018, no funds were requested for the repair and maintenance of stormwater infrastructure.

DATA COLLECTION

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

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

EXECUTIVE SUMMARY

The Riley Purgatory Bluff Creek Watershed District (RPBCWD) had a successful water quality sampling season in 2018, 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 2018 sampling effort are presented in this report.

2018 LAKE SUMMARY

During the 2018 monitoring season, 13 lakes and one high value wetland (Lake Idlewild) were m onitored throughout the District. Regular water quality lake sampling was conducted on each lake approximately every two weeks throughout the growing season (June-September). In ad dition to regular lake sampling, the District monitored water levels on all waterbodies, assessed carp populations within the Riley and Purgatory Chain of Lakes, and assessed zooplankton and phytoplankton populations in five lakes. Staff were able to remove 1,901 common carp from the Purgatory Creek Recreation Area during the spring spawning run which reduced overall carp numbers in the system. The District also monitored public access points and analyzed water samples for the presence of zebra mussels in these 14 waterbodies. Unfortunately, zebra mussels were found on Lake Riley, which is the first lake within the District to become infested. Successful alum treatments occurred on Lotus Lake, Round Lake, and Rice Marsh Lake in 2018. Herbicide treatments for curly leaf pondweed were conducted on Lotus Lake, Lake Susan, Mitchell Lake, Red Rock Lake, Staring Lake, and Lake Riley.

Surface water samples were collected, analyzed, and compared to standards set by the Minnesota Pollution Control Agency (MPCA) to assess overall lake health. **Figure** 1 displays lakes sampled in 2018 that met or exceeded the MPCA lake water quality standards for Chlorophyll-a (Chl-a), Total Phosphorus (TP), and Secchi Disk depth during the growing season (June-September). The MPCA has specific standards for both 'deep' lakes (Lake Ann, Lotus Lake, Lake Riley, and Round Lake) and 'shallow' lakes (Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Staring Lake, Lake Susan, and Silver Lake) (MPCA 2016). Lake Ann, Lake Idlewild, Lake Riley, Round Lake, Duck Lake, and Silver Lake met all three MPCA standards in 2018; Round (TP), Riley (Chl-a), Duck (TP), and Silver (Chl-a) did not previously meet all standards in 2017. This is the first time since data has been collected that Lake Riley and Silver Lake met all water quality standards. Lotus Lake, Red Rock, Rice Marsh, and Lake Susan all exceeded both the Chl-a and TP standards in 2018. Similar to 2017, Hyland did not meet all three standards in 2018.

Mitchell Lake also did not meet all water quality standards due to the declined summer secchi disk average. Both Red Rock and Rice Marsh Lake declined in water quality as both Chl-a and TP summer averages increased. All lakes met the nitrate/nitrite water quality standard and only Lake Idlewild did not meet the chloride standard.

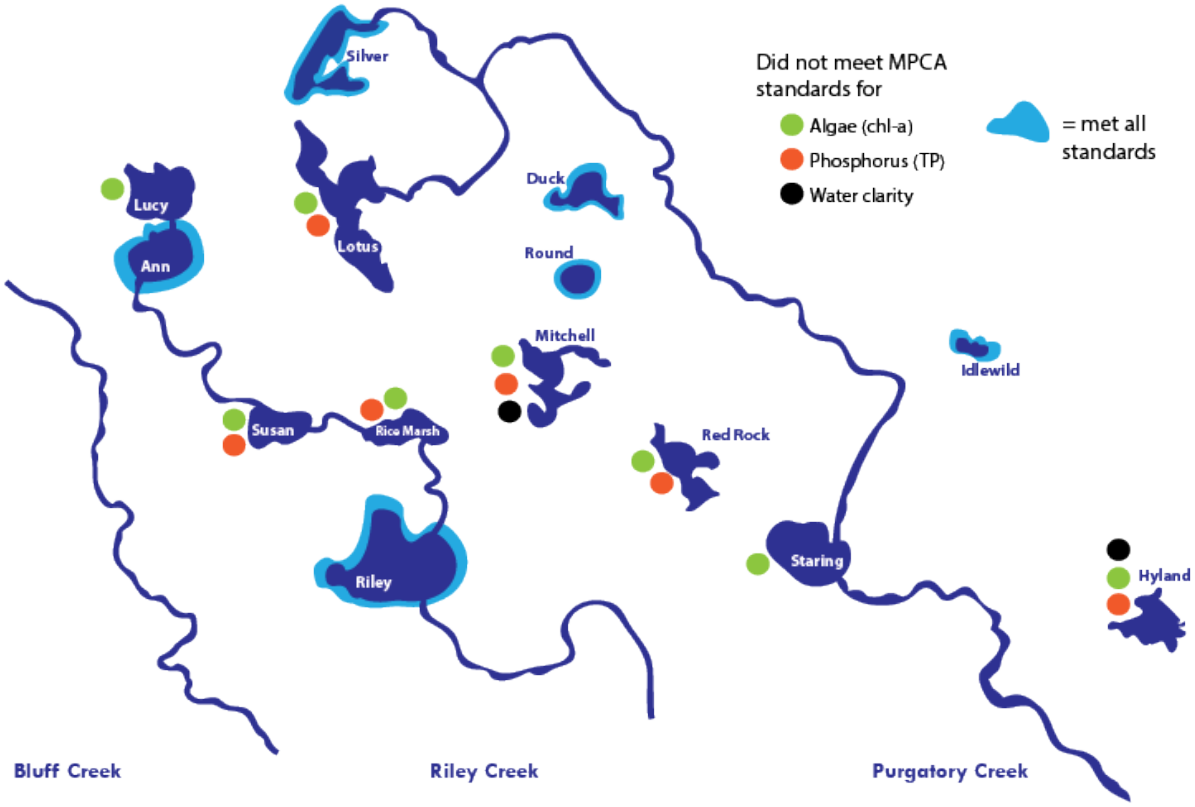


Figure 1 2018 Lake Water Quality

Summary of the lake water quality data collected in 2018 by the Riley Purgatory Bluff Creek Watershed District as compared to the Minnesota Pollution Control Agency Water Quality Standards. Chlorophyll-a (green), Total Phosphorus (orange), and Secchi Disk depth (black) were assessed during the growing season (June-September) for both 'deep' lakes or lakes >15 ft deep and < 80% littoral area (Lake Ann, Lotus Lake, Lake Riley, and Round Lake), and 'shallow' lakes or lakes <15 ft deep and >80% littoral area (Duck Lake, Hyland Lake, Lake Idlewild, Lake Lucy, Mitchell Lake, Red Rock Lake, Rice Marsh Lake, Staring Lake, Lake Susan, and Silver Lake). The corresponding dots next to each lake indicate which water quality standard was not met and lakes surrounded by blue met all water quality standards.

2018 STREAM SUMMARY

In 2018, the District collected water quality samples and performed data analysis on 21 different sampling sites along Riley Creek (six sites), Bluff Creek (five sites), and Purgatory Creek (ten sites). During the 2018 creek monitoring season (April-September) water chemistry and turbidity were regularly measured at the 18-regular water quality monitoring sites every two weeks. Water samples were collected to assess nutrient (TP and Chl-a) and total suspended sediment (TSS) concentrations. Creek flow was calculated from velocity measurements taken at consistent creek cross sections at each water quality monitoring location. The District collected macroinvertebrates at all five Riley Creek regular water quality sites in 2018. Sections of Purgatory Creek were walked and assessed using the Creek Restoration Action Strategy (CRAS) evaluation, which identifies stream reaches in the most need of restoration. Staff walked two new reaches during these evaluations. Overall, the 2018 CRAS scores of subreaches previously walked remained very similar to past scores. The two tributary streams not previously walked were determined to be in good to moderate condition. In 2018, the CRAS was published in the Water Science Bulletin of the Center for Watershed Protection.

The summary for all three creeks is based on water quality parameters developed by the MPCA in 2014 for Eutrophication and TSS. The parameters measured during the summer growing season (April-September) and the associated MPCA water quality limits for streams located in the Central River Region include: Dissolved Oxygen (DO) daily minimum > 4mg/L, summer season average TP < 0.1mg/L, TSS < 10% exceedance of 30mg/L limit during the summer season, summer season average Chl-a <18ug/L, and summer season average pH < 9su and >6su (MPCA, 2016).

P3 was the only regular creek sampling site to meet all MPCA water quality standards in 2018 (Figure 2). The overall number of water quality standard impairments increased from 2017 to 2018; Bluff had 10, Riley had seven, and Purgatory had nine (previously ten, two and seven, respectively). Bluff Creek remained the stream with the most impaired water quality, as previously seen in 2015, 2016, and 2017, with TP impairments at all sites, as well as TSS impairments at three sites, a DO impairment at B5, and a fish impairment at B1. Once again, TP was the water quality standard most impaired in 2018 with 10 of the 18 sites not meeting the standard (summer average <0.1 mg/L). TSS impairments increased from five impairments in 2017 to nine in 2018. The dissolved oxygen standard (daily minimum of 4mg/L) was impaired across five stream sites. All sites met the pH water quality standard (< 9su and >6su). Similar to 2016 and 2017, P2 was the only site which did not meet the Chl-a standard (summer average <18ug/L).

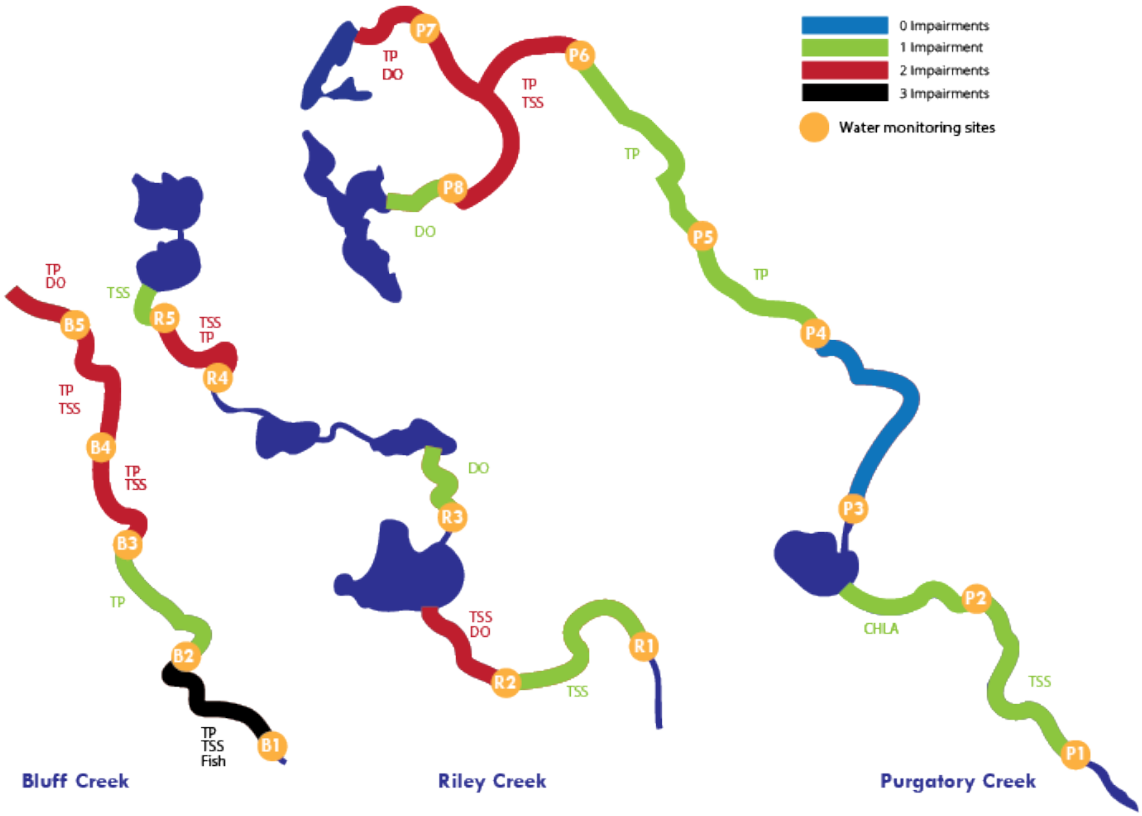


Figure 2 2018 Stream Water Quality

Summary of stream water quality data collected on Bluff Creek, Riley Creek, and Purgatory Creek in 2018 by the Riley Purgatory Bluff Creek Watershed District as compared to the Minnesota Pollution Control Agency (MPCA) Water Quality Standards. A total of 18 water monitoring locations (orange circles) were sampled and information gathered from the individual sites were applied upstream to the next monitoring location. The summer season (April-September) eutrophication and total suspended solids water quality standards used in this assessment included: Dissolved Oxygen (DO) daily minimum > 4mg/L, average Total Phosphorus (TP) < 0.1mg/L, Total Suspended Solids (TSS) < 10% exceedance of 30mg/L limit, average Chlorophyll-a (CHLA) <18ug/L, average pH < 9su and > 6su. The corresponding labels next to each stream section indicate which water quality standard were not met.

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

EDUCATION & OUTREACH

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

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

In 2018 the District implemented a new E&O Plan. The following pages describe the District's E&O programs and major activities in 2018.

VOLUNTEER PROGRAM

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

The watershed district's volunteer program supports its mission to protect, manage, and restore waters resources by engaging community members in stewardship opportunities. The district strives to create meaningful experiences for volunteers, while growing its own capacity to protect clean water. The 2018 program included three ongoing programs – Adopt a Dock, Master Water Stewards, and Service Learners. The district also led a tree-planting, cosponsored a volunteer clean-up event, and hosted a year-end celebration.

Adopt a Dock

Adopt a Dock is a citizen science initiative. Lakeshore residents to monitor for aquatic invasive species.. Invasive mussels were found on a plate in Lake Riley, after the district had already been confirmed the species in the lake.

Master Water Stewards

A partnership with the Freshwater Society, MWS trains community volunteers to prevent A through projects and education. In 2018, 4 stewards graduated from the program and 5 new stewards began classes.

Service Learners

Service learners are college students or other community members who gain first-hand experience at the district through volunteering.

In 2018, the watershed district's volunteer program engaged community members through three different opportunities and four events:

85 volunteers

660 hours volunteered

8 programs & events

LOCAL LEADERS PROGRAM

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

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

Highlights from 2018 included participating in the Minnesota Association of Watershed District's Annual Tour, and hosting a technical training on creek assessment and restoration.

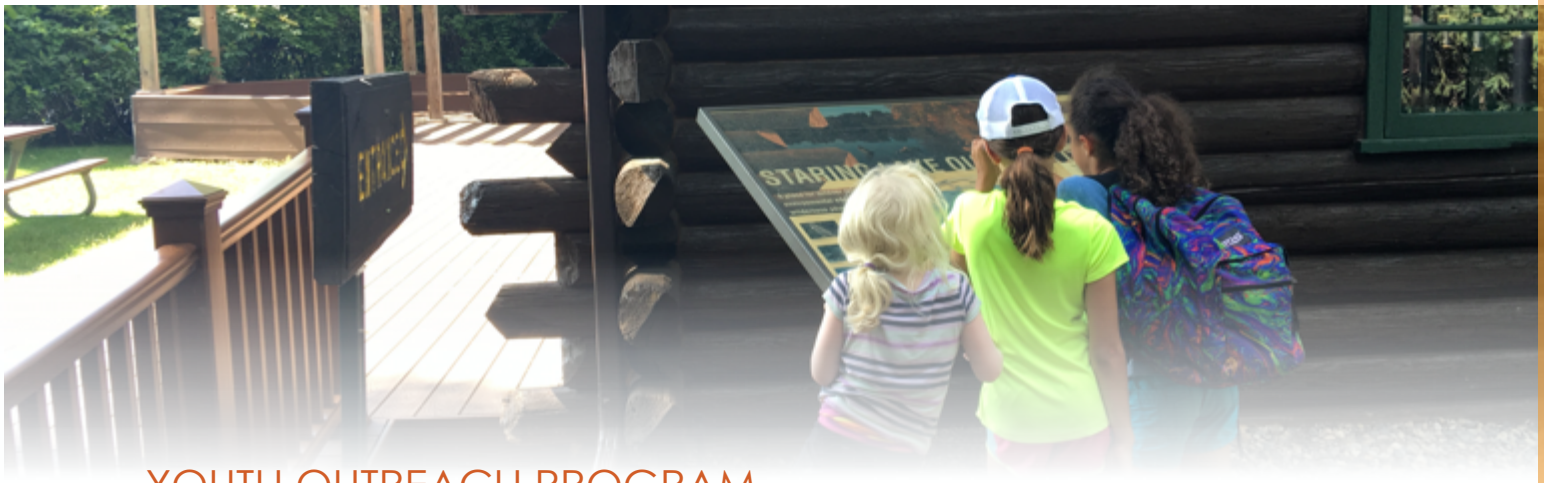
The District also hosted a groundwater conservation workshop, and presented to local city councils.

In 2018, the watershed district's local leader program engaged community members through a watershed tour, workshops, and presentations:

120 tour attendees

Groundwaater conservation workshop

7 activities



YOUTH OUTREACH PROGRAM

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

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

Earth Day Mini-Grants

The mini-grant program offers funding to educators for projects that or activities related to water resources. 9 projects were funded in 2018 including a trip to a nature center, snowshoes for exploring a frozen lake, and terrariums to learn the water cycle.

Staring Nature Center Partnership

The district partners with the Staring Lake Nature Center in Eden Prairie to support their water resources programing. In 2018, three schools (~120 4th graders) visited the center several times to learn about the health of Staring Lake.

School & Community Events

The district seeks out and responds to requests to present at schools and other youth events.

In 2018, the watershed district's youth outreach program engaged children and their families by:

9 mini-grant projects

2925 individuals engaged

21 activities & events

CONTINUING EDUCATION

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

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

Salt Solutions Workshops

In partnership with Nine Mile Creek Watershed District, Minnehaha Creek Watershed District, Basset Creek Watershed Management Commission, and the City of Minnetonka, the District offered workshops for non-profits and faith-based organizations to learn to reduce winter salt pollution.

Turf & Winter Maintenance Training

Through a Minnesota Pollution Control Agency Grant, the watershed district is able to offer certification trainings in best practices for turfgrass and winter maintenance professionals. In 2018 the District hosted two grant-supported workshops.

Business Luncheons

The District developed and hosted business luncheon series in 2018. Each of the three luncheons targeted a different business audience and focused on a pertinent topic.

In 2018, the watershed district's continuing education program served the community through:

270 participants

16 Trainings & events

COMMUNICATIONS PROGRAM

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

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

Annual Communication

Each year, the district prepares and distributes a communication about the work it does in the community.

Fact sheets

Water quality fact sheets tell the story of each lake and creek in the watershed. Over 1000 copies were distributed in 2018.

Media

Electronic newsletter and press releases are written throughout the year. Social media platforms are also utilized. In 2018, 390 social media posts were published.

Engagement events

From tabling at local fairs, to formal presentations, the district engaged with the public in a variety of ways in 2018.

In 2018, the watershed district's communications program engaged the community and raised awareness through:

1000 fact sheets

18 events

25 presentations

390 social media posts

WETLANDS

Wetlands are, second to coral reefs, the most diverse ecosystems on the planet. Migratory birds along with other wildlife species depend on these complex ecosystems for their unique habitats and the plant species found within. Each wetland is unique and can be classified based on soil chemistry, unique plant life, water regime, and wildlife. Along with being remarkable systems, wetland ecosystems contribute to the filtration of incoming water which keep water bodies within the District healthy and diverse. Because of the wetland importance in ecological health, the District has begun conducting a wetland inventory to catalog and classify vast types found through our 50 square mile District.

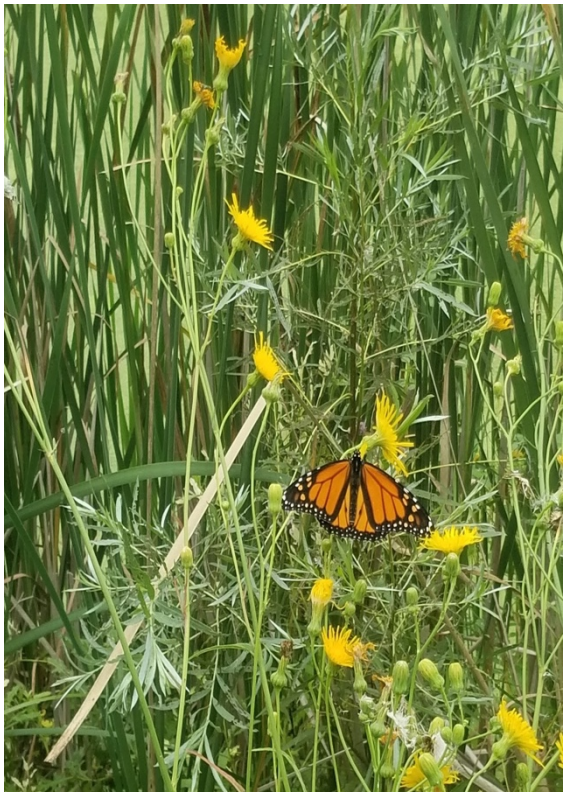
Starting June 2018, the Riley-Purgatory-Bluff-Creek Watershed District began the process of assessing wetlands located on the westside of the District in Chanhassen, as well as the Rice Marsh Lake area. These assessments used scoring techniques focusing on different flora and fauna, soil chemistry and hydrologic regime found within each wetland. The assessments were ultimately used to identify the quality of the habitat and type of wetland for our database.

Within the bounds of the District are some truly unique and beautiful wetlands. The Minnesota County Biological Survey classified a bog in the District as a unique natural community with rare species found within. When assessed, the bog found in the Bear Path community in Eden Prairie received one of the higher scores for ecological health. One species found within this rare bog, was the carnivorous sundew plant (adjacent). Bogs are known for the nutrient poor soil, and because of this, only very specific plants are able to grow; the sundew is one of these plants. Glistening drops found on the sundew resemble drops of the morning dew, consequently, insects are drawn to the plant. These insects are eventually absorbed to supplement the poor mineral nutrition of the soil the plant grows in.

In July 2018, the District hosted a wetland walk to engage the community on wetland ecology. During this event, individuals were exposed to some of the techniques and scoring used when assessing wetland ecology. A pamphlet identifying various types of wetlands and the flora found within each of these specific systems was also provided to assist in the walk. The walk occurred in the northwest corner of Rice Marsh Lake. This area of the lake was specifically chosen to enhance the material presented

where site visits were made to differing wetland types. This in-the-field observation provided an opportunity for people to see firsthand the different type of wetland ecology found within the district boundary.

The wetland inventory process is still underway, and the district is excited to have these ecological wonders documented. The purpose of this documentation is to identify wetlands that are degraded and well suited for ecological enhancement or relic wetlands that are fully drained but candidates for hydrologic restoration. This process will ultimately enhance the ecological integrity of the district, provide habitat for wildlife and better overall water quality.



BLUFF CREEK WATERSHED

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

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

BLUFF CREEK TRIBUTARY RESTORATION PROJECT

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

CHANHASSEN HIGH SCHOOL

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

According to irrigation meter records, the school campus purchases an average of 3.8 million gallons (MG) of groundwater annually from the city of Chanhassen's domestic water supply to irrigate about 11 acres of green space (athletic fields and areas around

the school building). This is equivalent to six Olympic-size swimming pools being filled annually or an average weekly irrigation rate at Chanhassen High School is 0.57 inches per week between May through September.

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

District significantly completed the project in 2018.

PURGATORY CREEK WATERSHED

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

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

FIRE STATION 2 WATER REUSE

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

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

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

LOTUS LAKE ALUM

In 2018, the District completed an alum treatment on Lotus Lake.

PURGATORY CREEK RESTORATION

The Purgatory Creek Restoration on the northeast corner of 101 and 62 was implemented in 2016 and is now complete.

PURGATORY CREEK BERM – EDEN PRAIRIE

The District with the City of Eden Prairie worked together in 2018 to determine what is the best course of action in regards to a breach in the berm. The breach currently gives us the best opportunity to manage the carp population. The District will continue to work with the City of Eden Prairie in 2019.

SCENIC HEIGHTS SCHOOL FOREST RESTORATION

A project to restore a healthy ecosystem that promotes clean water and creates habitat in the Purgatory Creek watershed

Summary

In 2017, RPBCWD joined with Scenic Heights Elementary School and other partners to embark on a project to restore the forested outdoor center on the school grounds. Invasive species like garlic mustard and buckthorn had outcompeted native plants in the forest, and erosion was a problem. Over the past fifteen years volunteers worked to try to control invasive species, plant natives, and tackle erosion. This restoration partnership builds on this good work to care for the forest and the watershed that it is a part of.

Details

Status: Active
Started: 2018
End: 2020
Cost: $260,000

Financial partners: Hennepin County, Minnetonka School District

Other partners: Scenic Heights Elementary, City of Minnetonka, Minnesota DNR, Boy Scouts, Girl Scouts

Learn more at rpbcwd.org

2018 Updates

Site work began in the winter of 2018 with the removal of woody invasive plants. A forestry mower was used to mechanically remove smaller plants, and hand cutting for larger trees and shrubs. The dense buckthorn and Tartarian honeysuckle were ground down to the forest floor during the coldest weeks of the winter to eradicate the rooting stalk and limit re-sprouts.

This dramatically opened the site, clearing space for what will be native prairie, oak savanna, and forest edge habitat. In the spring, the eroded gully that allows stormwater to flow to the pond was restored, creating a wider channel with bio-engineered rock riffles to prevent future erosion. Throughout the growing season invasive plants were continually treated with precision application of herbicide in an effort to exhaust the herbaceous invasive plant seed bank and prevent re-establishment of buckthorn.

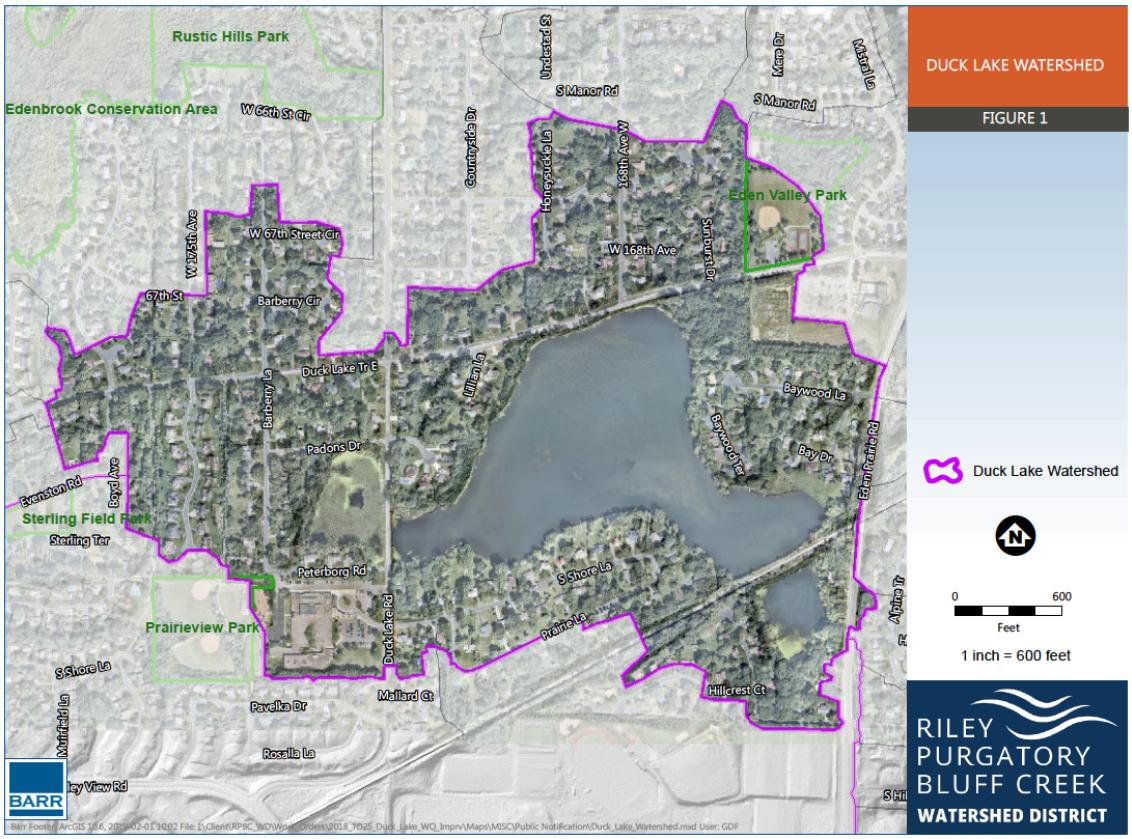
In the fall, volunteers planted over 100 native trees and shrubs (*header photo*). These were grown in a gravel bed tree nursery that was built by an Eagle Scout candidate and placed around the pond and vegetated swale. Shortly after, the first 1.3 acres of short grass prairie were installed. Eagle Scouts also helped to fix an eroded walking trail and install a sign about the ecological role of nurse stumps designed by a Minnetonka High School student. Finally, the entire Scenic Heights Elementary student body was engaged in creating a clay mural exploring the diversity of plants and animals we hope to see as a part of the restoration project.

2019 Plans

Invasive plant management will continue with a focus on herbaceous plants like garlic mustard and motherwort. Care will be taken to enhance valuable pockets of spring ephemeral plants. The rest of the 7-acre site will be seeded with native seed mixes in the late spring. Establishment will be assisted with touch-up seedings and weed management throughout the growing season. Volunteers will again be gathered to plant over 2,000 native flowering plants in the late spring, and the school body will be engaged in designing signage and educational materials for the forest.

DUCK LAKE PARTNERSHIP

The Watershed District's 2018 Watershed Management Plan identified the need for a phosphorus load reduction project in the Duck Lake watershed. As this area is mostly residential we needed to look to our community members to become project partners. The District envisioned a range of actions (plant a raingarden, install a rainbarrel, plant a tree, create a downspout planter) residents could take to be a part of a community-level partnership to help protect Duck Lake. In 2018 the District reached out to the City of Eden Prairie to be a part of the effort. It is projected that the project will be kicked off in winter 2019, and implemented summer/fall 2019.



SILVER LAKE WATER QUALITY PROJECT

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

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

The District completed the feasibility and is working with the City of Chanhassen for final design. Implementation is slated for 2020.

RILEY CREEK WATERSHED

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

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

LAKE SUSAN PARK POND

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

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

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

The District substantially completed the project in 2018. Financial partners include the State of Minnesota and the City of Chanhassen.

RICE MARSH LAKE ALUM TREATMENT

In 2018, the District implemented an alum treatment in Rice Marsh Lake to manage internal phosphorus loads coming from lake bottom.

LOWER RILEY CREEK RESTORATION

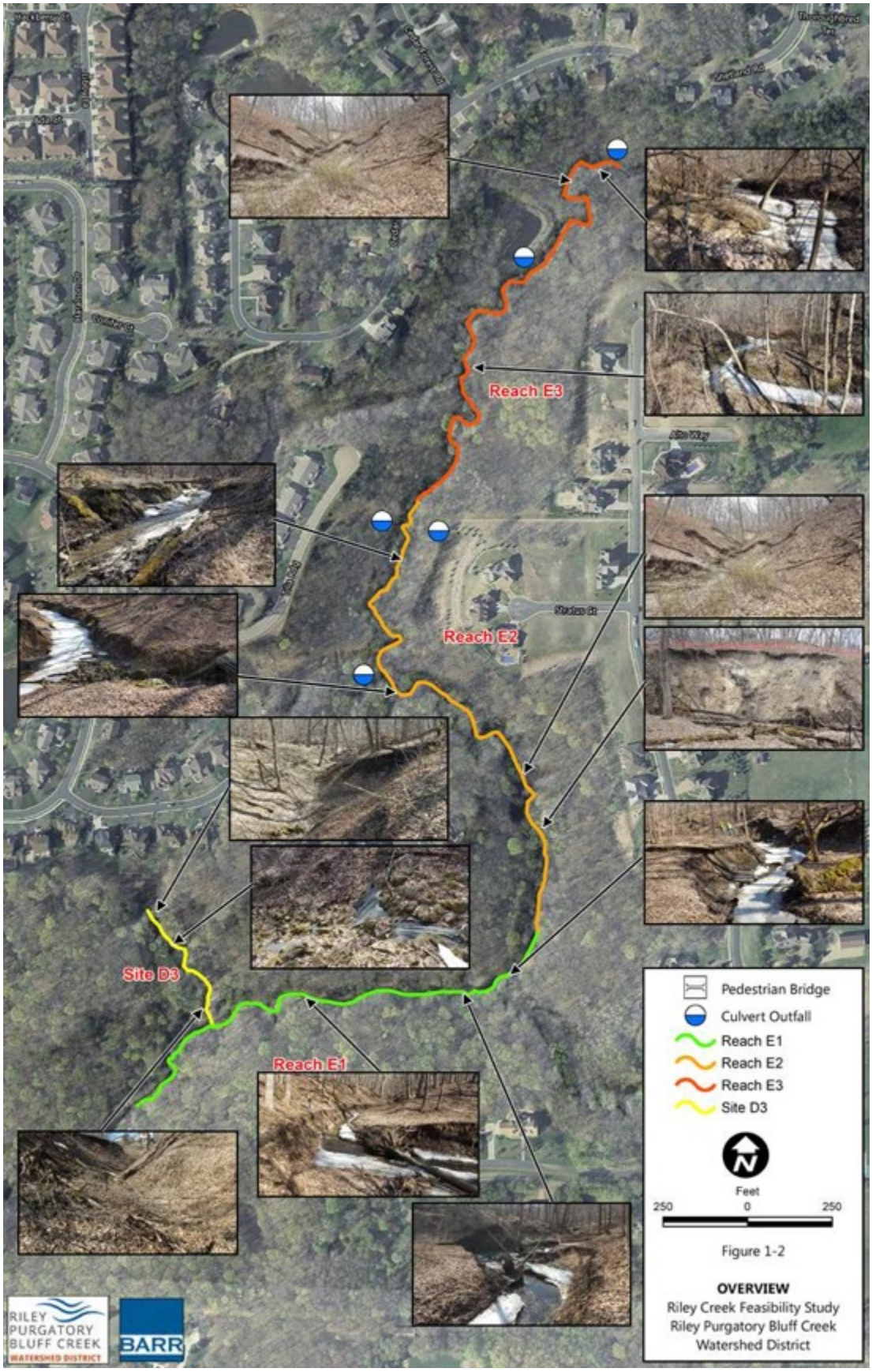
The Lower Riley Creek Restoration is a multi-year project that began in 2017. This section of the creek is severely eroded, incised and has many bank failures. Reach E has a deeply incised channel. As such, floods flows are concentrated in and near the main channel. This confinement results in faster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

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

The District with the Lower Minnesota River Watershed District and the City of Eden Prairie are financially contributing to this project. Construction of the project will be in 2019.

LOWER MINNESOTA RIVER
WATERSHED DISTRICT

EDEN PRAIRIE
LIVE • WORK • DREAM


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