



ADMINISTRATIVE OFFICE: 3235 Fernbrook Lane N • Plymouth, MN 55447
763.553.1144 • Fax: 763.553.9326

March 14, 2019

Representatives
Pioneer-Sarah Creek Watershed
Management Commission
Hennepin County, Minnesota

*The meeting packet for this meeting
may be found on the Commission's website:
[http://www.pioneersarahcreek.org/minutes--
meeting-packets.html](http://www.pioneersarahcreek.org/minutes--meeting-packets.html)*

Dear Representatives:

A regular meeting of the Pioneer-Sarah Creek Watershed Management Commission will be held Thursday, March 21, 2019, at 6:00 p.m., at the Discovery Center, 5050 Independence Street, Maple Plain, MN.

A light supper will be served. **RSVPs are requested** so that the appropriate amount of food is available. At the time of your response, please let us know if you will be eating supper with us.

In order to ensure a quorum for this meeting, please telephone 763.553.1144 or email me at judie@jass.biz to indicate if you or your Alternate will be attending. It is your responsibility to ascertain that your community will be represented at this meeting.

Regards,

Judie A. Anderson
Administrator
JAA:tim

| | | | |
|-----|---------------------------------|--|------|
| cc: | Alternates | City Clerks | MPCA |
| | Jim Kujawa, Kirsten Barta, HCEE | Met Council | BWSR |
| | Joel Jamnik, Attorney | official newspapers | DNR |
| | Brian Vlach, TRPD | Ed Matthiesen, Diane Spector, Wenck Assocs | |

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REGULAR MEETING AGENDA

March 21, 2019 • 6:00 pm

Maple Plain City Hall @ The Discovery Center
5050 Independence Street, Maple Plain

The meeting packet can be found on the Commission's website: <http://pioneersarahcreek.org/pages/Meetings/>

1. Call to Order.
2. Approve Agenda.*
3. Consent Agenda.
 - a. February meeting minutes.*
 - b. Monthly Claims/Treasurers Report.*
 - 1) WaterShed Partners.
4. Open forum.
 - a. Karen Galles, HCEES.
5. Action Items.
6. Old Business.
 - a. 2019 appointments needed from Maple Plain.
 - b. 2018 Work Plan in Review.*
7. New Business.
 - a. 2019 Projected Work Plan.*
 - b. Preliminary Draft 2018 Annual Activity Report.*
 - c. Lake Report Cards.*
8. Watershed Management Plan – Local Plans.
 - a. Maple Plain.
9. Staff Report.*
10. Education.
 - a. 2019 Water Summit.*
11. Grant Opportunities.
12. Communications.
 - a. Lake Independence Carp Abundance Estimate.*
 - b. Lake Independence – Zebra Mussel Survey.*
13. Commissioner Reports.
14. Other Business.
15. Adjournment. *(Next scheduled meeting April 25, 2019).*

** in meeting packet*

*** available at meeting*

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Watershed Management Commission

ADMINISTRATIVE OFFICE: 3235 Fernbrook Lane N • Plymouth, MN 55447
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REGULAR MEETING MINUTES February 21, 2019

1. CALL TO ORDER. A regular meeting of the Pioneer-Sarah Creek Watershed Management Commission was called to order at 6:01 p.m., Thursday, February 21, 2019, by Chair Joe Baker at Maple Plain City Hall, 5050 Independence Street, Maple Plain, MN.

Present: Mike Hoekstra, Greenfield; Joe Baker, Independence; Brenda Daniels, Loretto; Caitlin Cahill, Maple Plain; Pat Wulff, Medina; John Tschumperlin, Minnetrista; James Kujawa and Kirsten Barta, Hennepin County Environment and Energy (HCEE); Brian Vlach, Three Rivers Park District (TRPD); and Amy Juntunen, JASS.

Also present: Scott Johnson, Medina; and Scott Walsh, Kevin Horn and John Arneson, Lake Sarah Improvement Association (LSIA).

2. AGENDA. Motion by Tschumperlin, second by Daniels to approve the revised agenda as presented. *Motion carried unanimously.*

3. CONSENT AGENDA. Motion by Hoekstra, second by Daniels to approve the Consent Agenda:

a. January Regular Meeting Minutes.*

b. February Monthly Claims/Treasurer's Report.* Claims total \$19,437.17.

Motion carried unanimously.

4. OPEN FORUM.

a. Lake Sarah Bog. Scott Walsh made a presentation to the Commission regarding a bog of approximately 150,000 SF bog with the potential to break free of the shoreline, causing damage to lake shore property, docks, habitat and lake water quality. A loose bog this size would be impossible to control, and may also clog the outlet leading to high lake levels and flooding. LSIA is interested in securing the bog to the shoreline. A DNR permit is required and a CPL grant from the DNR may be available to fund much of the project. Wenck will write the application if the project qualifies for the grant funding. Barta suggested having two to three options for management of this bog and letting the DNR choose the option they prefer. LSIA is seeking the Commission's support before moving forward to ensure that the cities and Commission would not prevent such a project.

The Commission is supportive of LSIA's efforts regarding management of this bog but can't commit any funds or make any other commitments regarding a project at this time since there is no plan or costs outlined.

b. Lake Sarah High Water. Joe Slavec was not in attendance to make this presentation.

5. ACTION ITEMS.

a. Election of Officers. Motion by Baker, second by Daniels to elect the following slate of officers: Chair, Baker; Vice Chair, Fay; Secretary, Daniels; Treasurer, Tschumperlin. *Motion carried unanimously.*

b. Selection of Consultants for 2019-2020.* A request for letters of interest for technical (T), wetland (W), legal (L), and administrative (A) services was published in the January 14, 2019 *State Register*. Letters of interest were received from (T) Barr Engineering, Graef and Hennepin County Environmental Services; (W) from Barr Engineering, Graef, Hennepin County Environmental Services and ProSource; (L) from Campbell Knutson PA; and (A) from Judie Anderson's Secretarial Services, Inc. Motion by Daniels, second by Wulff to retain the current consultants (highlighted above) for 2019-2020. *Motion carried unanimously.*

6. OLD BUSINESS.

Greenfield • Independence • Loretto • Maple Plain • Medina • Minnetrista

*Included in meeting packet.

7. NEW BUSINESS.

a. Commission **2019 appointments** have been received from Greenfield, Independence, Loretto, Medina and Minnetrista.

b. 2018 Work Plan in Review. Cities do a lot of work outside of the Commission. Projects that have been completed by Cities that affect water quality and quantity should be submitted for inclusion in the Work Plan in Review. An Email will be sent to cities requesting this information be submitted to the Commission's Administrator by March 13. The Work Plan will be reviewed and approved at the March meeting after City comments are incorporated. A draft of the 2018 Annual Report was requested for review at the March meeting.

8. WATERSHED MANAGEMENT PLAN.

a. Greenfield. Staff has reviewed the plan and found it in conformance with the Commission's Third Generation Plan. Staff recommends approval. Motion by Cahill, second by Wulff to approve the Greenfield Local Water Management Plan. *Motion carried unanimously.*

b. Independence. Staff has reviewed the plan, noting that Independence is the first Member City to include updated hydraulics and hydrology. The CIP, implementation plan and funding plan are very good. There are three areas of recommendation for improvement.

Motion by Baker, second by Daniels to approve the Independence Local Water Management Plan with the following three conditions:

1) Section 4.2, Water Quality Goals; the goals only mention the Lake Independence and Painter Creek TMDL's. The other TMDLs within the community must be included in this goal.

2) Section 4.2, Policy 3, Section 4.3, Policy 12 and Section 5.10; all these sections and policies discuss stormwater facilities and their operation and maintenance. They do not specify who is responsible for said maintenance. Because of the potential future cost implications to the City or landowner, this should be determined for existing and future stormwater facilities, especially stormwater basins, and identified in the plan.

3) Section 5.9, Manure Management Policy. This is an excellent policy. We would encourage the city to go beyond requiring this for only commercial riding facilities, but to require it as a guideline for any new animal facility that is over 1.0 animal units in size.

Motion carried unanimously.

[Daniels departed at 7:29 p.m.]

c. Maple Plain. Staff has not had time to review this plan.

9. Staff Report.*

a. Buffer Inspection Map.* The state requires buffer inspections to be performed every three years. The County has split the watershed area into thirds and will be inspecting the northwest portion of the watershed in 2019. Cities and Commission have no enforcement responsibilities so no violations will be disclosed due to privacy issues. Additional spot-checks will occur throughout the watershed as mandated.

b. Operations and Maintenance (O&M) Agreements. Many projects have been approved contingent on receipt of an O&M agreement recorded on parcels. Many of these projects, though completed, have not had an O&M agreement recorded on the property. Due to the future cost burden for O&M, the Cities need to pursue and complete this item. A list of outstanding projects and their locations is in the Staff Report.

c. Lake Independence. There was no official zebra mussel report for 2018 by the Lake Independence Citizens Association (LICA). There were 12 sampling plate stations on the lake managed by residents, but the individual overseeing the project retired in mid-July. Wulff will send the list of participating homeowners discs to Vlach for follow-up. One sampler plate collected by TRPD did contain mussels. TRPD performed a shoreline survey and found more zebra mussels in 2018 compared to previous years, mainly at the private access and west of the

public access. The mussels seem to be localized in those areas. Other lakes also experienced an increase in mussels last year. Vlach will compile the information and provide a report at the March meeting.

10. EDUCATION.

11. GRANT OPPORTUNITIES.

12. COMMUNICATIONS.

a. Baker Campground Ravine Stabilization – Annual Report.* An annual progress report prepared for the BWSR grant was included in the meeting packet. Lake report cards are expected to be available at the March meeting.

b. Lake Sarah Report Card.* The Lake Sarah report card was included in the meeting packet. It shows a dramatic decrease in water quality in 2004 when the last large bog broke free of the shoreline.

13. COMMISSIONER REPORTS.

a. Cahill noted that Fay will continue as Commissioner and all Council members have been named as alternates.

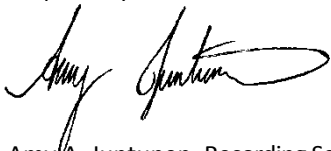
b. Baker announced that LSIA has been awarded a Hennepin County grant to raise awareness of lake users, beginning with lakeshore resident education on AIS prevention and expanding to other users. The program closes with a personal pledge from participants to understand and adhere to AIS prevention measures. The grant is capped at \$20,000. Additional inspections at the public access to ensure the CD3 station is used and maintained is part of the grant. Data gathered from this program will be available to the public and other organizations. This grant and program should be promoted on the Commission's website and Facebook page.

14. OTHER BUSINESS.

The **next regular meeting** is scheduled for March 21, 2019.

15. ADJOURNMENT. There being no further business, motion by Cahill, second by Wulff to adjourn. *Motion carried unanimously.* The meeting was adjourned at 7:53. p.m.

Respectfully submitted,



Amy A. Juntunen, Recording Secretary

AAJ:tim

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**Pioneer-Sarah Creek Watershed
Cash Disbursements Journal
For the Period From Mar 1, 2019 to Mar 31, 2019**

Filter Criteria includes: Report order is by Date. Report is printed in Detail Format.

| Date | Check # | Account ID | Line Description | Debit Amount | Credit Amount |
|--------------|----------------|-------------------|--------------------------------------|---------------------|----------------------|
| 3/15/19 | 1530 | 57000 | 2019 Membership | 500.00 | |
| | | 10100 | WaterShed Partners | | 500.00 |
| 3/15/19 | 1531 | 64003 | Baker Ravine Stabilization | 636.20 | |
| | | 10100 | Wenck Associates, Inc. | | 636.20 |
| 3/15/19 | 1532 | 51100 | Administration | 1,160.11 | |
| | | 51100 | Meeting-related | 1,512.00 | |
| | | 51100 | Bookkeeping/Audit Prep | 382.92 | |
| | | 51100 | Annual Report | 556.59 | |
| | | 51400 | Website | 133.20 | |
| | | 57000 | Education | 56.00 | |
| | | 51120 | Project Reviews | 14.00 | |
| | | 10100 | Judie Anderson's Secretarial Service | | 3,814.82 |
| Total | | | | 4,951.02 | 4,951.02 |

METRO WATERSHED PARTNERS

MINNESOTA WATER
LET'S KEEP IT CLEAN

INVOICE

Attention: Amy Juntunen
Pioneer-Sarah Creek WC

651-523-2812

jlarrison25@hamline.edu

Date: 1/2/19

Metro Watershed Partners
Hamline University
1536 Hewitt Ave. MS-A1760
Saint Paul, MN 55104

Project Title: Clean Water Minnesota
Terms: 30 Days

| Description | Cost |
|---|-----------------|
| 2019 Membership: Clean Water MN and Adopt-a-Drain | \$500.00 |
| TOTAL | \$500.00 |

Thanks for your membership in Clean Water MN. Your dollars support:

- Monthly blog posts with timely, consistent messages to encourage behaviors that improve water quality.
- New photographs that feature local residents taking action to protect lakes and rivers.
- Monthly meetings with information on partner activities, presentations by informative speakers, and updates on WSP activities.
- Maintenance of the Watershed Partners listserv.
- Development and implementation of a clean water exhibit at the Minnesota State Fair in the Eco-experience building.
- Site license to use Adopt-a-Drain.
- Recognition as a supporting partner of Adopt-a-Drain for residents in your service area.
- Access to an administrative interface on Adopt-a-Drain.org that includes access to reporting and other information useful for MS4 reporting and communications.
- Access to purchase print promotional resources with partner logo.
- Access to purchase mailed packets and yard signs for participants.

Duration of service: January 1 - December 31st, 2019. Unspent funds will rollover to support program activities in 2020.

Invoice

March 7, 2019

Invoice No: 11901429



Ms. Judie Anderson
 Pioneer-Sarah Watershed Management Comm.
 3235 Fernbrook Lane
 Plymouth, MN 55447

Responsive partner.
 Exceptional outcomes.

Project Manager Lucius Jonett

Project B1508-0007 Baker Ravine Stabilization

Professional Services Through February 28, 2019

Phase 03 Plans

Plans

Professional Personnel

| | Hours | Rate | Amount |
|--------------------|-------|--------|-----------------|
| Jonett, Lucius | 2.40 | 151.00 | 362.40 |
| Totals | 2.40 | | 362.40 |
| Total Labor | | | 362.40 |
| Phase Total | | | \$362.40 |

Phase 04 Obtain Permits

Obtain Permits

Professional Personnel

| | Hours | Rate | Amount |
|--------------------|-------|--------|----------------|
| Jonett, Lucius | .50 | 151.00 | 75.50 |
| Totals | .50 | | 75.50 |
| Total Labor | | | 75.50 |
| Phase Total | | | \$75.50 |

Phase 05 Specs and Contract Documents

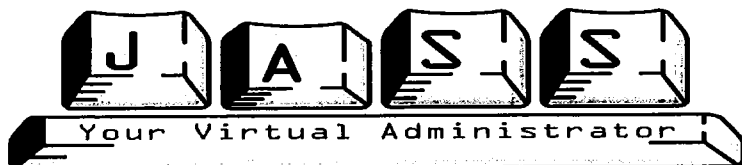
Specs and Contract Documents

Professional Personnel

| | Hours | Rate | Amount |
|--------------------|-------|--------|-----------------|
| Bossert, Seth | 1.00 | 114.00 | 114.00 |
| Jonett, Lucius | .30 | 151.00 | 45.30 |
| Matthiesen, Edward | .20 | 195.00 | 39.00 |
| Totals | 1.50 | | 198.30 |
| Total Labor | | | 198.30 |
| Phase Total | | | \$198.30 |

Total Invoice Amount \$636.20

| | Current | Prior | Total |
|------------------------|---------------|------------------|------------------|
| Billing Summary | 636.20 | 42,422.24 | 43,058.44 |



Pioneer-Sarah Creek Watershed Management Commission
3235 Fernbrook Lane Plymouth, MN 55447

3235 Fernbrook Lane
Plymouth MN 55447

March 14, 2019

| | | | | Total Project Area | |
|---|--------|-------|-----------|--------------------|----------------------------|
| General Administration | | | | | |
| Administrative | 0.33 | 55.00 | 18.150 | | |
| Administrative | 10.57 | 60.00 | 634.200 | | |
| Administrative - offsite | | 70.00 | 0.000 | | |
| Office Support | 3.75 | 60.00 | 225.000 | | |
| Public storage | 1.00 | 93.88 | 93.880 | | |
| Data Processing/File Mgmt | 1.25 | 55.00 | 68.750 | | |
| Reimbursable Expense | 120.13 | 1.00 | 120.130 | 1,160.110 | Administration |
| Meeting packets, attendance, Minutes and Meeting follow-up | | | | | |
| Administrative | | 55.00 | 0.000 | | |
| Administrative | 18.97 | 60.00 | 1,138.200 | | |
| Admin - Offsite | 3.42 | 70.00 | 239.400 | | |
| Reimbursable Expense | 134.40 | 1.00 | 134.400 | 1,512.000 | Meeting related activities |
| Bookkeeping | | | | | |
| Bookkeeping | | 55.00 | 0.000 | | |
| Bookkeeping, budget, audit requests | 1.84 | 60.00 | 110.400 | | |
| Treasurer's Reports | 2.50 | 60.00 | 150.000 | | |
| Audit Prep | | 55.00 | 0.000 | | Bookkeeping/TRs |
| Audit Prep | 1.42 | 60.00 | 85.200 | | Bookkeeping/TRs |
| Reimbursable Expense | 37.32 | 1.00 | 37.320 | 382.920 | Audit Prep |
| Annual Report/Work Plans | | | | | |
| Secretarial | | 55.00 | 0.000 | | |
| Administrative | 9.01 | 60.00 | 540.600 | | |
| Reimbursable Expense | 15.99 | 1.00 | 15.990 | 556.59 | Annual Report |
| Website | | | | | |
| Weebly hosting - 1 year | 98.40 | 1.00 | 98.400 | | |
| Pages, links, uploads | | 55.00 | 0.000 | | |
| Administrative | 0.58 | 60.00 | 34.800 | 133.200 | Website |
| Education, Strategic Planning | | | | | |
| Administrative | | 55.00 | 0.000 | | |
| Administrative | | 60.00 | 0.000 | | |
| Offsite | 0.80 | 70.00 | 56.000 | | |
| Reimbursable Expense | | 1.00 | 0.000 | 56.000 | Education |
| Project Reviews | | | | | |
| Administrative | | 55.00 | 0.000 | | |
| Administrative | | 60.00 | 0.000 | | |
| File Management/Archiving | | 50.00 | 0.000 | | |
| Reimbursable Expense | 14.00 | 1.00 | 14.000 | 14.000 | Project Reviews |
| | | | | 3,814.820 | 3,814.820 |

Metro Watershed Partners 2018 Annual Program Report



Metro Watershed Partners is a coalition of more than seventy public, private and non-profit organizations in the Twin Cities metro area. Through collaborative education and outreach, the Metro Watershed Partners promote a public understanding that inspires people to act to protect water in their watershed. Since 1996, partners have cooperated through educational projects, networking, and resource sharing.



MINNESOTA WATER
LET'S KEEP IT CLEAN

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Metro Watershed Partners 2018 Report

Introduction

Metro Watershed Partners is a coalition of more than seventy public, private and non-profit organizations in the Twin Cities metro area. Through collaborative education and outreach, the Metro Watershed Partners promote a public understanding that inspires people to act to protect water in their watershed. Since 1996, partners have cooperated through educational projects, networking, and resource sharing.



The mission of the Metro Watershed Partners is two-fold:

- to provide and promote collaborative watershed education programs with consistent messages to the general public, local government staff and elected officials, and
- to provide WSP members a place and means to share information, generate ideas, and coordinate and support collaborative watershed education programs.

In 2018 members contributed \$30,762 to support monthly meetings, exhibit checkout, administrative functions, and state fair outreach to hundreds of thousands of people. Members contributed \$90,287 to support the Clean Water Minnesota outreach campaign.

Leadership

The work of **Metro Watershed Partners** is guided by a steering committee that includes stormwater education professionals from watershed organizations, non-profits and government agencies. In 2018, our steering committee members were:

Alisa Reckinger, Hennepin County Environment and Energy

Angie Hong, Washington Conservation District (*convenor*)

Deirdre Coleman, Freshwater Society

Jen Dullum, Vermillion River Watershed JPO

Jessica Bromelkamp, Capitol Region Watershed District

Lyndon Torstenson, National Park Service, Mississippi National River & Recreation Area

Mike Trojan, Minnesota Pollution Control Agency

Telly Mamayek, Minnehaha Creek Watershed District

Tracy Fredin, Center for Global Environmental Education, Hamline University



MINNESOTA WATER
LET'S KEEP IT CLEAN

Clean Water MN

2018 Outreach Projects Report

Clean Water MN is the collaborative outreach project of the Metro Watershed Partners. Working together, we provide resources, training, and support to partners as they work to inspire homeowners in the Twin Cities metro area to keep water clean and healthy.

The steering committee of the Metro Watershed Partners oversees the work of Clean Water MN. Jana Larson from Hamline University manages campaign fundraising and the creation and implementation of communication and outreach programs. As part of this work, we regularly ask stakeholders to tell us how to best serve the needs of MS4s.



Cleanwatermn.org features seasonally appropriate stories about metro area residents taking action at home and in their lives to keep Minnesota water clean and healthy. The stories are designed for partners to use in their own communications—via websites, Facebook, Twitter, newsletters, and such.

Along with each story we create a suite of professional photographs,

accessible to partners online for use in their own stories and publications. Additionally, each story links to informational resources on our own site and other websites. In 2018 we published 12 new stories.

The cleanwatermn.org website also features informational pages, calls to action, a “Find My Watershed” map, information about the partnership, educational resources, and a list of our partners. We will continue to develop and add content to the site in 2019 and beyond.

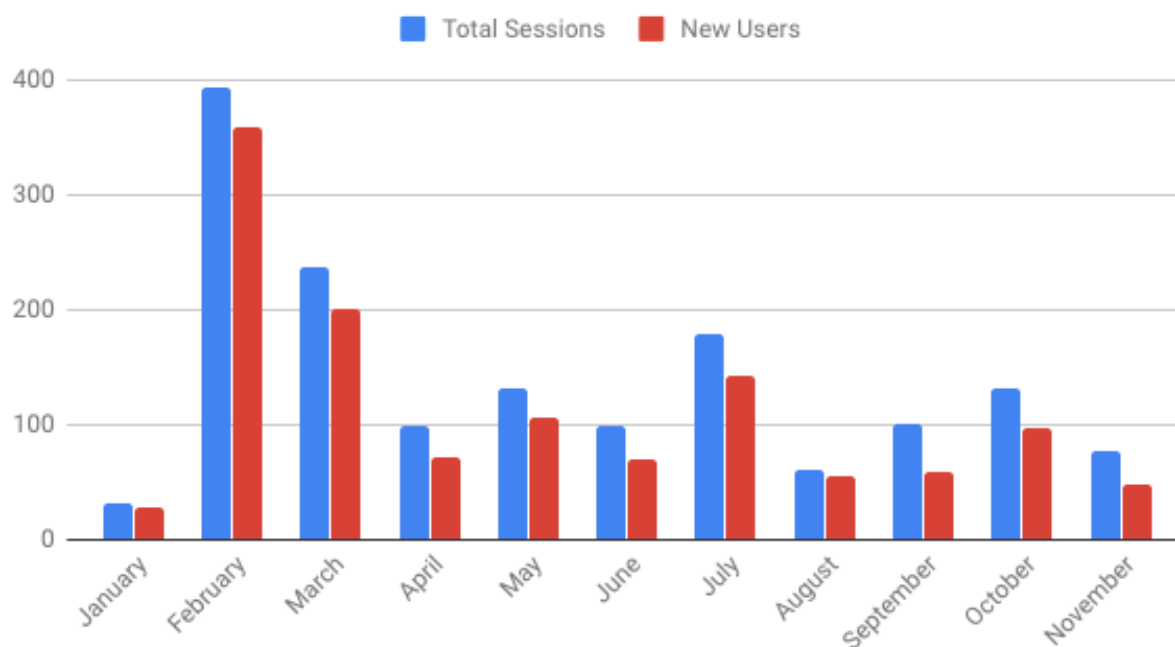


Campaign Analytics

In order to provide some measure of the impact of our work, we have created a system of unique, trackable links for our partners to use when they publish a story from Clean Water MN. This allows us to measure click-through rates to CleanWaterMN.org for each partner individually. Below you will find a summary of these analytics, which paint a general picture of engagement with each story. These numbers do not reflect, however, the total number of readers for any given story, since trackable links are not always used, and some readers may not click on the link to read the full story. Analytics reports with a breakdown for each partner can be found at: <http://bit.ly/2rxvGE6>

| Month | Blog Title | Total sessions | New users | Pages per visit | Average duration |
|-----------------------------------|--|----------------|-----------|-----------------|------------------|
| January | Water and Soil Conservation Practices Sustain Dairy Farm | 31 | 27 | 1.38 | 0:00:59 |
| February | Road Salt: Less is More | 393 | 359 | 1.13 | 0:00:25 |
| March | Monarch Mile: Pollinators Plant Seeds of Change | 236 | 200 | 1.34 | 0:00:57 |
| April | EcoFaith Network Puts Creation Care in Action | 99 | 72 | 1.23 | 0:00:34 |
| May | Middle School Students Solve for Runoff | 131 | 105 | 1.30 | 0:00:39 |
| June | Minneapolis Couple Tackles Litter One Day at a Time | 99 | 69 | 1.27 | |
| July | Residents and Rangers Protect the Saint Croix River for Future Generations | 178 | 142 | 1.17 | |
| August | A New Generation of Water Stewards Adopts Storm Drains | 61 | 54 | 1.43 | |
| September | Roots Return Farm Turns Rainwater into Pollinator Paradise | 101 | 59 | 1.48 | 0:00:23 |
| October | Maintaining Rain Gardens through the Changing Seasons | 132 | 96 | 1.33 | 0:00:44 |
| November | Community Gardens Plant Seeds of Peace in Rondo | 76 | 48 | 1.24 | 0:01:26 |
| December | Artful Environmental Education at Highpoint Center for Printmaking | | | | |
| Total click-throughs to CWMN site | | 1537 | 1231 | | |

Clean Water MN 2018 blog traffic



The blog posts that received the most traffic through social media were:

- *Road Salt: Less is More* (February)
- *Monarch Mile: Pollinators Plant Seeds of Change* (March)
- *Residents and Rangers Protect the Saint Croix River for Future Generations* (July)

Clean Water MN activities in 2018

2018 was a year of focus groups, listening sessions, pilots, evaluations, surveys, and findings.

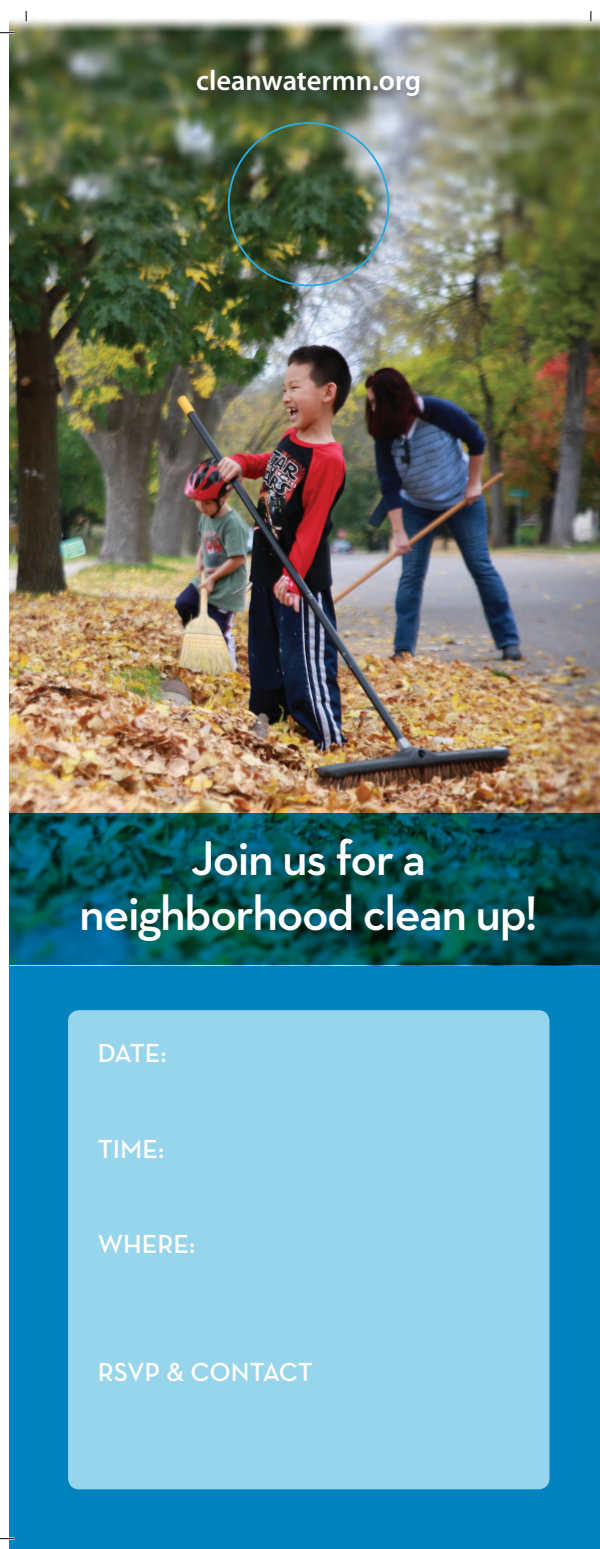
In March, we created an online survey to evaluate the strengths and weaknesses of the **Clean Water MN website and blog**.

Responses from 26 partners helped us to modify blog posts, photographs, informational PDFs, and the website to better serve partner communications needs. This included creating new **PDF resources on a variety of subjects including lawn care, salt, and rain garden maintenance**.

In spring, an **online survey of Minneapolis Adopt-a-Drain participants** gave us additional insights into barriers, motivations, and demographics of program participants.

Researchers from the University of Minnesota began an in-depth baseline study of Adopt-a-Drain in Minneapolis focused on understanding how to promote and implement Adopt-a-Drain so that it resonates with underserved communities. This research will also inform the development of a pilot program aimed at including businesses and community organizations in Adopt-a-Drain. This multi-faceted evaluation project, funded by the City of Minneapolis, will continue through 2020.

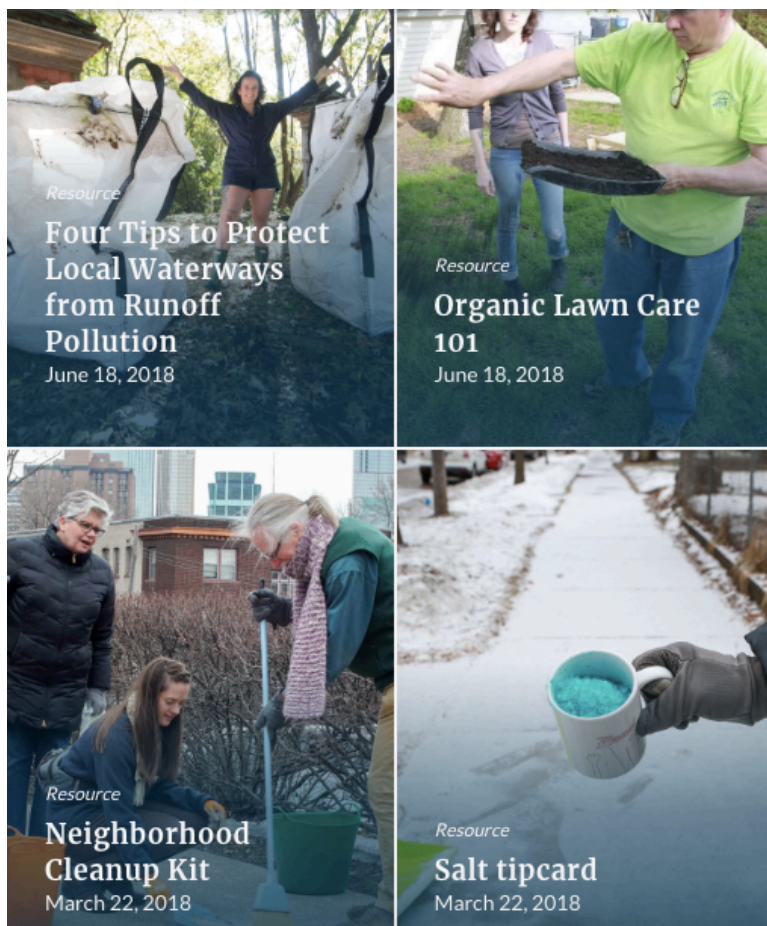
In April, we hired Karen DeYoung to lead a **listening session with 50 partners aimed at understanding how to structure the Adopt-a-Drain program** to best serve the partnership. Her report helped us adapt our existing program to provide multiple levels of partner engagement and recognition for the 2019 rollout of Adopt-a-Drain. Partner feedback and suggestions from this session also helped us to design a more dynamic user interface for the new Adopt-a-Drain website.



In spring, we piloted the **Clean Streets, Clean Water Neighborhood Cleanup Kit** in neighborhoods across the metro area. We gave printed outreach materials for free to groups who participated in the pilot and, in exchange, event leaders participated in one of two follow-up **focus groups led by Lune LLC** to give feedback on what worked well and how to improve the kit. Lune LLC also workshopped the kit with partners at our September meeting and collected feedback. We are using the findings from these sessions to modify and update materials. These will be available online for the March launch of Adopt-a-Drain.

In November, the roundtable event was a **listening session, facilitated by Lune, llc, focused on planning the next three years of work for the partnership.** We found that

partners are particularly fired up about the Adopt-a-Drain program, and about using the coming years to understand how to reach underserved audiences with our messages and programs. The findings from the roundtable were presented at the December meeting, and the 35 partners who were present used a dot-voting activity to help rank the items in terms of priorities for the partnership.



Adopt-a-Drain—metro wide launch in March, 2019!

Adopt-a-Drain is a pilot program created in 2014 by Hamline University with support from the City of Saint Paul and Capitol Region Watershed District. Adopt-a-Drain allows residents to claim responsibility for a storm drain near their home and keep it clear of trash and organic debris in order to reduce water pollution.

Since launching the program in Saint Paul, Hamline has expanded implementation, adding new neighborhoods and cities. There are currently more than 2,000 residents in five cities participating in the program, who have together diverted tens of thousands of pounds of trash and organic debris from local waterways.



In August 2018, we opened registration for the Adopt-a-Drain program to all metro area residents during the State Fair. The response was fantastic; 700 Minnesota residents signed up to adopt a drain over the twelve days of the fair.

Work on a new Adopt-a-Drain site began in 2018; the new website will launch in March, 2019. This new site will include the GIS data of all 280,000 storm drains in the seven-county metro area, and supporting members of the Metro Watershed Partners will have an administrative interface to view program data for their service area.

With your continued support, in addition to launching the metro-wide Adopt-a-Drain program, we will continue to update and improve cleanwatermn.org, publishing monthly blog stories, with new photographs, and informational PDFs.

Please find the proposed budget for 2019 on page 17 of this report. The invoice for 2019 membership can be returned with payment to to: Hamline University, CGEE, 1536 Hewitt Ave. MS-A1760, Saint Paul, MN 55104

2018 Accomplishments of the Metro Watershed Partners

Networking and Sharing Resources

The Watershed Partners hold monthly meetings that provide members a way to gather, share information, generate ideas, and form partnerships that support watershed education in the state of Minnesota. These meetings keep our members up to date on new developments in the field of water resources and water education by featuring presentations by experts in fields such as watershed management, education, marketing, legislation and outreach.

In 2018, the Watershed Partners held 11 meetings. Meeting attendance totaled 386; attendance varied from 15 to 115 but on average 35 partners attended each meeting. We're pleased to see that partners continue to value our meetings, and demonstrate energy for collaboration and information sharing; we plan to continue offering workshops and events our partners will find useful in 2018 and beyond.

2018 PARTNER MEETINGS — TOPICS AND PRESENTERS

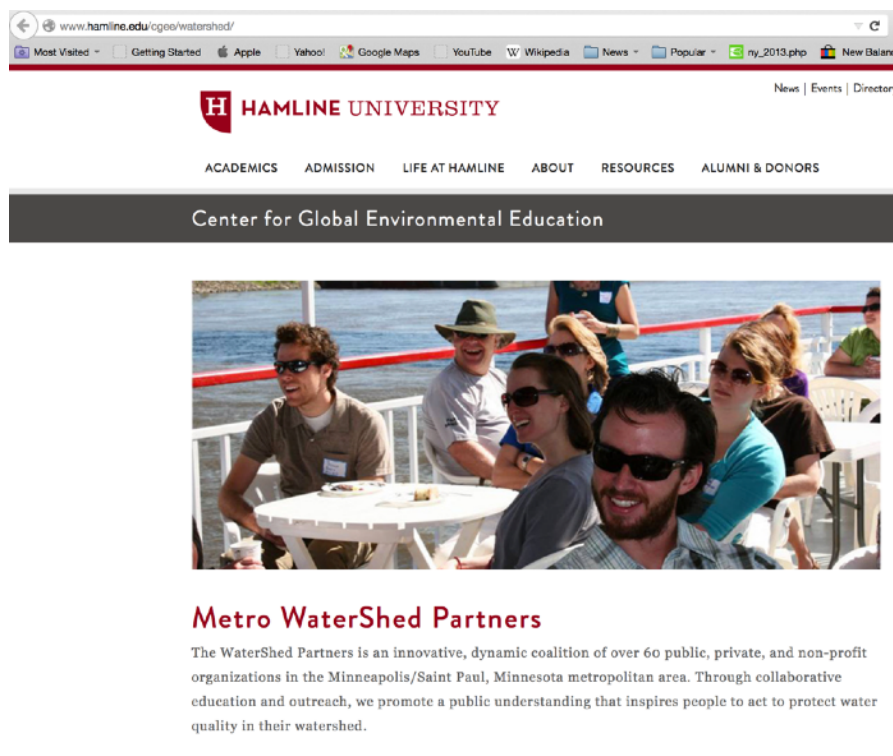
| | | |
|-----------|---|---|
| January | Smart Salting | Brooke Asleson, MPCA |
| February | Legislative Update | Trevor Russell, FMR |
| March | Climate Change Communication: Introduction to Strategic Framing | Abby Moore, MWMO |
| April | Working with niche audiences: Engaging Homeowners' Associations to implement Clean Water projects; Engaging Faith-based Communities; Getting Seniors Outdoors | Angie Hong, EMWREP Randy Thoreson, NPS |
| May | The Quest for Equity and Environmental Justice: Outreach and Education WITH vulnerable communities and traditionally underserved watershed stakeholders. | Kimberly Carpenter, Metro Blooms |
| July | Our St. Croix: Preserving a Natural, Recreational, and Economic Amenity | |
| August | Walker Art Center: Tour of the water reuse features of the sculpture garden | Marcy Bean, MWMO Jacqueline Stahlmann, Walker Art Center Abby Moore, MWMO |
| September | Clean Streets, Clean Water: Key findings & recommendations from a focus group-based evaluation of the Neighborhood Cleanup Toolkit | Emma Ramsbottom, LUNE, Ilc |
| October | The Remand Rule and New Concepts for the Draft MS4 General Permit | Cole Landgraf, MPCA |
| November | Watershed Partners roundtable: Scripting the future of the partnership and your role in achieving outcomes. | Jana Larson, Hamline University, Amanda Meyers, U of M, Vanessa Perry, LUNE, Ilc |
| December | Potluck, Year-in-Review, Adopt-a-Drain model partnerships | Erica Sniegowski, Nine Mile Creek Watershed District |

The internal website for the Metro Watershed Partners

is hosted by Hamline University at: www.hamline.edu/cgee/watershed/.

The site contains:

- information about our monthly meetings
- an archive of minutes, agendas and presentations from past meetings
- the most recent annual report
- information on becoming a member and contributing membership funds to support our partnership and outreach activities
- a directory of partners
- information on borrowing exhibits
- information about outreach activities at the Minnesota State Fair
- general information and a brief history of the partnership



Please contact Jana Larson if you have questions or need help finding the information you are looking for: jl Larson25@hamline.edu.

Watershed Partners listserv

The Metro Watershed Partners listserv is a forum for watershed educators, legislators and industry professionals throughout the state to share information and resources.

In 2018, the Metro Watershed Partners listserv continued to provide more than two hundred user-members with an effective tool to promote educational programs, share information about professional programs, and exchange information with other watershed educators, legislators and businesses. The email address for the listserv is: watershedpartners@listserv.hamline.edu. If you would like to send and receive listserv emails, send a request to Jana Larson: jl Larson25@hamline.edu.

Education and Outreach at the Minnesota State Fair



2018 was another record year for the state fair, with total attendance breaking 2 million visitors. The Watershed Partners hosted an exhibit in the Eco-experience where approximately 250,000 people were exposed to our message about taking action to protect Minnesota's lakes and rivers.

The Metro Watershed Partners partnered with Hamline University to host the Adopt-a-Drain photo booth and exhibit at Eco Experience. The exhibit features: an Adopt-a-Drain photo booth (re-designed in 2018), air hockey, foosball, an Adopt-a-Drain sign-up station, a video table with in-depth interactive information about the Mississippi River, and three portable tabletop exhibits focused on the science of Eutrophication, taking action to reduce run-off, and the urban water cycle. Together, these exhibits raise awareness about the importance of protecting water in Minnesota and ask people to commit to take action at home to prevent run-off pollution. For the first time this year, the exhibit provided a chance for visitors to formalize their commitment by signing up to adopt a drain.





There were more than 250,000 visitors to the Eco-experience in 2018. Approximately 8,000 of them took a photo in the Adopt-a-Drain photo booth. (We took and printed 3,441 photos during the fair, with an average of 2.5 people per photo.) 50% of photos were shared via email or text.

Over the twelve days of the fair, 700 Minnesota residents from 73 cities signed up to adopt a storm drain. Those who adopted a drain were able to take home an informational packet and a small yard sign that reads “We Protect Minnesota Lakes, Rivers and Wetlands.”

There was a Watershed Partner or Master Water Steward present during 60 of the 144 hours of the fair, to interact with the public, answer questions, and promote water-friendly behaviors.

Thank you for all your help making the exhibit a success!



Education and Outreach at Community Events:

Throughout the year, the Metro Watershed Partners make our tabletop exhibits available free of charge to organizations doing education and outreach on non-point source pollution and preservation of clean water. If you are interested in checking out one of our kiosks or table-top exhibits (see below) for an event in your community, you can find more information and a check-out form at: <http://www.hamline.edu/education/environmental/cgee/watershed/exhibit/index.html>



Exhibit-in-a-Box on Eutrophication.

2018 Financial Report

In response to our fundraising requests, 48 supporting members contributed: \$30,762 to the Watershed Partners in support of meetings, state fair outreach, administration, exhibit maintenance, development and checkout; and \$90,287 to support the Clean Water MN website and public outreach campaign.

Supporting Members of the Metro Watershed Partners and the Clean Water MN Media Campaign in 2018

| | |
|------------------------------------|--------------------------------|
| Andover | Minnetonka |
| Apple Valley | Minnetrista |
| Bassett Creek WMC | MNRRRA |
| Blaine | Mound |
| Bloomington | New Brighton |
| Brown's Creek WD | Nine Mile Creek WD |
| Canon River WP | Pioneer-Sarah Creek WC |
| Capitol Region Watershed District | Prior Lake |
| Carver County | Rice Creek WD |
| Chisago Lakes Improvement District | Riley-Purgatory Bluff Creek WD |
| Columbia Heights | Rochester |
| East Metro Water Resources | Roseville |
| Eden Prairie | Ramsey-Washington Metro WD |
| Edina | Saint Louis Park |
| Elm Creek WMC | Saint Paul |
| Excelsior | Shingle Creek WMC |
| Faribault | Shoreview |
| Farmington | South Washington WD |
| Hennepin County | Vadnais Lake Area WMO |
| Hilltop | Vermillion River Watershed JPO |
| Lauderdale | Washington County |
| Lower Mississippi River WMO | Wayzata |
| Minneapolis | West Mississippi WMC |
| Minnehaha Creek WD | Woodbury |

Clean Water MN/Watershed Partners 2018 Financial Report

| | IN-KIND | CASH | TOTAL |
|--|--------------------|---------------------|---------------------|
| REVENUE | | | |
| CWMN funds rollover | | \$15,284.66 | \$15,284.66 |
| Watershed Partners coordination | \$53,800.00 | \$22,770.00 | \$76,570.00 |
| Watershed Partners exhibit | \$22,000.00 | \$7,992.00 | \$29,992.00 |
| Media campaign | \$5,500.00 | \$90,287.00 | \$95,787.00 |
| Meeting registration fees | | | |
| Total revenue | \$81,300.00 | \$136,333.66 | \$217,633.66 |
| EXPENSE | | | |
| 1. Watershed Partners Coordination | | | |
| Principle Investigator | \$2,500.00 | \$5,488.61 | \$7,988.61 |
| Program Coordinator | \$12,000.00 | \$12,000.00 | \$24,000.00 |
| Steering Committee | \$32,400.00 | | \$32,400.00 |
| Meeting room rental fees | \$4,500.00 | \$600.00 | \$5,100.00 |
| Technology maintenance | \$2,400.00 | | \$2,400.00 |
| Meeting expenses | | \$1,858.00 | \$1,858.00 |
| Postage and printing | | \$200.00 | \$200.00 |
| Accounting/indirect fees | | \$2,625.00 | \$2,625.00 |
| Subtotal | \$53,800.00 | \$22,771.61 | \$76,571.61 |
| 2. Watershed Exhibit Implementation | | | |
| Exhibit coordination | \$4,500.00 | \$5,500.00 | \$10,000.00 |
| State fair expenses | \$15,000.00 | \$9,463.13 | \$24,463.13 |
| Storage and check-out | \$2,500.00 | | \$2,500.00 |
| Subtotal | \$22,000.00 | \$14,963.13 | \$36,963.13 |
| 3. Clean Water MN | | | |
| Campaign coordination | \$5,500.00 | \$45,000.00 | \$50,500.00 |
| Printing and postage | | \$431.30 | \$431.30 |
| Blog writing and photography | | \$14,675.00 | \$14,675.00 |
| Web hosting and maintenance | | \$2,500.00 | \$2,500.00 |
| Graphic design | | \$5,820.00 | \$5,820.00 |
| Web design and programming | | \$0.00 | \$0.00 |
| Focus group research | | \$5,027.00 | \$5,027.00 |
| Adopt-a-Drain program support | | \$15,000.00 | \$15,000.00 |
| Meeting expenses | | \$431.00 | \$431.00 |
| Accounting/indirect fees | | \$7,477.94 | \$7,477.94 |
| Subtotal | \$5,500.00 | \$96,362.24 | \$101,862.24 |
| TOTAL | \$81,300.00 | \$134,096.98 | \$215,396.98 |
| ROLLOVER TO 2019 | | \$2,236.68 | \$2,236.68 |

Clean Water MN/Watershed Partners 2019 Budget

item 03b1)

| | IN-KIND | CASH | TOTAL |
|--|--------------------|---------------------|---------------------|
| REVENUE | | | |
| CWMN funds rollover | | \$2,236.68 | \$2,236.68 |
| Watershed Partners coordination | \$53,800.00 | \$23,400.00 | \$77,200.00 |
| Watershed Partners exhibit | \$9,500.00 | \$20,500.00 | \$30,000.00 |
| Clean Water MN | \$5,500.00 | \$46,900.00 | \$52,400.00 |
| Adopt-a-Drain | | \$80,000.00 | \$80,000.00 |
| Total revenue | \$68,800.00 | \$173,036.68 | \$241,836.68 |
| EXPENSE | | | |
| 1. Watershed Partners Coordination | | | |
| Principle Investigator | \$2,500.00 | \$4,500.00 | \$7,000.00 |
| Program Coordinator | \$12,000.00 | \$12,000.00 | \$24,000.00 |
| Steering Committee | \$32,400.00 | | \$32,400.00 |
| Meeting room rental fees | \$4,500.00 | \$1,200.00 | \$5,700.00 |
| Technology maintenance | \$2,400.00 | | \$2,400.00 |
| Meeting expenses | | \$3,000 | \$3,000 |
| Postage and printing | | \$200 | \$200 |
| Accounting and indirect fees | | \$2,500.00 | \$2,500.00 |
| Subtotal | \$53,800.00 | \$23,400.00 | \$74,700.00 |
| 2. Watershed Exhibit Implementation | | | |
| Exhibit coordination | \$4,500.00 | \$5,500.00 | \$10,000.00 |
| State fair expenses | | \$15,000.00 | \$15,000.00 |
| Storage and check-out | \$5,000.00 | | \$5,000.00 |
| Subtotal | \$9,500.00 | \$20,500.00 | \$30,000.00 |
| 3. Clean Water MN | | | |
| Campaign coordination | \$5,500.00 | \$20,000.00 | \$25,500.00 |
| Printing and postage | | \$400 | \$400 |
| Blog writing and photography | | \$15,000.00 | \$15,000.00 |
| Web hosting and maintenance | | \$2,500.00 | \$2,500.00 |
| Graphic design | | \$2,000.00 | \$2,000.00 |
| Focus group research | | \$500.00 | \$500.00 |
| Meeting expenses | | \$2,000.00 | \$2,000.00 |
| Cleanup kit resources | | \$500.00 | \$500.00 |
| Accounting and indirect fees | | \$4,000.00 | \$4,000.00 |
| Subtotal | \$5,500.00 | \$46,900.00 | \$52,400.00 |
| 4. Adopt-a-Drain | | | |
| Site license | | \$30,000.00 | \$30,000.00 |
| Program coordination | | \$20,000.00 | \$20,000.00 |
| Program implementaion | | \$15,000.00 | \$15,000.00 |
| Social media, photography and media production | | \$7,000.00 | \$7,000.00 |
| Program evaluation | | \$5,000.00 | \$1,000.00 |
| Accounting and indirect fees | | \$5,000.00 | |
| Subtotal | \$0.00 | \$82,000.00 | \$73,000.00 |
| TOTAL | \$68,800.00 | \$172,800.00 | \$241,600.00 |



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Z:\Pioneer-SarahCreek\Work Plans\M_2018 Work Plan in review.doc3/15/2019 12:47 PM

March 14, 2019

To: Pioneer-Sarah Creek Commissioners
Fr: Judie Anderson
Re: 2018 Work Plan in Review

Minnesota Rule 8410.0150 requires the Commission to submit to the Board of Water and Soil Resources a financial report, activity report and audit report for the preceding fiscal year. 8410.0150 Subp. 3 outlines the required content of the annual activity report. It includes an assessment of the previous year's annual work plan and development of a projected work plan for the following year.

The Commission's Third Generation Watershed Management Plan identifies issues, priorities and goals for the six-year period 2015-2020. As a reminder, they are enumerated beginning on page 6 of this memo and **the goals that have not been pursued are shown in red.**

Following is a summary of the work undertaken by the Pioneer-Sarah Creek Watershed Management Commission in 2018 to meet the goals, objectives and projected work plan outlined in its 2017 *Annual Report*. The projected Work Plan was approved at the Commission's April 19, 2018 meeting.. (***) indicates 2018 activities not included in the 2018 Work Plan.)

2018 Work Plan in Review

A. ONGOING TECHNICAL AND ADMINISTRATIVE PROGRAMS

1. Continue to review local development/redevelopment plans for conformance with the standards outlined in the Commission's Third Generation Watershed Management Plan. Those standards include:

- a. Maintain the current flood profile of the creeks and their tributaries.
- b. Maintain the post-development 2-year, 10-year, and 100-year peak rate of runoff at pre-development level for the critical duration precipitation event.
- c. Maintain the post-development annual runoff volume at pre-development volume.
- d. Prevent the loss of floodplain storage below the established 100-year elevation.

The Commission reviewed eighteen plans for conformance with its standards in 2018. Twelve of the projects reviewed were in the city of Greenfield, four in Independence, and one each in Loretto and Medina.

2. Continue to serve as the local government unit (LGU) for administering the Wetland Conservation Act (WCA) for the cities of Greenfield, Loretto and Maple Plain. Preserve the existing functions and values of wetlands within the watershed. Promote enhancement or restoration of wetlands in the watershed. *In 2018 Technical staff assisted approximately 35 landowners/agency/developer contacts with wetland-related questions. On behalf of the Commission they reviewed the following types of wetland applications: eight wetland boundary/type; three no-loss, exemptions, three sequencing, and two wetland replacement plans. Wetland impacts totaled 14,301 SF; wetland replacement totaled 28,602 SF. Two WCA violations were investigated and*

resolved. The Commission was involved in five Technical Evaluation Panels (TEPs) throughout the watershed. The Pioneer-Sarah Creek Watershed Management Commission does not have a wetland banking program.

3. Adopt a 2019 operating budget.

a. Search for grant and other funds to supplement the regular budget. *Supported the Lake Sarah Improvement Association's application for a Hennepin County AIS Prevention grant for its innovative approach to AIS education and raising personal accountability for the prevention of the spreading of AIS.*

See Section D. below for more information regarding grant-funded projects.

b. Operate a capital improvement program and share in the cost of projects. *On June 21, 2018 the Commission approved an operating budget totaling \$134,070, with a total assessment to the membership of \$128,000, a zero increase over 2018. The 2017 audit showed a carry-over of \$74,464 to help fund future CIPs.*

4. Conduct a Level II Review and Assessment of the Commission's Progress toward its Third Generation Plan Objectives as part of the Board of Water and Soil Resources PRAP (Performance Review and Assistance Program). In the summer of 2018, the Commission underwent a BWSR Level II Performance Review. The review contained three specific recommendations to enhance the Commission's service and its delivery of effective water and related land resource management. Briefly, they are:

a. *Develop and implement a training plan for board members. This training will resume in 2019.*

b. *Make water quality data and trends easily accessible to the public. The website will be updated to make information about water quality trends in area lakes available in easy to understand and accessible formats. Future annual reports will also contain information on water quality trends.*

c. *Evaluate progress for the implementation of plan actions at a minimum of every two years. BWSR noted that the goals in the Commission's current water management plan are related to resource outcomes. However, efforts to measure the effects of projects on those resources are not apparent. The Commission should evaluate progress at a minimum every two years as required in rule, and make sure to measure outcomes, not just outputs, and report on progress toward achieving resource improvement. Future Work Plans will endeavor to fulfill this recommendation.*

5. Publish a 2017 Annual Activity Report summarizing the Commission's yearly activities and financial reporting. The 2017 Annual Activity Report was approved by the Commission at their April 19, 2018 meeting and submitted to BWSR by the April 30 statutory deadline.

6. Draft a 2018 Work Plan. The Commission's 2018 Work Plan was also approved at the Commission's April 19, 2018 meeting.

B. WATER QUALITY AND QUANTITY

1. Support the Commission's management goals for water quality. Continue to make progress to improve the lakes and streams in the watershed as well as protect those that are not impaired. The MPCA notified the Commission that Lake Rebecca was delisted from the impaired water's list for excessive nutrients in 2018.

a. Improve water clarity in the impaired waters by 10% over the average of the previous ten years by 2023.

b. Maintain or improve water quality in the lakes and streams with no identified impairments. *No waters in the Pioneer-Sarah Creek watershed were added to the impaired waters list in 2018.*

2. Foster implementation of BMPs in the watershed through technical and financial assistance. Utilized the auspices of the University of Minnesota's agriculture specialist and Hennepin County's Rural Conservationist to promote, educate, and facilitate best management practices to target audiences such as owners of small animal operations and lakeshore residents. Sought grants such as Hennepin County Good Steward and Opportunity Grants to assist recipients with the costs of installing implementation practices.

Although the Commission regulates new development projects submitted by the member communities, city, county and commission staff received numerous calls and enquiries throughout the year where water quality and habitat restoration improvement assistance are requested. Most are followed through by the landowner, but not quantified or recorded by the staff. BMPs anywhere from a simple pollinator-friendly garden to an extensive manure/pasture management system for 2 or 3 horses, are undertaken with minimal assistance from staff and without a final determination of the water quality benefits derived from them .

3. Operate a monitoring program sufficient to characterize water quantity and quality and biotic integrity in the watershed and evaluate progress toward TMDL goals. Partner with Three Rivers Park District (TRPD) to conduct water quality monitoring in the watershed. Bring stream and lake monitoring efforts into line with monitoring program outlined in the Third Generation Watershed Plan.

a. Partner with Three Rivers Park District (TRPD) to conduct bi-weekly water quality monitoring of “sentinel lakes” – Independence, Sarah, and Little Long, along with both basins of Whaletail. These five lakes were monitored in 2018. *All of these lakes are classified as “deep” lakes with the exception of Whaletail North, which is classified as a “shallow” lake. The water quality parameters that were collected at the surface for all of the lakes included total phosphorus, soluble reactive phosphorus, total nitrogen, and chlorophyll-a. Samples were also collected at the top of the hypolimnion and 1-m from the bottom for analysis of total phosphorus and soluble reactive phosphorus for those lakes classified as “deep” lakes. Results of the monitoring program are cited on “Lake Report Cards,” which are posted to the Commission’s website.*

b. Partner with Three Rivers Park District (TRPD) to conduct flow and water quality monitoring on Pioneer Creek at Copeland Road and Sarah Creek at County Road 92, along with possible water quality and flow monitoring at up to two additional sites. *The stream sites that were monitored for continuous flow in 2018 included Sarah Creek at Highway 92, Pioneer Creek at Pagenkopf, and Pioneer Creek at Copeland. No water quality data was collected at these stream monitoring sites. However, two sites were monitored for continuous flow and water quality on a stream that flows into Lake Rebecca. These sites were located on a stream (designated as Rebecca North) that outlets on the east side of Lake Rebecca. There was a sample site located at the channel inlet as water enters Lake Rebecca Park Reserve, and a sampling site as water flows through an outlet prior to entering Lake Rebecca. These sites were intended to determine the amount of nutrient loading attributed to the watershed outside of Lake Rebecca Park Reserve and determine the amount of total nutrient loading entering Lake Rebecca through the channel. It was assumed that the difference between the two monitoring sites were representative of the nutrient loading attributed to the Lake Rebecca Park Reserve.*

c. Participate in Metropolitan Council’s Citizen Assisted Monitoring Program (CAMP). The Commission has budgeted funds to monitor one lake in 2018. *Hafften Lake was monitored through the CAMP program in 2018. The 2018 CAMP report will be available in spring 2019 at <https://metro council.org/Wastewater-Water/Services/Water-Quality-Management/Lake-Monitoring-Analysis.aspx>*

d. **** A survey/study was conducted on Lake Independence to estimate the carp biomass/abundance relative to the threshold biomass that may cause ecological damage, and determine major spawning/migration routes of carp from Lake Independence into adjacent lakes. Lake Independence carp biomass and abundance was estimated using mark-recapture catch per unit effort data from boat electrofishing surveys. Carp captured from the boat electrofishing surveys were implanted with passive integrated transponder (PIT) tags and released to monitor their movement. PIT antenna data logger stations were installed at all major inlets and outlets for Lake Independence to detect the passage/movement of PIT-tagged carp. Lakes that have excessive carp biomass and abundance that are above the ecological threshold of 100 kg/ha can have degraded water quality and have negative impacts on the submersed aquatic plant community.*

C. EDUCATION

1. Annually evaluate the proposed Education and Outreach program and establish education and outreach activities for the coming year, including goals and strategies identified in the WRAPS study. These latter

activities could be identified through a collaboration of the Technical Advisory Committee (TAC) and the Citizen Advisory Committee (CAC). A number of implementation strategies are identified in the Commission's Education and Outreach Plan found in Appendix E of the Third Generation Management Plan. *This evaluation did not occur in 2018.*

The Commission does, at its regular monthly meetings, welcome and encourage citizen to speak to issues, concerns and other interests during Open Forum. The Commission values their input and responds as appropriate.

2. Educate Commissioners, member City Councils and Planning Commissions about watershed and water resources management. Sponsor watershed and water resources training opportunities such as NEMO (Nonpoint Education for Municipal Officials). *NEMO activities were not scheduled in 2018. The Commission will continue to be involved in NEMO whenever programs and activities become available.*
3. Become a member of WaterShed Partners, a coalition of more than 70 public, private and nonprofit organizations in the Twin Cities Metro area promoting public understanding that inspires people to act to protect water in their watershed through educational projects, networking, and resource sharing. *The Commission became a member of WaterShed Partners in 2018. Administrative Staff regularly attended their meetings and brought forward information to the Commission regarding their activities and educational projects. Resources were shared on the Commission's website and on their Facebook page.*
4. Convene Citizen Advisory Committee (CAC) as necessary to make recommendations on education and outreach actions and assist the Commission with implementation. *The CAC was not convened in 2018.*
5. Participate with collaborative groups to pool resources to undertake activities in a cost-effective manner, promote interagency cooperation and collaboration, and promote consistency of messages. Use the Commission's, member cities', and educational partners' websites and newsletters, social media, co-ops, local newspapers and cable TV to disseminate education materials to all stakeholders about actions they can take to protect and improve water quality. *The WaterShed Partner website, <http://cleanwatermn.org/about-us/>, describes opportunities to protect the environment - Clean up dog poop, Adopt-a-Drain, Autumn raingarden maintenance tips, Tips to protect local waterways from runoff pollution, Organic lawn care, Salt tip card, Green up your lawn not lakes and rivers, and many more.*
6. Continue to maintain the Commission's website to provide news to residents of the watershed. Maintain the Commission Facebook page. *In 2018 PioneerSarahCreek.org had 1200 users for 1600 sessions. In the first month of 2019 those numbers were 130 and 151, respectively. In the final month of 2018 the Facebook page posted 18 likes, 68 reaches and 16 engagements.*
7. Provide opportunities for the public to learn about and participate in water quality activities. Enhance education opportunities for youth. Provide opportunities for bridge-building between stakeholders.
 - a. Promote river stewardship through the River Watch program. Encourage participation by local school students and their teachers. Funding for monitoring one site was included in the 2018 budget. *No sites were monitored as part of the River Watch program in 2018. However, three sites were included in WHEP (the Wetland Health Evaluation Program). They were PS-1, the Loretto Treatment Pond downstream from the new Loretto wastewater treatment facility; PS-2, The Selstad wetland that feeds into Lake Independence; and PS-8, the Dance Hall Creek wetland located at the end of the creek just before it flows into Lake Sarah.*
 - b. Work with Boy Scouts for conservation hours, dependent on appropriate environmental projects being identified. *This task was not pursued due to risk and safety issues.*
 - c. Work in partnership with the University of Minnesota's agriculture specialist to help build relationships with the agricultural community in the watershed in order to encourage TMDL implementation. *As an example, one project provided assistance to a landowner in creating a horse manure composting system that makes manure handling more convenient and less time consuming. This manure storage and composting*

facility conserves valuable fertility for their pasture and hay fields and prevents those nutrients from leaching to groundwater and running off to the adjacent creek.

d. Working in partnership with the Hennepin County Rural Conservationist, continue to work with landowners, writing county cost-share grants to help owners become compliant with the MN Buffer Law. *The deadline for compliance passed in late 2017. Land owners who did not respond to the County or did not get their property into compliance was referred to BWSR for enforcement. The MN Buffer Law requires Staff to check each parcel in the County at least once every three years and spot check up to 15% of parcels. Hennepin County has opted to section the County into thirds and check 1/3 each year. Those residents chosen for a spot check will be notified by letter. In 2019, review and inspections will take place in the Pioneer-Sarah Creek watershed in the cities of Independence, Greenfield, Loretto, Maple Plain, Medina, and parts of Minnetrista.*

D. STUDIES, PROJECTS AND CIPS.

1. Continue to support member cities as they identify studies and projects which benefit both the cities and the watershed. *Submitted FY20-21 Biennial Budget Request (BBR) to the Board of Water and Soil Resources Among projects identified on the BBR are carp population control in chain of lakes; feedlot BMPs; Dancehall Creek SWA-identified implementation projects; SWAs for Hafften, Schendel, Schwauppauflf Lakes drainage basin; Tomahawk Trail wetland external load reduction; Ardmore neighborhood projects; and Lake Independence alum treatment.*
2. Continue to identify Watershed-wide TMDL implementation projects. Seek grant funding to assist with the costs associated with those projects. *Sought grant funding assistance for the Baker Park Reserve Campground Ravine Stabilization project. Received funding in the amount of \$416,000 through a BWSR Clean Water Fund grant and \$59,500 through the Hennepin County Natural Resources Opportunity Grant program. Local partners (the cities of Independence and Medina, Three Rivers Park District, and the Lake Independence Citizens Association [LICA]) are providing \$34,000. The Commission's share of this \$520,000 project is \$10,500.*
3. Prioritize BMPs identified in the Dance Hall Creek Subwatershed Retrofit Assessment for implementation or further study. *In 2016 the City of Greenfield sent letters to the Dance Hall Creek landowners requesting their cooperation in beginning the implementation phase of the SWA. While no responses were forthcoming, the City and the Commission continued to make personal contacts to further this process.*
4. Cost-share with the Lake Sarah Improvement Association (LSIA) to complete a round of curly-leaf pondweed (CLPW) treatment in 2018. *In 2018 the Commission entered into a joint powers agreement with the Three Rivers Park District to complete curly-leaf pondweed turion surveys, annual aquatic plant surveys and annual water quality monitoring to determine the effectiveness of the CLPW control program to reduce phosphorus loading to the lake. The parties will coordinate with the Lake Sarah Improvement Association to develop and implement a CLPW control strategy per the Lake Sarah TMDL Implementation Plan. The Commission's cost-share is 25%, not to exceed \$8,000 annually.*
5. **** Enter into Joint Powers Agreement with cities of Independence and Medina, and the Three Rivers Park District to facilitate the improvement of Lake Independence through the implementation of Phase I of the Baker Park Campground Ravine stabilization project.*
6. Convene the Technical Advisory Committee (TAC) for the purpose of receiving CIP applications from the member communities, reviewing them for validity, and recommendation to the Commission for incorporation on the Third Generation Plan CIP. *Additions, revisions and deletions were made to the Commission's Capital Improvement Program at the TAC's April and May meetings. The TAC's recommendations were approved by the Commission at their May meeting.*

- a. Update CIP in anticipation of the PRAP.

b. Seek grant funding to assist with the costs associated with projects identified on the Commission's CIP. *Applied for, and received BWSR Competitive Grant funding in the amount of \$416,00 for the Baker Park Reserve Campground Ravine Stabilization project.*

c. Prioritize capital projects in anticipation of funding during the initial round of the Watershed-based Funding Pilot Project. *The Commission identified three projects recommended in the Lake Ardmore Subwatershed Assessment for funding by the BWSR Watershed-based Funding Pilot Project. Those projects were 1) Project SS1, Stream Stabilization - stabilize 70 feet of stream bank in channel between Lakes Ardmore and Independence; 2) Project SR1, Shoreline Restoration - stabilize 160 feet of shoreline at boat launch; and 3) Project PD3, Pond Excavation - enlarge existing stormwater pond to provide additional treatment for urban runoff. Total cost of these projects is \$74,062.00. Grant funding under the pilot project totals \$58,317.*

E. PLANNING

1. When requested, assist member cities to develop their local water plans. Review plans for compliance with the Commission's Third Generation Plan. Revisions to Minnesota Rules 8410 state that all cities and towns in the seven-county metropolitan area must complete and adopt their local water plans between January 1, 2017 and December 31, 2018. *At year-end the local plans from the cities of Loretto, Medina and Minnetrista had been approved and the plans from Greenfield, Independence and Maple Plain were under review by Commission Staff.*

2. Budget for the expense of writing the Fourth Generation Plan, due in 2020. Development should begin in late 2018. *The 2017 Audit includes \$25,000 set aside for next generation plan expense.*

PRIORITIES

1. Educate the Commissioners and member City Councils and Planning Commissions about watershed and water resources management.
2. Undertake a monitoring program to monitor water quality trends and to track progress toward meeting TMDLs.
3. Partner with member cities and other parties to conduct subwatershed assessments and other studies to identify feasible and cost-effective Best Management Practices to protect and improve water quality.

GOALS

A. Water Quantity.

1. Maintain the post-development 2-year, 10-year, and 100-year peak rate of runoff at pre-development level for the critical duration precipitation event.
2. Maintain the post-development annual runoff volume at pre-development volume.
3. Prevent the loss of floodplain storage below the established 100-year elevation.

Actions:

- a. The Commission shall maintain Rules and Standards requiring development and redevelopment meeting certain criteria to meet runoff rate control and runoff volume and infiltration requirements.
- b. Landlocked depressions that presently do not have a defined outlet and do not typically overflow may only be allowed a positive outlet provided the downstream impacts are addressed and the plan is approved by the Commission.
- c. The Commission encourages the use of Low Impact Design techniques to reduce runoff rates and volumes, erosion and sedimentation, and pollutant loading.
- d. Member cities shall adopt local controls and local stormwater management plans that are at least as stringent as the Commission Water Quantity goals and policies and the Commission Rules and Standards.
- e. The Commission requires a plan review by the local permitting authority for development or redevelopment if any part of the development is within or affects a 100-year floodplain
- f. The Commission shall maintain Rules and Standards requiring development and redevelopment affecting the 100-year floodplain to meet Commission compensatory storage, low flow elevation, and timing requirements.
- g. Member cities shall adopt a floodplain ordinance and any other required local controls, and local stormwater management plans that are at least as stringent as the Commission Floodplain goals and policies and the Commission Rules and Standards.

B. Water Quality

The TMDLs completed for Lake Independence and Lake Sarah established nutrient load reductions necessary to improve water quality in those lakes. The WRAPS study currently underway will establish additional water quality improvement and protection goals for the other lakes and streams in the watershed. The Third Generation goals for water quality are focused on making progress to improve the lakes and streams in the watershed as well as protect unimpaired waters. The goals are aggressive; some of them will require much dedication and effort and public and private resources to achieve. However, public input received for this Plan, the TMDLs, and other sources show that achieving a high standard of water quality is a priority for the public as well as required by state statute, and the Implementation Plan includes a number of actions to help meet these goals.

Actions.

- a. The Commission adopts as water quality goals the standards for Class 2b waters in the North Central Hardwood Forest ecoregion as set forth in MN rules 7050.0222.
- b. The Commission will undertake a routine lake and stream monitoring program to assess progress toward meeting these goals.
- c. The Commission shall maintain Rules and Standards requiring development and redevelopment meeting certain criteria to meet water quality requirements.
- d. The Commission shall maintain Rules and Standards requiring development and redevelopment meeting certain criteria to meet erosion control requirements.
- e. **The Commission will develop and implement a program to provide technical and financial assistance to the member cities in identifying appropriate and cost-effective Best Management Practices to reduce nutrient and sediment load to lakes and streams.**
- f. The Commission will work in partnership with other organizations and agencies to pursue grant and other funding to implement improvement projects and feasibility studies.
- g. The Commission shall update implementation plans and this Plan as necessary following TMDL/WRAPS completion and progress reviews.
- h. Member cities shall adopt local controls and local stormwater management plans that are at least as stringent as Commission Water Quality goals and policies and the Commission Rules and Standards.
- i. The Commission will develop and publish a model manure management ordinance within six months of this Plan's adoption. Member cities shall then have one year to adopt a manure management ordinance using the model ordinance for guidance, or to adopt other standards and practices that will accomplish the objective of reducing phosphorus loading from new livestock operations.

C. Groundwater

The Commission has undertaken limited groundwater management activities in the past, primarily by encouraging projects requiring project review to infiltrate a portion of runoff. Over the past decade cities that rely on groundwater for drinking water have worked with the Minnesota Department of Health to adopt wellhead protection plans and to implement policies and official controls to protect drinking water sources. In the Third Generation Plan, the Commission has adopted a new infiltration requirement for new development and redevelopment to promote groundwater recharge and reduce runoff.

1. Promote groundwater recharge by requiring abstraction/infiltration of runoff from new development and redevelopment.
2. Protect groundwater quality by incorporating wellhead protection study results into development and redevelopment Rules and Standards.

Actions

- a. The Commission shall maintain Rules and Standards requiring development and redevelopment meeting certain criteria to meet infiltration requirements.
- b. Member cities shall adopt local controls and local stormwater management plans that are at least as stringent as Commission Groundwater goals and policies and the Commission Rules and Standards.
- c. **The Commission will partner with the DNR, USGS, MDH, and other agencies to educate the member cities and watershed community officials about groundwater issues and their relation to stormwater management and surface water quality.**
- d. The Commission shall develop and maintain a map showing the wellhead protection zones within its boundaries upon completion of a local wellhead protection plan for use in determining vulnerable areas that should be exempted from infiltration.
- e. **The Commission will develop and implement a program to provide technical and financial assistance to the member cities in identifying appropriate and cost-effective Best Management Practices to increase infiltration and groundwater recharge and reduce stormwater runoff.**

D. Wetlands

The Commission's primary tool for managing wetlands is the Wetland Conservation Act (WCA). The Commission serves as the Local Government Unit (LGU) for WCA administration in Greenfield, Loretto and Maple Plain and the other three member cities administer WCA themselves. The Commission requires submittal of a functions and values assessment using the latest version of MnRAM whenever an applicant proposes wetland impacts.

1. Preserve the existing functions and values of wetlands within the watershed.
2. Promote wetland the enhancement or restoration of wetlands in the watershed.

Actions

- a. The Commission shall maintain Rules and Standards requiring development and redevelopment meeting certain criteria to provide buffers adjacent to wetlands, lakes, and streams.
- b. Member cities shall adopt local controls and local stormwater management plans that are at least as stringent as Commission Wetland goals and policies and the Commission Rules and Standards.
- c. **The Commission shall act as the Local Government Unit (LGU) for the Wetland Conservation act for those communities that choose to so designate.**
- d. Developers must complete a wetland delineation by a wetland professional to identify the location and extent of any wetlands present within the development site.
- e. For any development or redevelopment proposing impacts to any wetlands in the watershed, a functions and values assessment using the most recent version of the MnRAM protocol must be completed and submitted to the Commission and to the respective LGU.
- f. Before consideration or approval of a wetland replacement plan or use of wetland banking credits, the Commission shall ensure that the applicant has exhausted all possibilities to avoid and minimize adverse wetland impacts according to the sequencing requirements of the Wetland Conservation Act. The order of descending priority for the location of replacement wetland, including the use of wetland banking credits, is as follows: 1) On-site; 2) Within the same subwatershed; 3) Within the Pioneer-Sarah Creek watershed; 4) Within Hennepin County; and 5) Outside the Pioneer-Sarah Creek watershed within Major Watershed Number 18 or Major Watershed Number 19

E. Drainage Systems

Pioneer Creek between Highway 12 and Watertown Road and several lateral ditches, including parts of Robina Creek, are under the ditch authority of Hennepin County as County Ditch #19. The County also is ditch authority for County Ditch #9 connecting and outletting Lake Schwauppau, Schendel Lake, and Hafften Lake in the northern watershed; and Judicial Ditch #20, which includes part of Deer Creek and several laterals, and Pioneer Creek downstream of Ox Yoke Lake. The primary Third Generation activity related to drainage systems is to periodically review the advantages and disadvantages of ditch authority and to reconsider jurisdiction

1. Continue current Hennepin County jurisdiction over county ditches in the watershed.

Actions

- a. Periodically reconsider the appropriate jurisdiction over the county ditches in the watershed

F. Operations and Programming

These goals guide the routine programs and operations of the Commission, and include the education and outreach program; maintenance of rules and standards; the annual monitoring program; and programs and activities to stay abreast of changing standards and requirements, search for grant and other funds to supplement the regular budget, and operate a capital improvement program and share in the cost of projects.

1. Identify and operate within a sustainable funding level that is affordable to member cities.
2. **Foster implementation of TMDL and other implementation projects by sharing in their cost and proactively seeking grant funds.**
3. **Operate a public education and outreach program prioritizing elected and appointed officials education and building better understanding between all stakeholders.**
4. Operate a monitoring program sufficient to characterize water quantity and quality and biotic integrity in the watershed and to evaluate progress toward TMDL goals.
5. Maintain rules and standards for development and redevelopment that are consistent with local and regional TMDLs, federal guidelines, source water and wellhead protection requirements, nondegradation, and ecosystem management goals.
6. Serve as a technical resource for member cities.

Actions

- a. Annually review the budget and Capital Improvement Program and **convene a professional Technical Advisory Committee to identify and prioritize projects.**
- b. Convene Citizen Advisory Committees as necessary to advise the Commission and to assist in program development and implementation.
- c. Prepare and implement an annual monitoring plan and provide annual reporting.
- d. According to the schedules set forth in TMDL Implementation Plans and WRAPS studies, every five years evaluate progress toward meeting those water quality goals, and adjust the Implementation Plans as necessary to achieve progress.
- e. Periodically review the development rules and standards for adequacy and make revisions as necessary.
- f. Coordinate water resources management between the Commission, Three Rivers Park District, and the member cities.



3235 Fernbrook Lane
 Plymouth, MN 55447
 (763) 553-1144
 Fax: (763) 553-9326

March 14, 2019

To: Pioneer-Sarah Creek Commissioners

Fr: Judie Anderson

Re: 2019 Projected Work Plan

Z:\Pioneer-SarahCreek\Work Plans\M_2019 Projected Work Plan.doc3/15/2019 1:57:12 PM

Minnesota Rule 8410.0150 requires the Commission to submit to the Board of Water and Soil Resources a financial report, activity report and audit report for the preceding fiscal year. 8410.0150 Subp. 3 outlines the required content of the annual activity report. It includes an assessment of the previous year's annual work plan and development of a projected work plan for the following year. The 2018 Work Plan accomplishments were accepted at the **March 21, 2019**.

The Commission's Third Generation Watershed Management Plan identifies issues, priorities and goals for the six-year period 2015-2020. As a reminder, they are enumerated beginning on page 4 of this memo. **Those goals that have not been pursued are shown in red. Staff recommends that action regarding these goals be seriously considered.**

Following is a projected work plan for 2019. Review and comments are requested by **March 29, 2019** so that they can be incorporated into the *2018 Annual Activity Report*.

2019 Work Plan

A. ONGOING TECHNICAL AND ADMINISTRATIVE PROGRAMS

1. Continue to review local development/redevelopment plans for conformance with the standards outlined in the Commission's Third Generation Watershed Management Plan.
 - a. Maintain the current flood profile of the creeks and their tributaries.
 - b. Maintain the post-development 2-year, 10-year, and 100-year peak rate of runoff at pre-development level for the critical duration precipitation event.
 - c. Maintain the post-development annual runoff volume at pre-development volume.
 - d. Prevent the loss of floodplain storage below the established 100-year elevation.
2. Discontinue serving as the local government unit (LGU) for administering the Wetland Conservation Act (WCA) for the member cities effective January 1, 2020.
3. Adopt a 2020 operating budget.
 - a. Search for grant and other funds to supplement the regular budget.
 - b. Fund a capital improvement program to share in the cost of projects.
 - c. Budget for the expense of undertaking a Major Plan Amendment to extend the term of the Third Generation Plan.

4. Continue to respond to recommendations included in the Board of Water and Soil Resources 2018 Level II Review and Assessment of the Commission's Progress toward its Third Generation Plan Objectives report.
 - a. Develop and implement a training plan for board members. *The Commissioner handbook will be updated and training will resume in 2019.*
 - b. Make water quality data and trends easily accessible to the public.
 - c. Evaluate progress for the implementation of plan actions at a minimum of every two years, making sure to measure outcomes, not just outputs. Report on progress toward achieving resource improvement.
5. Conduct the biennial solicitation of interest proposals for administrative, legal, technical and wetland consultants.
6. Publish a 2018 Annual Activity Report summarizing the Commission's yearly activities and financial reporting.
7. Draft a 2019 Work Plan.

B. WATER QUALITY AND QUANTITY

1. Support the Commission's management goals for water quality. Continue to make progress to improve the lakes and streams in the watershed as well as protect those that are not impaired.
 - a. Improve water clarity in the impaired waters by 10% over the average of the previous ten years by 2023.
 - b. Maintain or improve water quality in the lakes and streams with no identified impairments.
2. Foster implementation of BMPs in the watershed through technical and financial assistance.
 - a. Utilize the services of the University of Minnesota's agriculture specialist and Hennepin County's Rural Conservationist to promote, educate, and facilitate best management practices to target audiences.
 - b. Identify projects eligible for the Hennepin County Natural Resources Grant program.
3. Operate a monitoring program sufficient to characterize water quantity and quality and biotic integrity in the watershed and evaluate progress toward TMDL goals. Partner with Three Rivers Park District (TRPD) to conduct water quality monitoring in the watershed. Bring stream and lake monitoring efforts into line with monitoring program outlined in the Third Generation Watershed Plan.
 - a. Partner with Three Rivers Park District (TRPD) to conduct bi-weekly water quality monitoring of "sentinel lakes" – Independence, Sarah, and Little Long, along with both basins of Whaletail.
 - b. Partner with Three Rivers Park District (TRPD) to conduct flow and water quality monitoring at selected sites on Pioneer Creek and Sarah Creek, along with possible water quality and flow monitoring at up to two additional sites.
 - c. Participate in Metropolitan Council's Citizen Assisted Monitoring Program (CAMP). The Commission has budgeted funds to monitor one lake in 2019.
4. Support watershed residents and organizations as issues arise, providing general, technical and financial assistance where appropriate.

C. EDUCATION

1. Annually evaluate the proposed Education and Outreach program and establish education and outreach activities for the coming year, including goals and strategies identified in the WRAPS study. These later activities

could be identified through a collaboration of the Technical Advisory Committee (TAC) and the Citizen Advisory Committee (CAC). A number of implementation strategies are identified in the Commission's Education and Outreach Plan found in Appendix E of the Third Generation Management Plan.

- a. Activate a CAC to begin this process, which is noted as one of the Commission's high priorities in its Management Plan.
 - b. Convene the CAC as necessary, at least once annually, to make recommendations on education and outreach actions and assist the Commission with implementation.
- 2. Educate Commissioners, member City Councils and Planning Commissions about watershed and water resources management. Sponsor watershed and water resources training opportunities such as NEMO (Nonpoint Education for Municipal Officials).
- 3. Continue membership in WaterShed Partners, a coalition of more than 70 public, private and nonprofit organizations in the Twin Cities Metro area promoting public understanding that inspires people to act to protect water in their watershed through educational projects, networking, and resource sharing. Take a more active role in its activities.
- 4. Participate with collaborative groups to pool resources to undertake activities in a cost-effective manner, promote interagency cooperation and collaboration, and promote consistency of messages. Use the Commission's, member cities', and educational partners' websites and newsletters, social media, co-ops, local newspapers and cable TV to disseminate education materials to all stakeholders about actions they can take to protect and improve water quality.
- 5. Continue to maintain the Commission's website and Facebook page to provide news to residents of the watershed.
- 6. Provide opportunities for the public to learn about and participate in water quality activities. Enhance education opportunities for youth. Provide opportunities for bridge-building between stakeholders.
 - a. Promote river stewardship through the River Watch program. Encourage participation by local school students and their teachers. Funding for monitoring one site is included in the 2018 budget.
 - b. Work in partnership with Hennepin County's Agriculture Specialist to help build relationships with the agricultural community in the watershed in order to encourage TMDL implementation.
 - c. Working in partnership with the Hennepin County Rural Conservationist, continue to work with landowners, writing county cost-share grants to help owners become compliant with the MN Buffer Law.

D. STUDIES, PROJECTS AND CIPS.

- 1. Continue to support member cities as they identify studies and projects which benefit both the cities and the watershed.
- 2. Continue to identify Watershed-wide TMDL implementation projects.
- 3. Prioritize BMPs identified in the Dance Hall Creek Subwatershed Retrofit Assessment for implementation or further study. Continue to network with landowners to gain impetus toward completion of projects.
- 4. Under a joint powers agreement with the Three Rivers Park District, complete Curly-leaf Pondweed turion surveys in Lake Sarah during a five-year control program, complete annual aquatic plant surveys in Lake Sarah to monitor the response of native macrophytes to the CLP control program, and complete annual water quality monitoring to determine the effectiveness of the CLPW control program in reducing phosphorus loading to the lake.

5. Convene the Technical Advisory Committee for the purpose of receiving CIP applications from the member communities, reviewing them for validity, and recommendation to the Commission for incorporation on the Third Generation Plan CIP.

a. Prioritize capital projects in anticipation of funding during the next round of the Watershed-based Funding Project.

E. PLANNING

1. Complete the review of member communities' local water management plans. Under Rule 8410.0160, subp. 6, local plans were to be approved by the Commission by December 31, 2018. *This process will be completed with the review of Maple Plain's local plan in 2019.*

2. Budget for the expense of writing the Fourth Generation Plan, due in 2020, if a Major Plan Amendment to the Third Generation Plan is not approved by BWSR.

PRIORITIES

1. Educate the Commissioners and member City Councils and Planning Commissions about watershed and water resources management.
2. Undertake a monitoring program to monitor water quality trends and to track progress toward meeting TMDLs.
3. Partner with member cities and other parties to conduct subwatershed assessments and other studies to identify feasible and cost-effective Best Management Practices to protect and improve water quality.

GOALS

A. Water Quantity.

1. Maintain the post-development 2-year, 10-year, and 100-year peak rate of runoff at pre-development level for the critical duration precipitation event.
2. Maintain the post-development annual runoff volume at pre-development volume.
3. Prevent the loss of floodplain storage below the established 100-year elevation.

Actions:

- a. The Commission shall maintain Rules and Standards requiring development and redevelopment meeting certain criteria to meet runoff rate control and runoff volume and infiltration requirements.
- b. Landlocked depressions that presently do not have a defined outlet and do not typically overflow may only be allowed a positive outlet provided the downstream impacts are addressed and the plan is approved by the Commission.
- c. The Commission encourages the use of Low Impact Design techniques to reduce runoff rates and volumes, erosion and sedimentation, and pollutant loading.
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The TMDLs completed for Lake Independence and Lake Sarah established nutrient load reductions necessary to improve water quality in those lakes. The WRAPS study currently underway will establish additional water quality improvement and protection goals for the other lakes and streams in the watershed. The Third Generation goals for water quality are focused on making progress to improve the lakes and streams in the watershed as well as protect unimpaired waters. The goals are aggressive; some of them will require much dedication and effort and public and private resources to achieve. However, public input received for this Plan, the TMDLs, and other

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1. Promote groundwater recharge by requiring abstraction/infiltration of runoff from new development and redevelopment.
2. Protect groundwater quality by incorporating wellhead protection study results into development and redevelopment Rules and Standards.

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- b. Member cities shall adopt local controls and local stormwater management plans that are at least as stringent as Commission Groundwater goals and policies and the Commission Rules and Standards.
- c. **The Commission will partner with the DNR, USGS, MDH, and other agencies to educate the member cities and watershed community officials about groundwater issues and their relation to stormwater management and surface water quality.**
- d. The Commission shall develop and maintain a map showing the wellhead protection zones within its boundaries upon completion of a local wellhead protection plan for use in determining vulnerable areas that should be exempted from infiltration.
- e. **The Commission will develop and implement a program to provide technical and financial assistance to the member cities in identifying appropriate and cost-effective Best Management Practices to increase infiltration and groundwater recharge and reduce stormwater runoff.**

D. Wetlands

The Commission's primary tool for managing wetlands is the Wetland Conservation Act (WCA). The Commission serves as the Local Government Unit (LGU) for WCA administration in Greenfield, Loretto and Maple Plain and the other three member cities administer WCA themselves. The Commission requires submittal of a functions and values assessment using the latest version of MnRAM whenever an applicant proposes wetland impacts.

1. Preserve the existing functions and values of wetlands within the watershed.
2. Promote wetland the enhancement or restoration of wetlands in the watershed.

Actions

- a. The Commission shall maintain Rules and Standards requiring development and redevelopment meeting certain criteria to provide buffers adjacent to wetlands, lakes, and streams.

- b. Member cities shall adopt local controls and local stormwater management plans that are at least as stringent as Commission Wetland goals and policies and the Commission Rules and Standards.
- c. **The Commission shall act as the Local Government Unit (LGU) for the Wetland Conservation act for those communities that choose to so designate.**
- d. Developers must complete a wetland delineation by a wetland professional to identify the location and extent of any wetlands present within the development site.
- e. For any development or redevelopment proposing impacts to any wetlands in the watershed, a functions and values assessment using the most recent version of the MnRAM protocol must be completed and submitted to the Commission and to the respective LGU.
- f. Before consideration or approval of a wetland replacement plan or use of wetland banking credits, the Commission shall ensure that the applicant has exhausted all possibilities to avoid and minimize adverse wetland impacts according to the sequencing requirements of the Wetland Conservation Act. The order of descending priority for the location of replacement wetland, including the use of wetland banking credits, is as follows: 1) On-site; 2) Within the same subwatershed; 3) Within the Pioneer-Sarah Creek watershed; 4) Within Hennepin County; and 5) Outside the Pioneer-Sarah Creek watershed within Major Watershed Number 18 or Major Watershed Number 19.

E. Drainage Systems

Pioneer Creek between Highway 12 and Watertown Road and several lateral ditches, including parts of Robina Creek, are under the ditch authority of Hennepin County as County Ditch #19. The County also is ditch authority for County Ditch #9 connecting and outletting Lake Schwauppauff, Schendel Lake, and Hafften Lake in the northern watershed; and Judicial Ditch #20, which includes part of Deer Creek and several laterals, and Pioneer Creek downstream of Ox Yoke Lake. The primary Third Generation activity related to drainage systems is to periodically review the advantages and disadvantages of ditch authority and to reconsider jurisdiction.

- 1. Continue current Hennepin County jurisdiction over county ditches in the watershed.

Actions

- a. Periodically reconsider the appropriate jurisdiction over the county ditches in the watershed

F. Operations and Programming

These goals guide the routine programs and operations of the Commission, and include the education and outreach program; maintenance of rules and standards; the annual monitoring program; and programs and activities to stay abreast of changing standards and requirements, search for grant and other funds to supplement the regular budget, and operate a capital improvement program and share in the cost of projects.

- 1. Identify and operate within a sustainable funding level that is affordable to member cities.
- 2. **Foster implementation of TMDL and other implementation projects by sharing in their cost and proactively seeking grant funds.**
- 3. **Operate a public education and outreach program prioritizing elected and appointed officials education and building better understanding between all stakeholders.**
- 4. Operate a monitoring program sufficient to characterize water quantity and quality and biotic integrity in the watershed and to evaluate progress toward TMDL goals.
- 5. Maintain rules and standards for development and redevelopment that are consistent with local and regional TMDLs, federal guidelines, source water and wellhead protection requirements, nondegradation, and ecosystem management goals.
- 6. Serve as a technical resource for member cities.

Actions

- a. Annually review the budget and Capital Improvement Program and **convene a professional Technical Advisory Committee to identify and prioritize projects.**
- b. Convene Citizen Advisory Committees as necessary to advise the Commission and to assist in program development and implementation.
- c. Prepare and implement an annual monitoring plan and provide annual reporting.
- d. According to the schedules set forth in TMDL Implementation Plans and WRAPS studies, every five years evaluate progress toward meeting those water quality goals, and adjust the Implementation Plans as necessary to achieve progress.
- e. Periodically review the development rules and standards for adequacy and make revisions as necessary.
- f. Coordinate water resources management between the Commission, Three Rivers Park District, and the member cities.

DRAFT

Great picture goes here

2018 Activity Report



Greenfield • Independence • Loretto • Maple Plain • Medina • Minnetrista

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This report was prepared
for the Pioneer-Sarah Creek Watershed Management Commission
by JASS, Inc.

Questions regarding this report should be directed
to JASS, 763.553.1144 or judie@jass.biz

We gratefully acknowledge the assistance of:
James Kujawa, Kirsten Barta and Mary Karius, Hennepin County Dept. of Environment and Energy
Brian Vlach and Amy Timm, Three Rivers Park District
Brian Johnson, Metropolitan Council

Cover Photograph:
Courtesy of

ANNUAL ACTIVITY REPORT

This annual activity report has been prepared by the Pioneer-Sarah Creek Watershed Management Commission in accordance with the annual reporting requirements of Minnesota Rules Chapter 8410.0150, Subps. 2 and 3. It summarizes the activities undertaken by the Commission during calendar year 2018.

PIONEER-SARAH CREEK WATERSHED MANAGEMENT COMMISSION

The Commission was established to protect and manage the natural resources of the Pioneer and Sarah Creek watersheds. It is a joint powers watershed organization formed as required under MN Statutes 103B.201-103B.255 and MN Rules Chapter 8410. A Board of Commissioners comprised of representatives appointed by the member communities was established as the governing body of the Commission. Its membership is comprised of the cities of Greenfield, Independence, Loretto, Maple Plain, Medina, and Minnetrista. The table in *Appendix 1* shows the names of the Commissioners appointed to serve in 2018.

MEETINGS

The Commission meets on the third Thursday of the month at Maple Plain City Hall. The meetings are open to the public and visitors are welcome. Meeting notices, agendas, and approved minutes are posted on the Commission's website, www.pioneersarahcreek.org.

STAFF AND CONSULTANTS

The Commission has no employees. Independent consultants perform technical, legal, administrative, and wetland services for the Commission and are selected biannually. The current staff and consultants are also listed in *Appendix 1*.

THE WATERSHED

Located entirely within western Hennepin County, the Pioneer-Sarah Creek watershed covers approximately 70.5 square miles and includes the watersheds of Pioneer Creek and Sarah Creek. The Crow River demarcates most of the northern boundary. Portions or all of the six member cities are within the legal boundaries of the Pioneer-Sarah Creek watershed and are listed in Table 1. A map of the watershed can be viewed on the next page.

WATERSHED MANAGEMENT PLAN

The Commission's Third Generation Watershed Management Plan was approved by the Board of Water and Soil Resources (BWSR) for a period of six years on January 28, 2015. The Commission adopted the Plan on May 21, 2015.

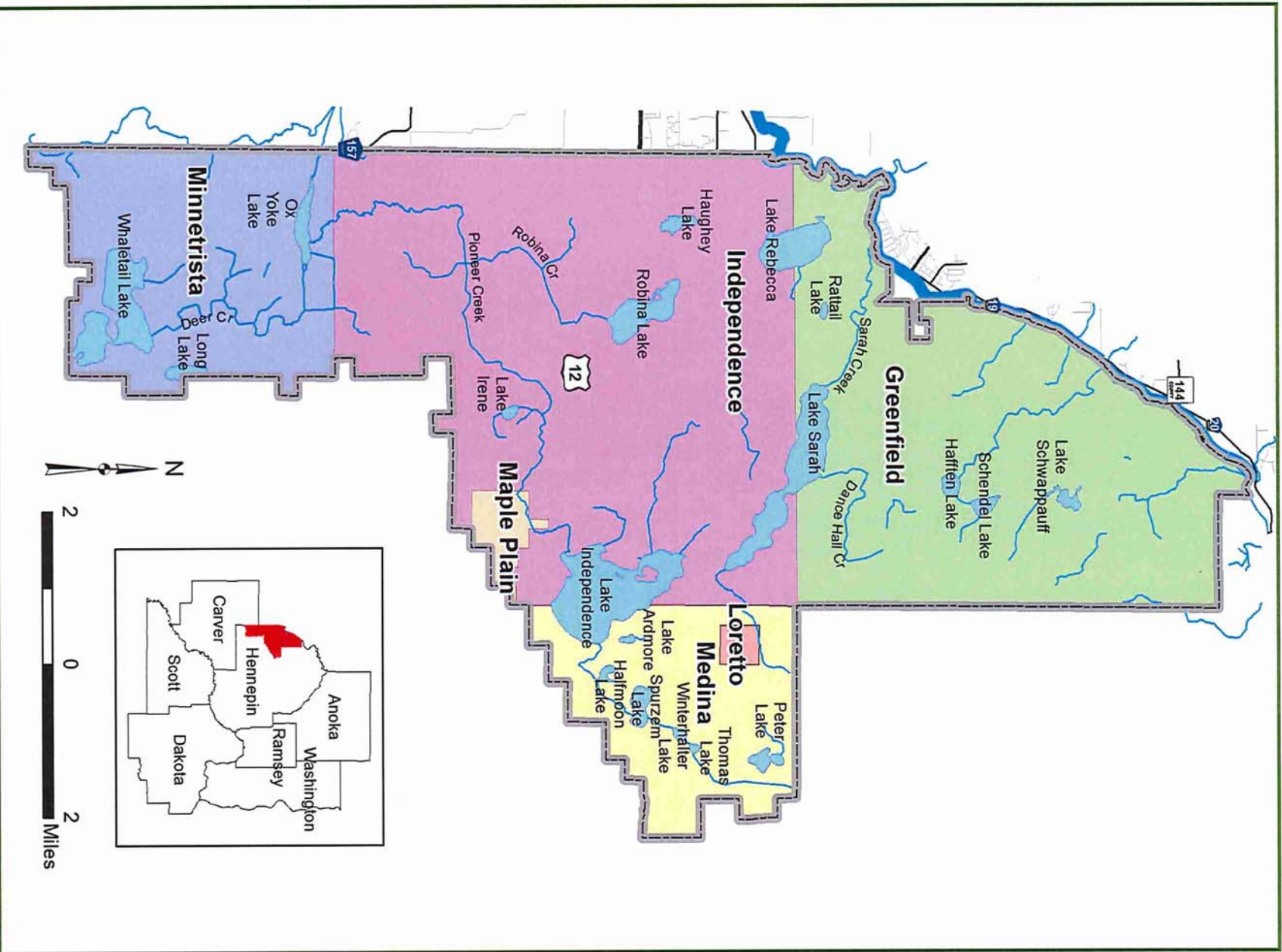


Table 1
Area of Members within the Pioneer-Sarah Creek Watershed

| Local Government Unit | Area Within Watershed (Square Miles) | Percent of Watershed |
|-----------------------|---|----------------------|
| Greenfield | 21.5 | 30.5% |
| Independence | 29.7 | 42.1% |
| Loretto | 0.3 | 0.4% |
| Maple Plain | 0.8 | 1.1% |
| Medina | 7.5 | 10.7% |
| Minnetrista | 10.7 | 15.2% |
| TOTAL: | 70.5 | 100.0% |

During development of the Plan, the Commission identified the following priorities to guide water resources planning and management functions:

- Educate the Commissioners and member City Councils and Planning Commissions regarding watershed and water resources management.
- Undertake a monitoring program to monitor water quality trends and to track progress toward meeting TMDLs.
- Partner with member cities and other parties to conduct subwatershed assessments and other studies to identify feasible and cost-effective Best Management Practices (BMPs) to protect and improve water quality.

On November 19, 2015, the Commission amended its Third Generation Watershed Management Plan to adopt a revision to the plan amendment process to conform to 2015 revisions to MN Rules 8410. In part, the revisions will allow the Commission to modify the CIP with only minimal need for plan amendments.

On July 20, 2017 the Commission adopted a second Minor Plan Amendment to revise the costs associated with project IN-2 Hydrologic Restorations on the Pioneer-Sarah Creek 2015 Capital Improvement Program (CIP). The revision would update the estimated costs of the design and construction phases of the Baker Campground Ravine project.

On June 21, 2018 the Commission amended its Third Generation Plan to revise the CIP to remove twenty projects that have already been completed or will not move forward, to update the estimated costs/timing of three projects, to group nine projects into the category *Watershedwide Ongoing Opportunity-Based Projects*, and to add ten new projects.

LOCAL PLANS

Local water management plans adopted by member cities pursuant to Minnesota Statutes, Section 103B.235 shall be consistent with the Commission's Third Generation Watershed Management Plan. Local plans must comply with MN Statutes, Section 103B.235 and MN Rules 8410 regarding local plan content. [\(Appendix 2\)](#). At year-end the Commission had reviewed and approved the local

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surface water plans of the cities of Loretto, Medina, and Minnetrista. The plans for Independence and Maple Plain were under review on December 31. Responses to Staff's comments on Greenfield's Local Plan were received January 9, 2019.

2018 WORK PLAN IN REVIEW

FINANCIAL REPORTING

Appendix includes the Commission's approved budget for 2018. The Commission's Joint Powers Agreement provides that each member community contributes toward the annual operating budget based on its share of the total market value of all property within the watershed. The 2018 assessments to the members are also found in **Appendix**.

A \$133,770 operating budget was approved by the Commission for 2018. \$5,500 was projected as proceeds from application fees, \$270 from interest income, and \$128,000 as assessments to members.

The Pioneer-Sarah Creek Watershed Management Commission maintains a checking account at US Bank for current expenses and rolls uncommitted monies to its account in the 4M Fund, the Minnesota Municipal Money Market Fund.

An amendment of Minnesota Rules, Chapter 8410 became effective on July 13, 2015. One of the revisions to the Rules extends the annual audit due date to 180 days after the end of the fiscal year, in the case of the Pioneer-Sarah Creek Commission, to June 30, 2019. The 2018 Audit Report, which is being prepared by Johnson & Company, Ltd., Certified Public Accountants, will be included in the Commission's *2019 Annual Activity Report*. Since the 2017 Audit was included in the *2017 Annual Activity Report*, no audit report will be included in this report.

The Commission follows Rule 54 of the Government Accounting Standard Board (GASB) to report Fund Balances. The fund balance classifications include:

- > *Nonspendable* – amounts that are not in a spendable form. The Commission does not have any items that fit this category.
- > *Restricted* – amounts constrained to specific purposes by their providers. One example would be ad valorem levy funds received from the County for capital improvement projects. The unused portion of these funds must be set aside in a restricted account for similar projects. Another example would be BWSR Legacy Grant proceeds where the funds are received prior to the onset of a project and where any unused portion must be returned to the grantor.
- > *Committed* – amounts constrained to specific purposes by the Commission itself. An example would be residual funds carried over from one year to the next for Studies, Project Identification and Subwatershed Assessments.
- > *Assigned* – amounts the Commission intends to use for specific purposes. Most line items in the Commission's Operating Budget fall under this category.
- > *Unassigned* – amounts that are available for any purpose. These amounts are reported only in the general fund.

Amounts paid by the Commission per the 2018 Audit will be categorized as General Engineering, General Administration, Education, Programs, Projects, or Capital Projects.

2019 WORK PLAN

CONSULTANT SERVICES SELECTION

WHAT OUR CITIES HAVE BEEN DOING TO SUPPORT IMPROVED WATER QUALITY

APPENDICES

2018 Commissioners

| Member | Represented by | Responsibility | Phone/E-mail |
|--------------|---|----------------------|--|
| Greenfield | Tom Cook 7738 Commerce Circle Greenfield, MN 55373 | Treasurer Excomm | 763.477.4263 tomdebcook@msn.com |
| Independence | Joe Baker 5580 Lake Sarah Heights Drive Independence, MN 55357 | Chair Excomm | 612.868.8702 joebaker149@gmail.com |
| Loretto | Brenda Daniels 150 Meadow Drive Loretto, MN 55357 | Secretary Excomm | brenda199962@yahoo.com |
| Maple Plain | John Fay 5819 Three Oaks Avenue Maple Plain, MN 55359 | Vice Chair Excomm | 763.213.3271 jartfay@mchsi.com |
| Medina | Mike McLaughlin 2887 Lakeshore Avenue Maple Plain, MN 55359 | | 612.819.1655 mclaughlin110@gmail.com |
| Minnetrista | John Tschumperlin 7575 Susan Lane Mound, MN 55364 | | 612.791.1114 jtschumperlin@ci.minnetrista.mn.us |

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2018 Consultants

| Member | Represented by | Responsibility | Phone/E-mail |
|------------------------|--|--|--|
| James Kujaawa | Hennepin County Dept. of Env. and Energy | Technical Advisor TAC | 612.348.7338 James.Kujaawa@hennepin.us |
| Kirsten Barta | 701 Fourth Ave S, Suite 700 Minneapolis, MN 55415 | Rural Conservation Specialist | 612.543.3373 Kirsten.barta@hennepin.us |
| Judie Anderson | JASS 3235 Fernbrook Lane Plymouth, MN 55447 | Administrator Deputy Treasurer Excomm, TAC | 763.553.1144 judie@jass.biz amy@jass.biz |
| Joel Iamnik | Campbell Knutson PA Grand Oak Office Center I 860 Blue Gentian Road Suite 290 Eagan, MN 55121 | Legal Counsel | 651.234.6219 jiamnik@ck-law.com |
| Brian Vlach | Three Rivers Park District 12615 County Road 9 Plymouth, MN 55441 | Water Quality TAC | 763.694.7846 Bvlach@threeriversparkdistrict.org |
| Johnson & Co., Ltd. | 3255 Fernbrook Lane Plymouth, MN 55447 | Auditor | 952.525.9500 |
| Unnamed | | Wetland monitoring consultant | |

item 07b

2018 Consultants

| Member | Represented by | Responsibility | Phone/E-mail |
|----------------|--|-----------------------------------|--|
| James Kujiwa | Hennepin County Dept. of Environment and Energy | Professional TAC | 612.348.7338 james.kujiwa@hennepin.us |
| Kirsten Barta | 701 Fourth Ave S, Suite 700 Minneapolis, MN 55415 | Professional TAC | |
| Karl Hakanson | Hennepin County Extension Educator - Agriculture Urban Research & Outreach- Engagement Ctr 2001 Plymouth Avenue North Minneapolis, MN 55411 | Professional TAC | 612.624.7948 |
| Brian Vlach | Three Rivers Park District 12615 County Road 9 Plymouth, MN 55441 | Professional TAC | 763-694-7846 Brian.Vlach@ThreeRiversParks.org |
| Ed Mathiesen | Wenck Associates 7500 Highway 55 Suite 300 Golden Valley, MN 55427 | Professional TAC | 763.252.6851 emathiesen@wenck.com |
| Judie Anderson | JASS 3235 Fernbrook Lane Plymouth, MN 55447 | Professional TAC Admin Support | 763.553.1144 judie@jass.biz amy@jass.biz |

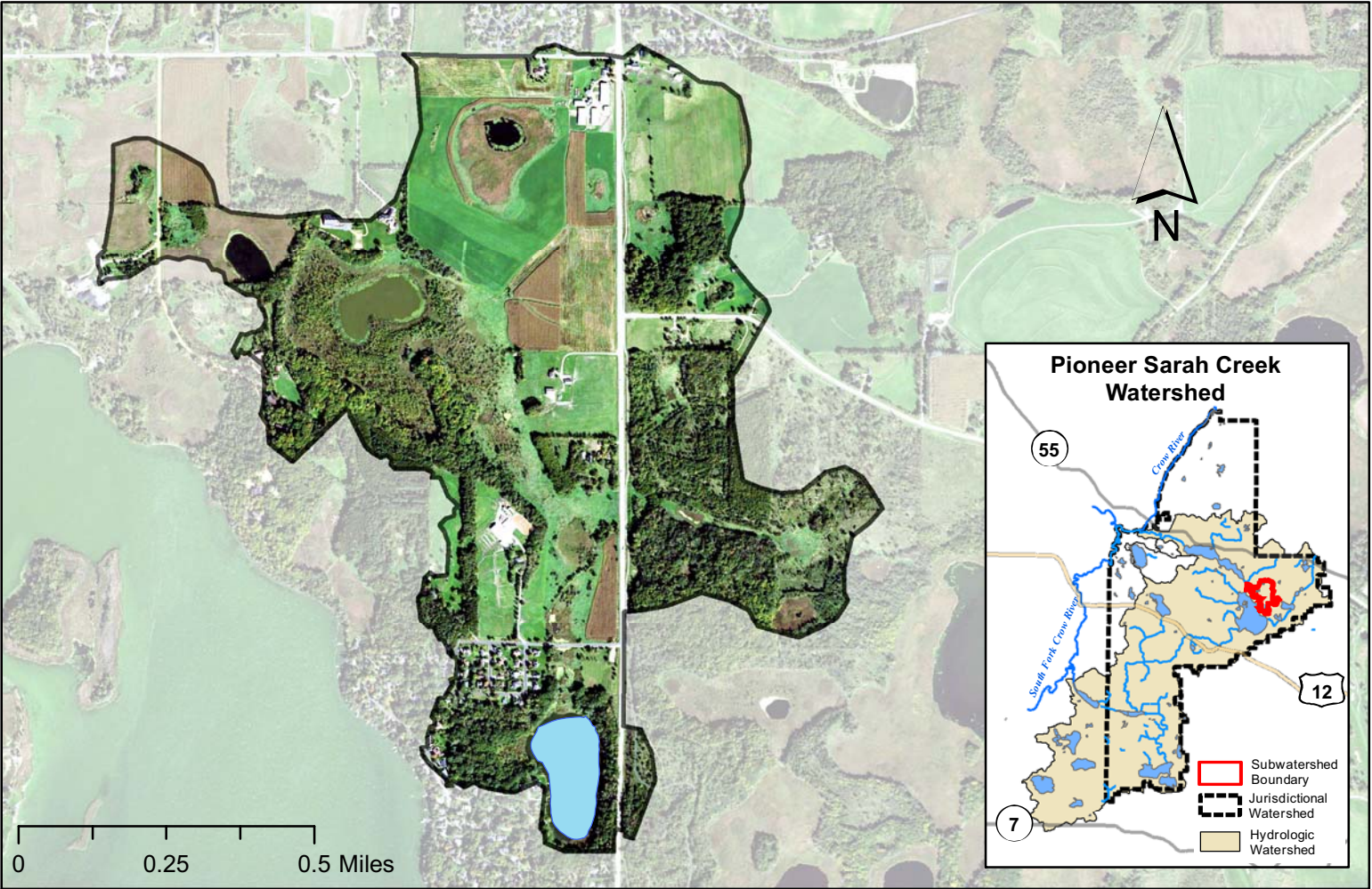
Local Water Management Plan Requirements

Local water management plans adopted by member cities pursuant to Minnesota Statutes, Section 103B.235 shall be consistent with the Commission's Third Generation Watershed Management Plan. Local plans must comply with MN Statutes, Section 103B.235 and MN Rules 8410 regarding local plan content.

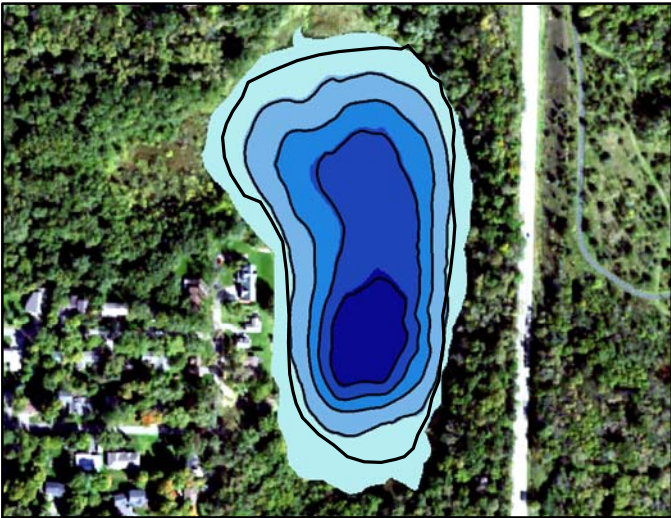
- Update the existing and proposed physical environment and land use. Information from previous plans that has not changed may be referenced and summarized but does not have to be repeated. Local plans may adopt sections of the Commission's Plan's Inventory and Condition Assessment by reference unless the city has more recent information, such as revised figures and data.
- Explain how the goals and policies, and rules and standards in the Commission's Plan will be implemented at the local level, including any necessary modifications of local ordinances, policies, and practices and specifically addressing adoption and enforcement of a manure management ordinance.
- Show how the member city will take action to achieve the load reductions and other actions identified in and agreed to in TMDL Implementation Plans and the WRAPS study, including identifying known upcoming projects including street or highway reconstruction projects that will provide opportunities to include load and volume reduction BMPs.
- Show how the member city will, through an executed and recorded maintenance and inspection agreement, inspect or cause to be inspected and documented at least every five years privately owned permanent BMPs installed to meet the goals and policies and rules and standards of the Commission's Plan, and the actions the member city will take to assure that the BMPs are maintained and operated as designed.
- Update existing or potential water resource related problems and identify nonstructural, programmatic, and structural solutions, including those program elements detailed in MN Rules 8410.0100, Subp. 1-6.
- Summarize the estimated cost of implementation and analyze the member city's ability to finance the recommended actions.
- Set forth an implementation program including a description of adoption or amendment of official controls and local policies necessary to implement the Rules and Standards; programs; policies; and a capital improvement plan.

Lake Ardmore Watershed Map

item 07c

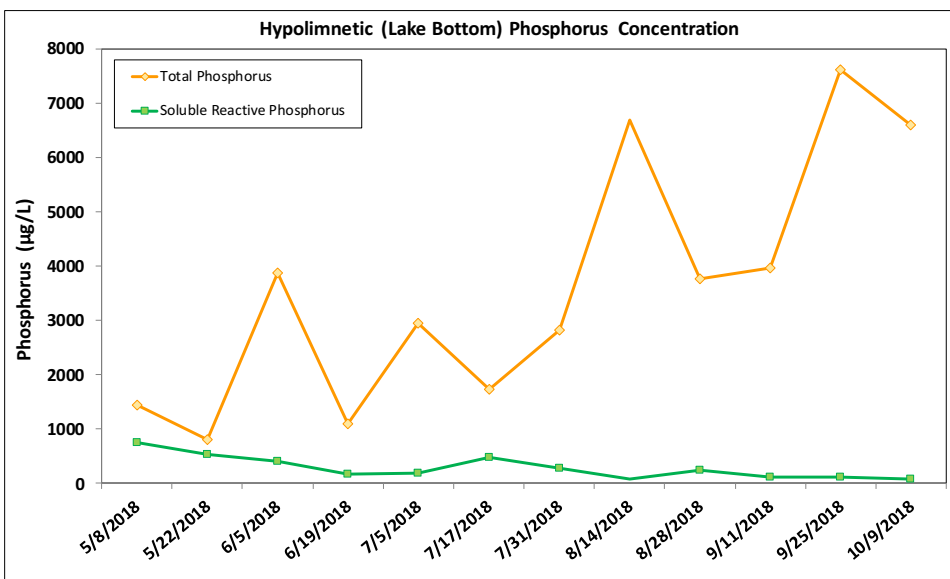
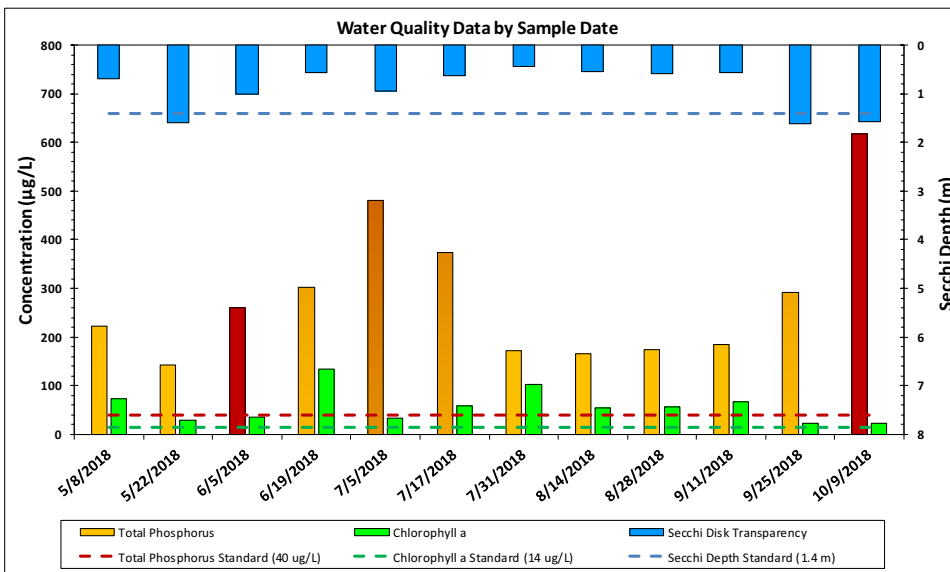
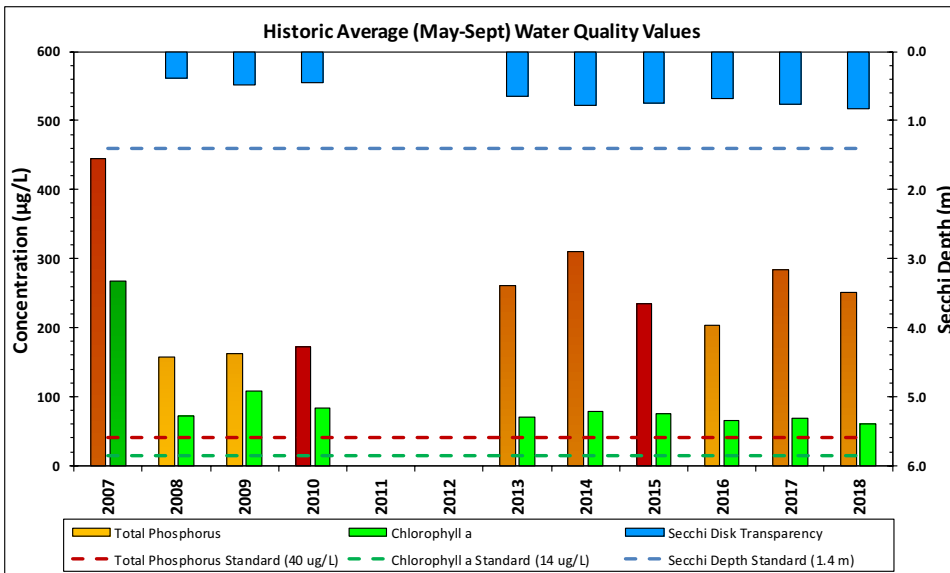


Lake Ardmore Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|------------------|
| DNR # | 27015300 |
| Watershed Area | 514 Acres |
| Lake Area | 13.5 Acres |
| Percent Littoral Area | 75% |
| Average Depth | 9.4 ft. |
| Maximum Depth | 24.4 ft. |
| Watershed Area:Lake Area | 38:1 |
| Impairment Classification | Needs Assessment |
| Classification | Deep Lake |



| Ardmore Water Quality Report Card | | | | |
|-----------------------------------|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2007 | F | F | F | F |
| 2008 | F | D | F | F |
| 2009 | F | F | F | F |
| 2010 | F | F | F | F |
| 2011 | | | | |
| 2012 | | | | |
| 2013 | F | D | F | F |
| 2014 | F | F | D | F |
| 2015 | F | D | D | D- |
| 2016 | F | D | F | F |
| 2017 | F | D | D | D- |
| 2018 | F | D | D | D- |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

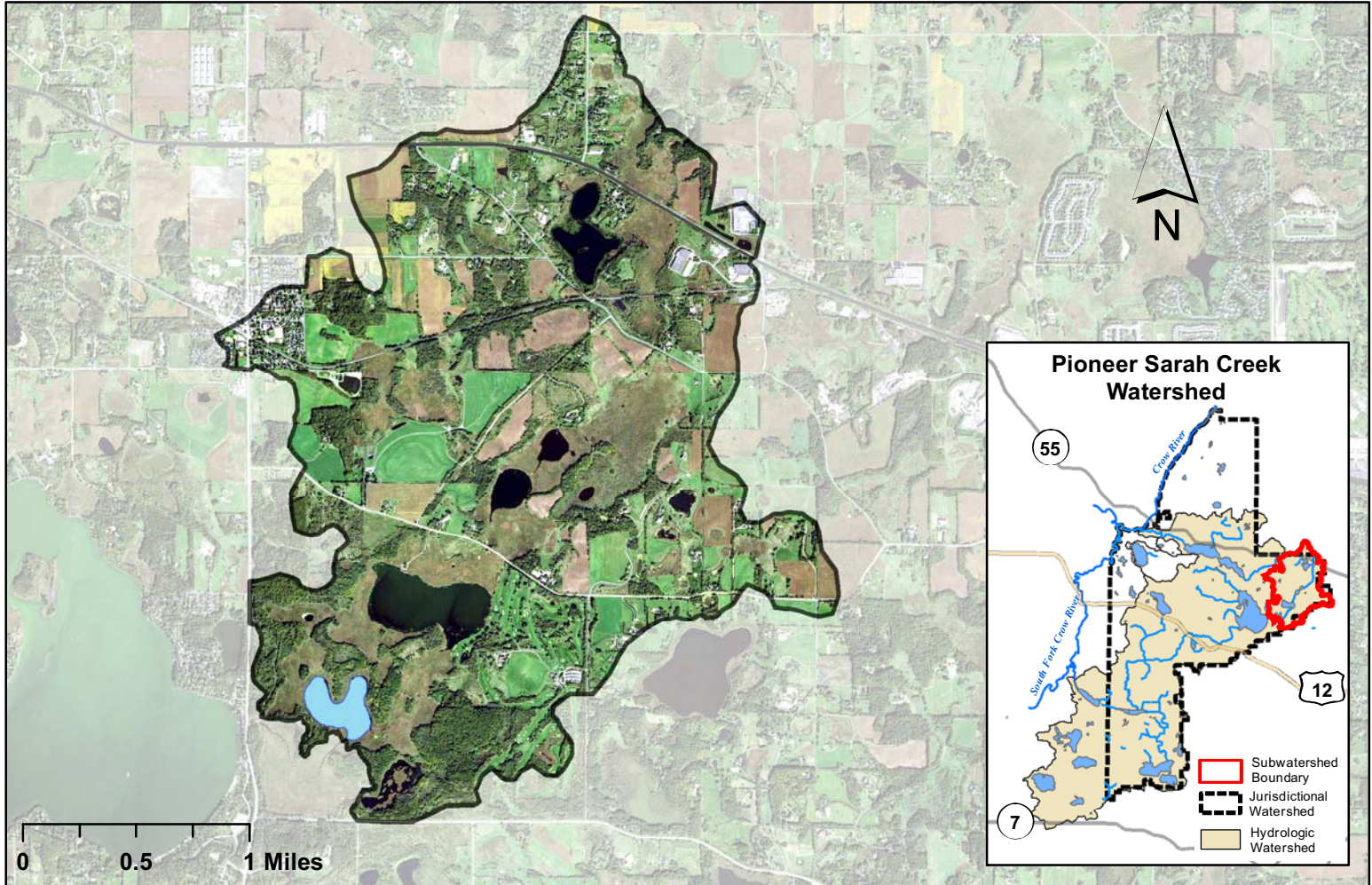


Division of Water Resources

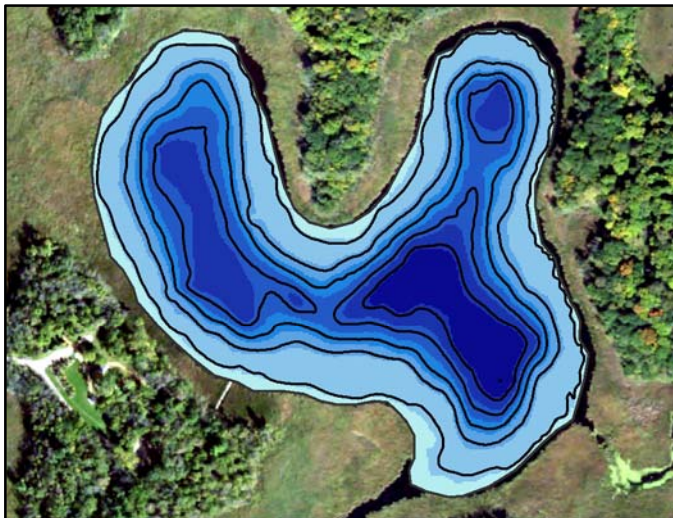
December 2018

Half Moon Lake Watershed Map

item 07c

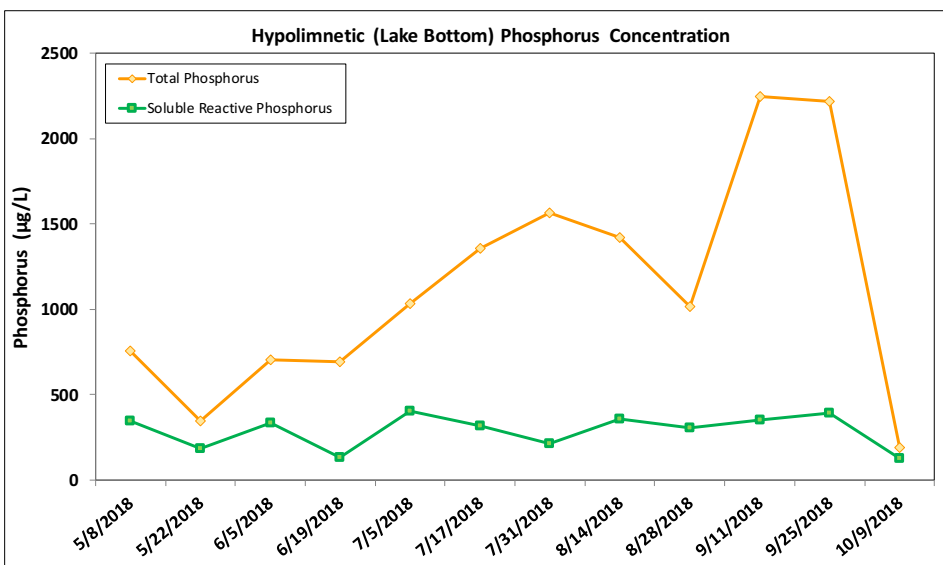
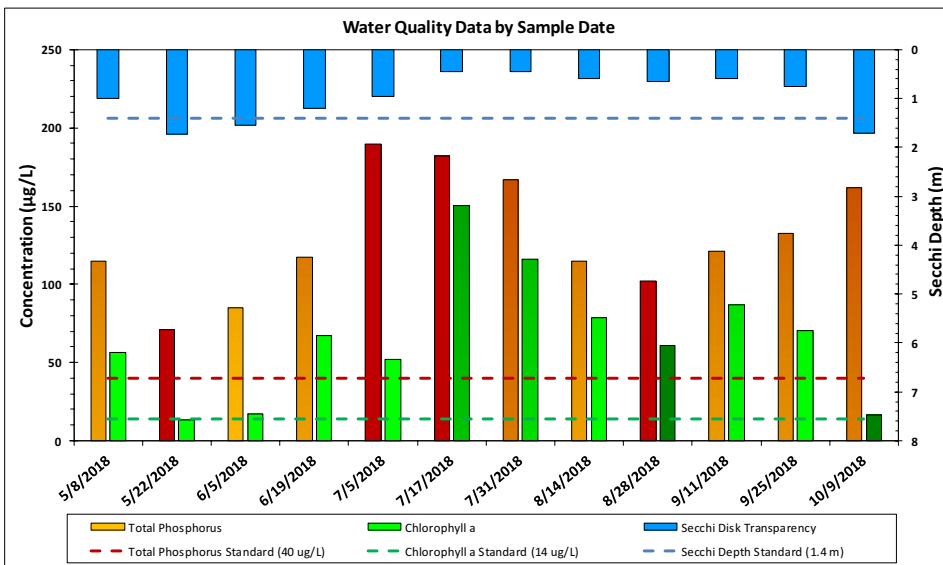
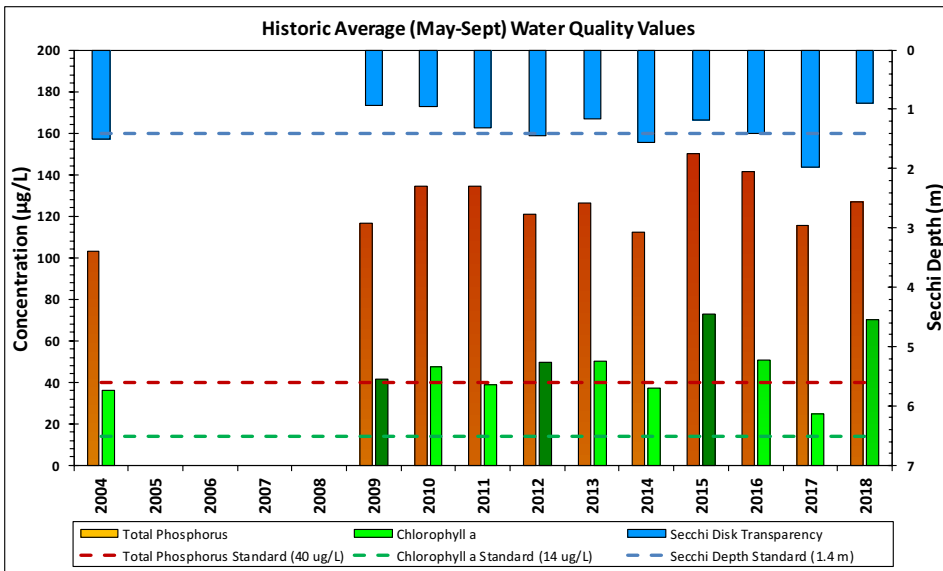


Half Moon Lake Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|---------------|
| DNR # | 27015200 |
| Watershed Area | 3,258 Acres |
| Lake Area | 31.1 Acres |
| Percent Littoral Area | 11% |
| Average Depth | 13.4 ft. |
| Maximum Depth | 30.3 ft. |
| Watershed Area:Lake Area | 104.7:1 |
| Impairment Classification | Proposed 2016 |
| Classification | Deep Lake |



| Half Moon Lake Water Quality Report Card | | | | |
|--|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2004 | D | C | C | C- |
| 2005 | | | | |
| 2006 | | | | |
| 2007 | | | | |
| 2008 | | | | |
| 2009 | D | C | D | D+ |
| 2010 | D | C | D | D+ |
| 2011 | D | C | C | C- |
| 2012 | D | D | C | D+ |
| 2013 | D | D | D | D |
| 2014 | D | C | C | C- |
| 2015 | D | D | D | D |
| 2016 | D | D | C | D+ |
| 2017 | D | C | C | C- |
| 2018 | D | D | D | D |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

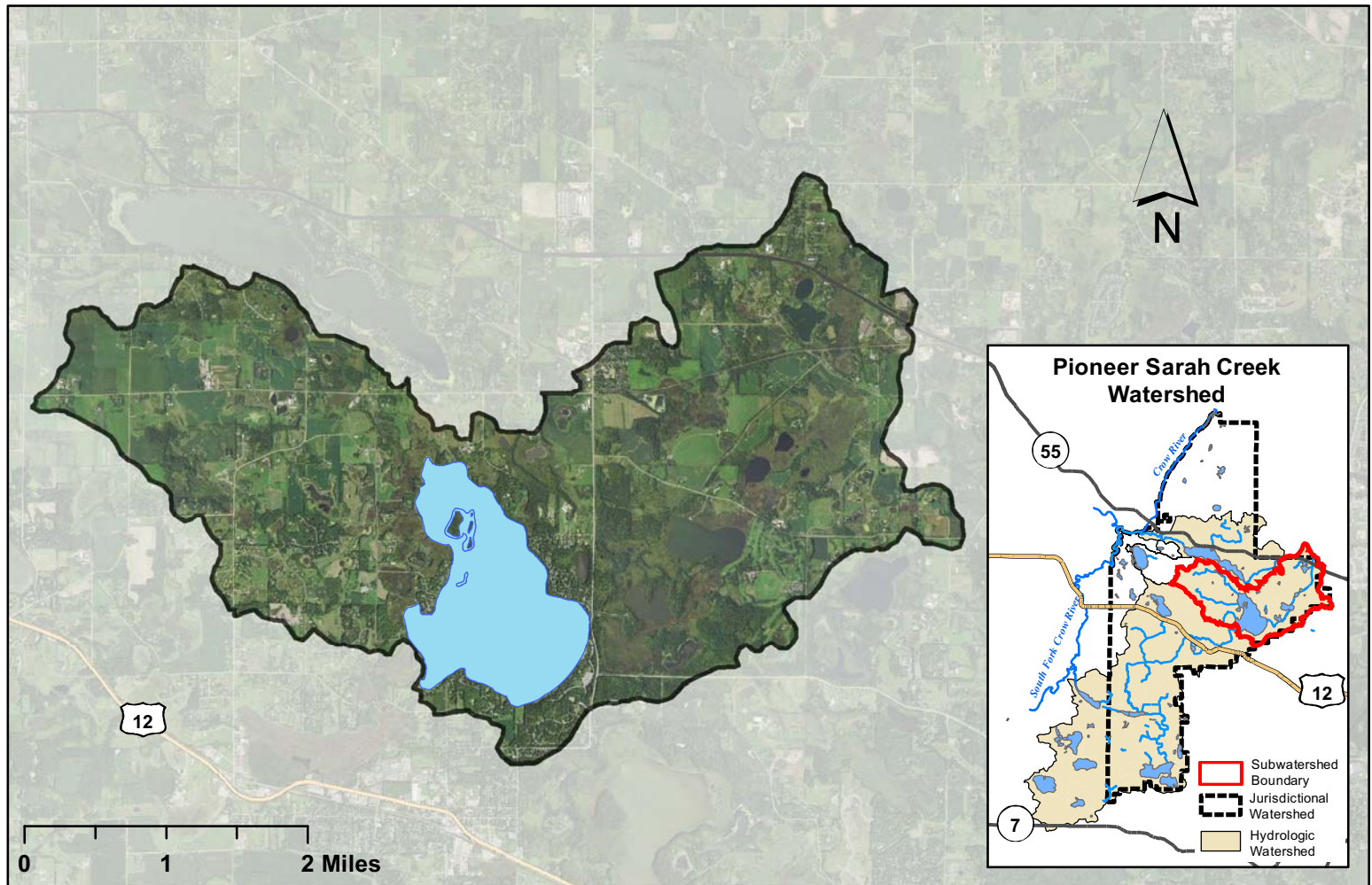


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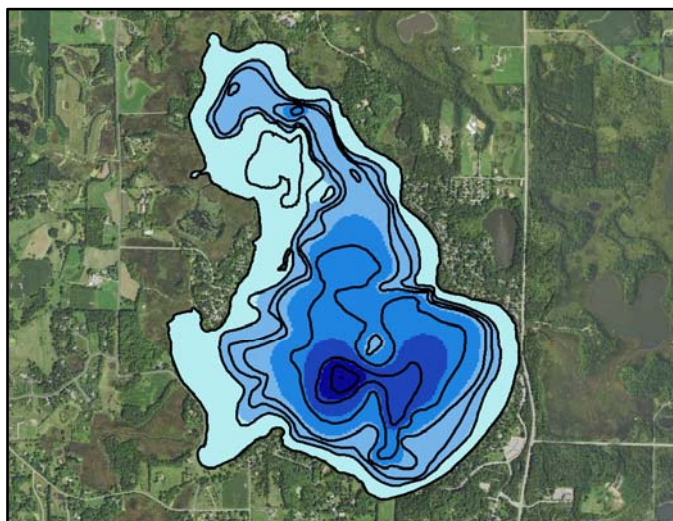
December 2018

Lake Independence Watershed Map

item 07c

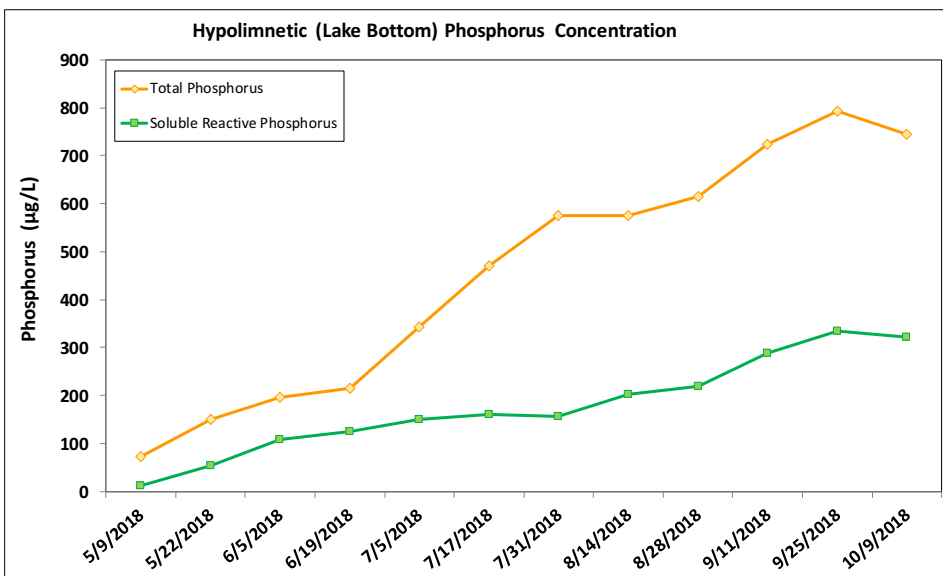
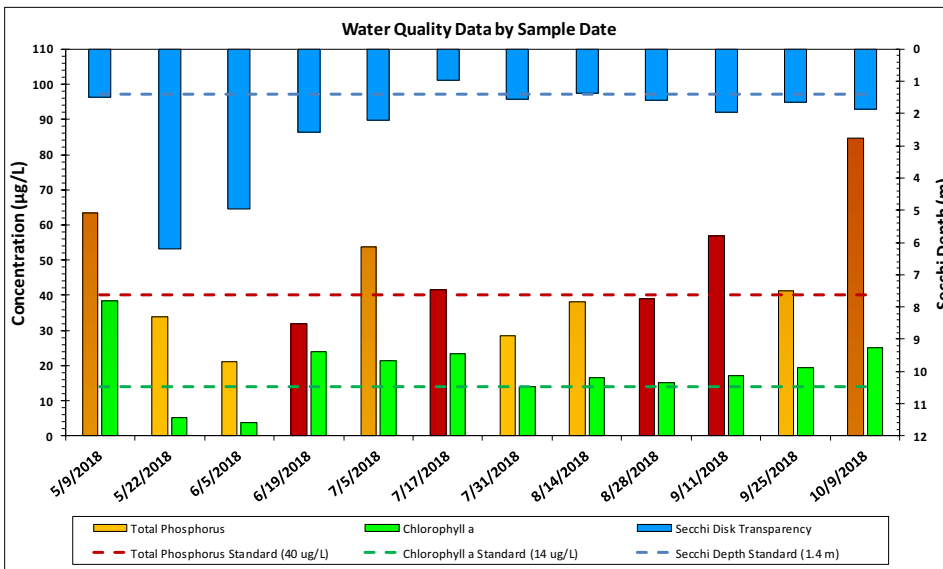
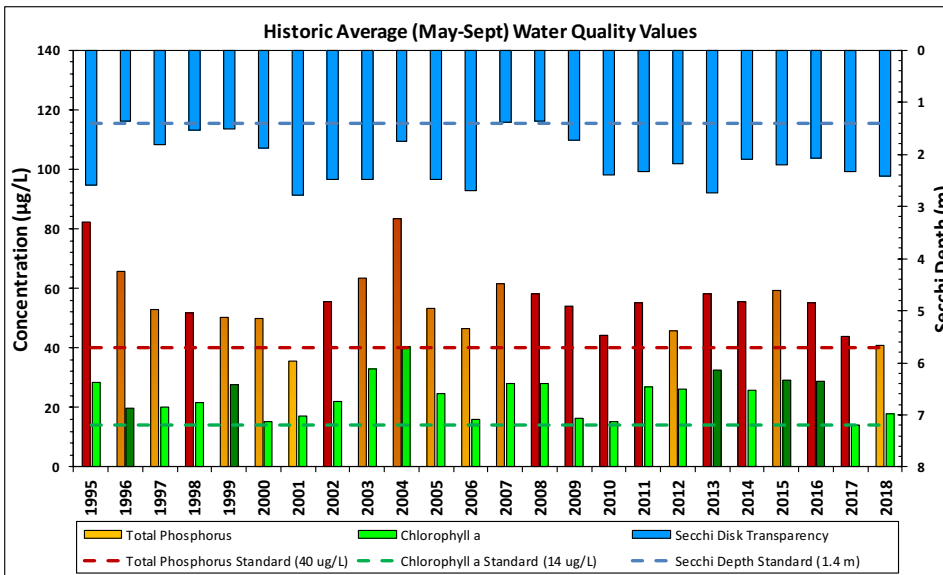


Lake Independence Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|-----------------------|
| DNR # | 27017600 |
| Watershed Area | 7,632 Acres |
| Lake Area | 832 Acres |
| Percent Littoral Area | 51% |
| Average Depth | 15.9 ft. |
| Maximum Depth | 58 ft. |
| Watershed Area:Lake Area | 9.2:1 |
| Impairment Classification | Excess Nutrients 2002 |
| Classification | Deep Lake |



| Lake Independence Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 1995 | D | C | B | C |
| 1996 | C | B | C | C+ |
| 1997 | C | B | C | C+ |
| 1998 | C | C | C | C |
| 1999 | C | C | C | C |
| 2000 | C | B | C | C+ |
| 2001 | C | B | B | B- |
| 2002 | C | C | B | C+ |
| 2003 | C | C | B | C+ |
| 2004 | D | C | C | C- |
| 2005 | C | C | B | C+ |
| 2006 | C | B | B | B- |
| 2007 | C | C | C | C |
| 2008 | C | C | C | C |
| 2009 | C | B | C | C+ |
| 2010 | C | B | B | B- |
| 2011 | C | C | B | C+ |
| 2012 | C | C | C | C |
| 2013 | C | C | B | C+ |
| 2014 | C | C | C | C |
| 2015 | C | C | C | C |
| 2016 | C | C | C | C |
| 2017 | C | B | B | B- |
| 2018 | C | B | B | B- |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

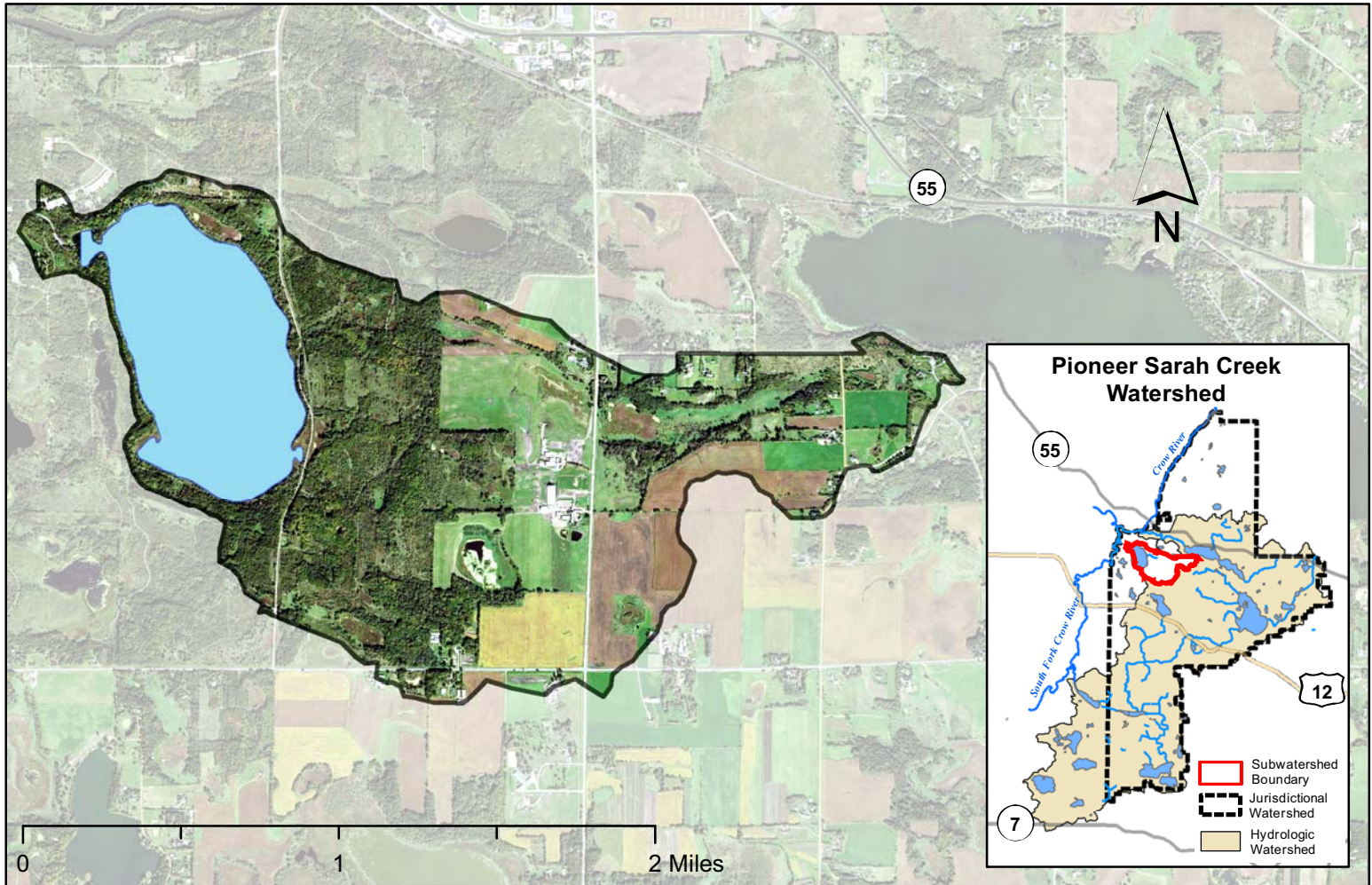


Division of Water Resources

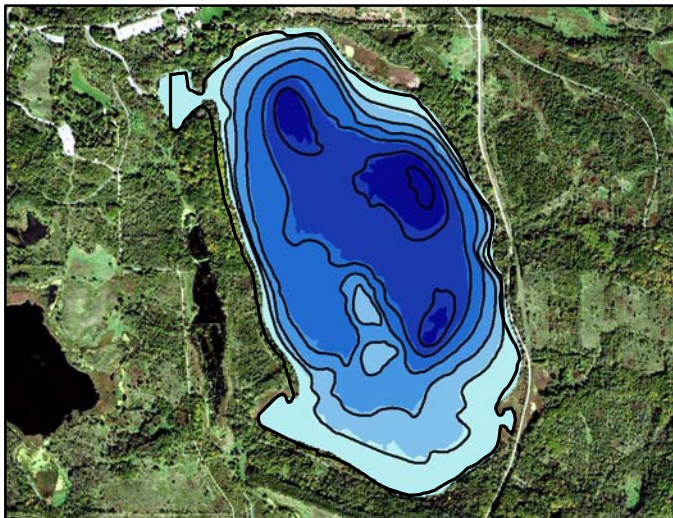
December 2018

Lake Rebecca Watershed Map

item 07c

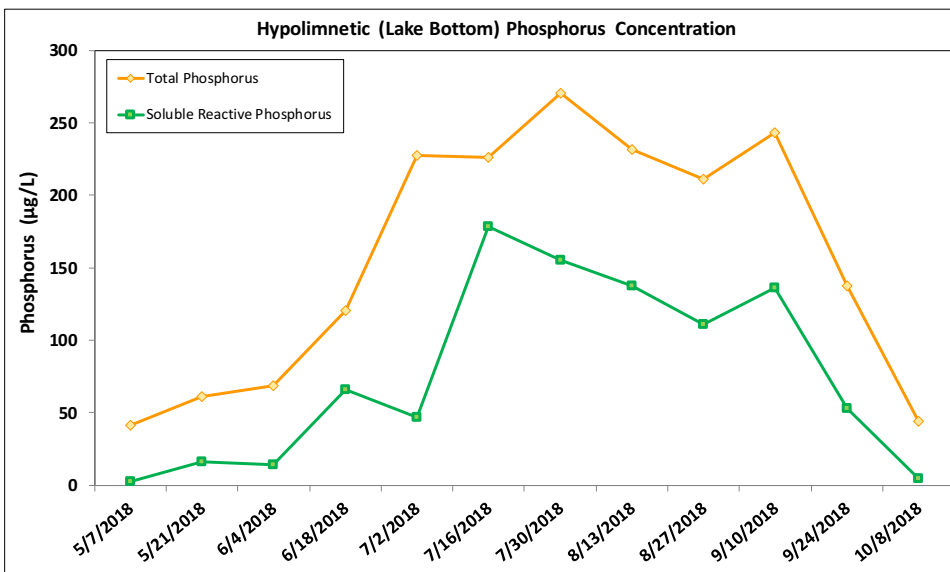
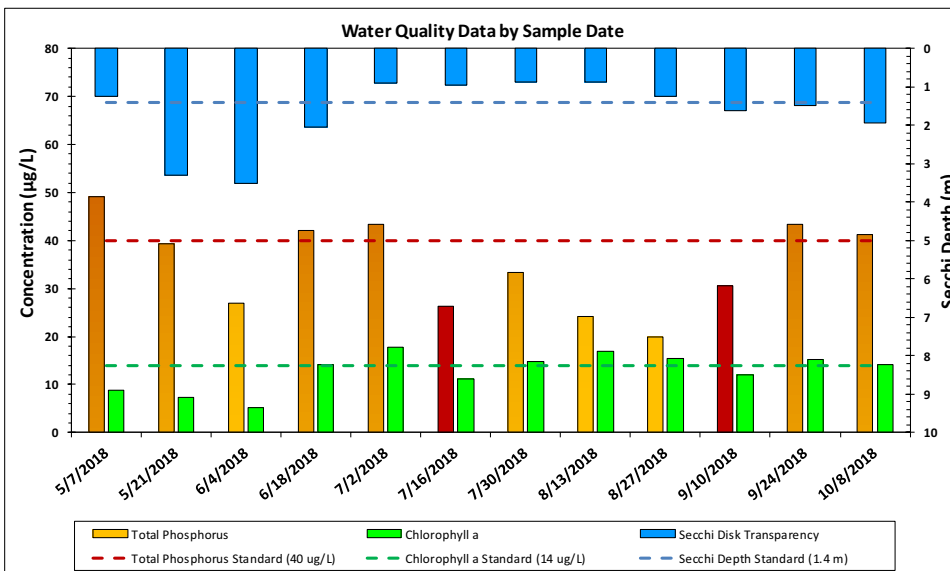
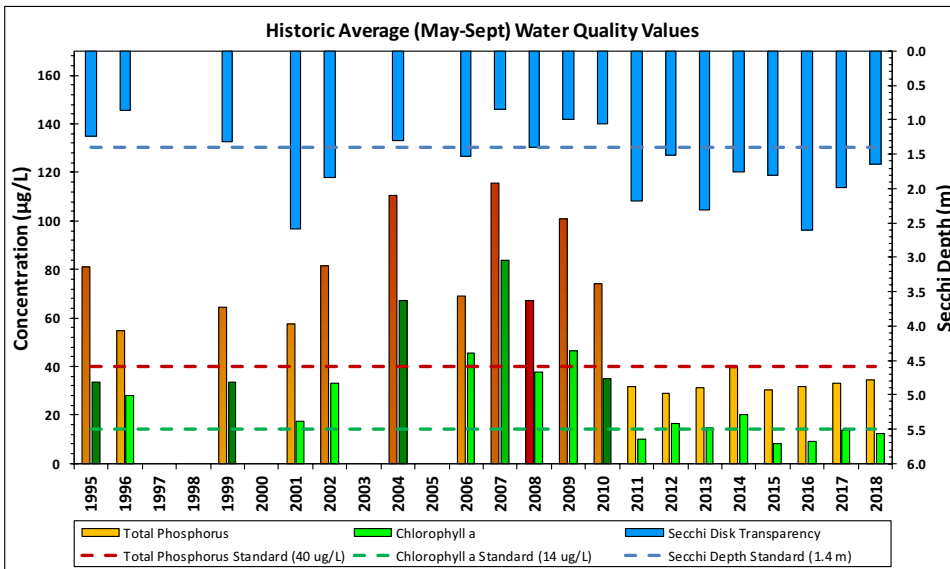


Lake Rebecca Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|-----------------------|
| DNR # | 27019200 |
| Watershed Area | 1,277 Acres |
| Lake Area | 261 Acres |
| Percent Littoral Area | 50% |
| Average Depth | 14.4 ft. |
| Maximum Depth | 31.1 ft. |
| Watershed Area:Lake Area | 4.9:1 |
| Impairment Classification | Excess Nutrients 2008 |
| Classification | Deep Lake |



| Lake Rebecca Water Quality Report Card | | | | |
|--|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 1995 | D | C | C | C- |
| 1996 | C | C | D | C- |
| 1997 | | | | |
| 1998 | | | | |
| 1999 | C | C | C | C |
| 2000 | | | | |
| 2001 | C | B | B | B- |
| 2002 | D | C | C | C- |
| 2003 | | | | |
| 2004 | D | D | C | D+ |
| 2005 | | | | |
| 2006 | D | C | C | C- |
| 2007 | D | F | D | D- |
| 2008 | C | C | C | C |
| 2009 | D | C | D | D+ |
| 2010 | D | C | D | D+ |
| 2011 | B | B | C | B- |
| 2012 | B | B | C | B- |
| 2013 | B | B | B | B |
| 2014 | C | C | C | C |
| 2015 | B | A | C | B |
| 2016 | B | A | B | B+ |
| 2017 | C | B | C | C+ |
| 2018 | C | B | C | C+ |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

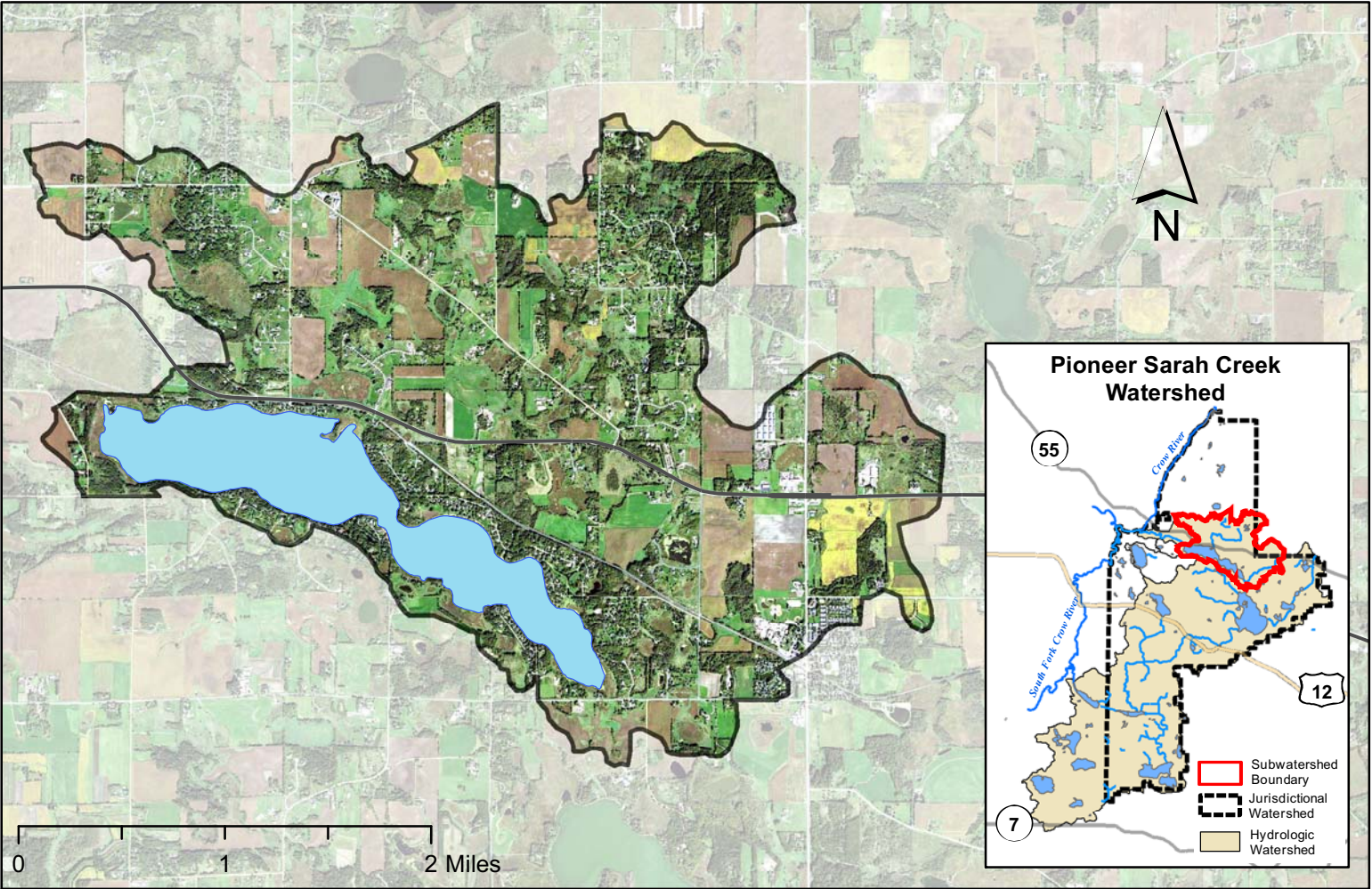


Division of Water Resources

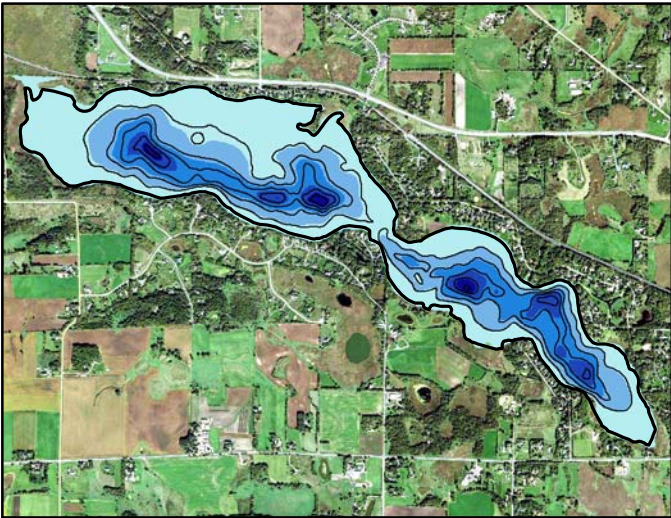
December 2018

Lake Sarah Watershed Map

item 07c

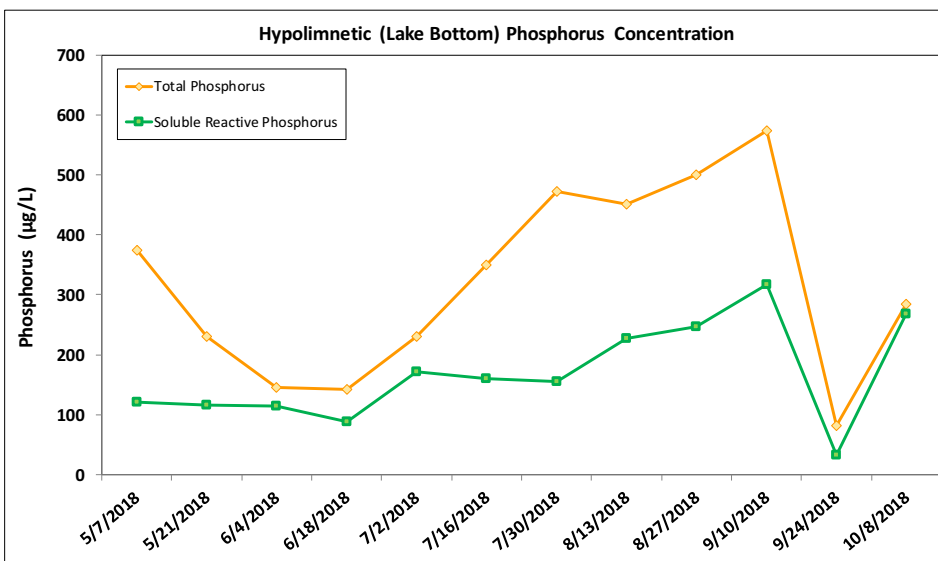
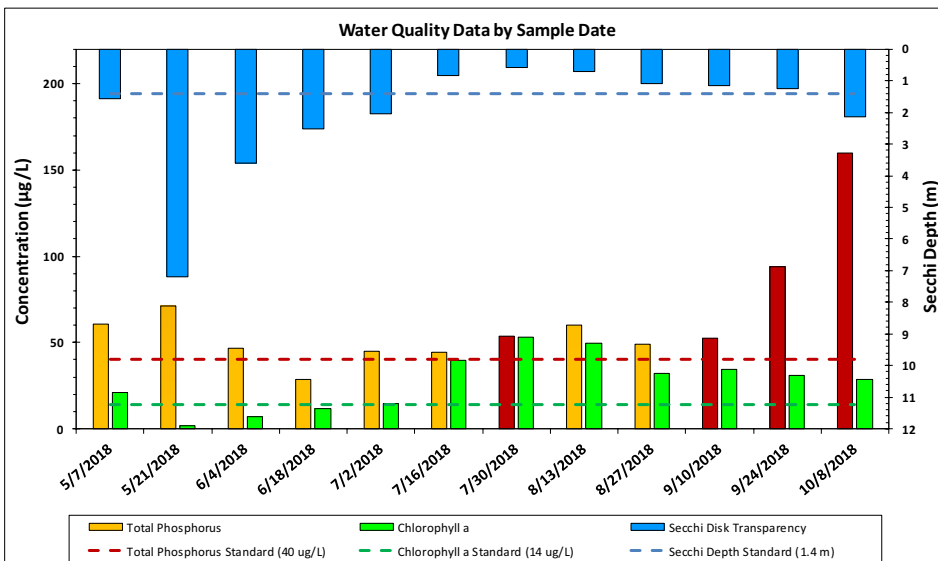
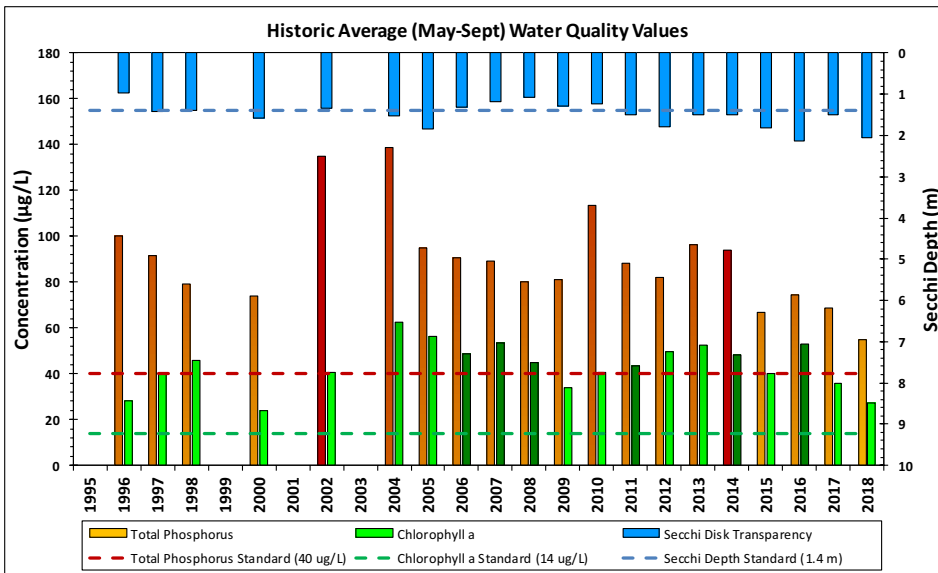


Lake Sarah Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|-----------------------|
| DNR # | 27019100 |
| Watershed Area | 4,519 Acres |
| Lake Area | 536 Acres |
| Percent Littoral Area | 61% |
| Average Depth | 13.7 ft. |
| Maximum Depth | 49.9 ft. |
| Watershed Area:Lake Area | 8.4:1 |
| Impairment Classification | Excess Nutrients 2006 |
| Classification | Deep Lake |



| Lake Sarah Water Quality Report Card | | | | |
|--------------------------------------|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 1995 | | | | |
| 1996 | D | C | D | D+ |
| 1997 | D | C | C | C- |
| 1998 | D | C | C | C- |
| 1999 | | | | |
| 2000 | D | C | C | C- |
| 2001 | | | | |
| 2002 | D | C | C | C- |
| 2003 | | | | |
| 2004 | D | D | C | D+ |
| 2005 | D | D | C | D+ |
| 2006 | D | D | C | D+ |
| 2007 | D | D | D | D |
| 2008 | D | C | D | D+ |
| 2009 | D | C | C | C- |
| 2010 | D | C | C | C- |
| 2011 | D | C | C | C- |
| 2012 | D | D | C | D+ |
| 2013 | D | D | C | D+ |
| 2014 | D | D | C | D+ |
| 2015 | C | C | C | C |
| 2016 | D | D | C | D+ |
| 2017 | D | C | C | C- |
| 2018 | C | C | C | C |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

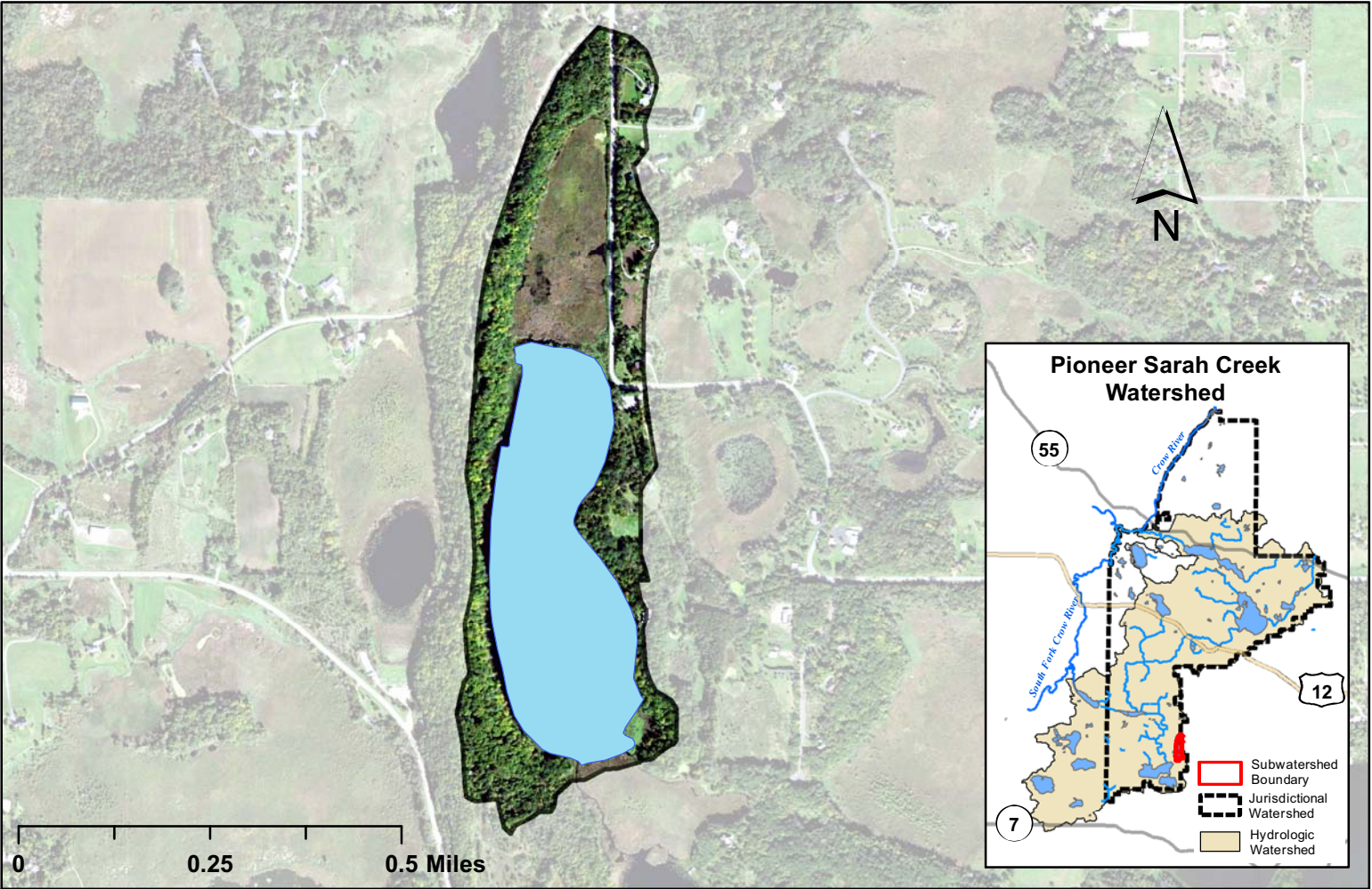


Division of Water Resources

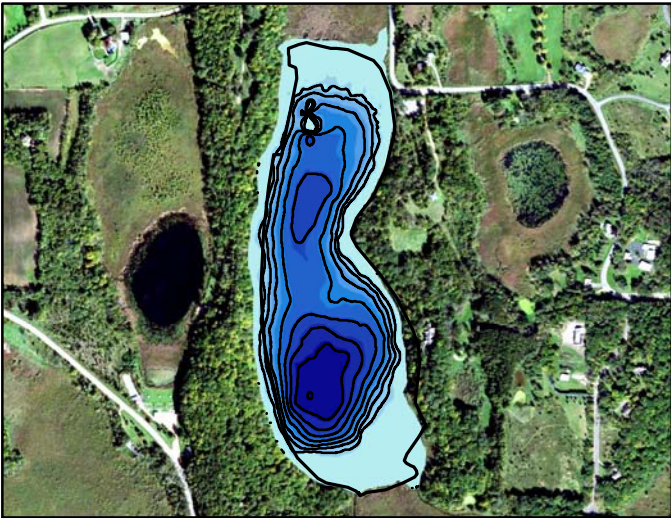
December 2018

Little Long Lake Watershed Map

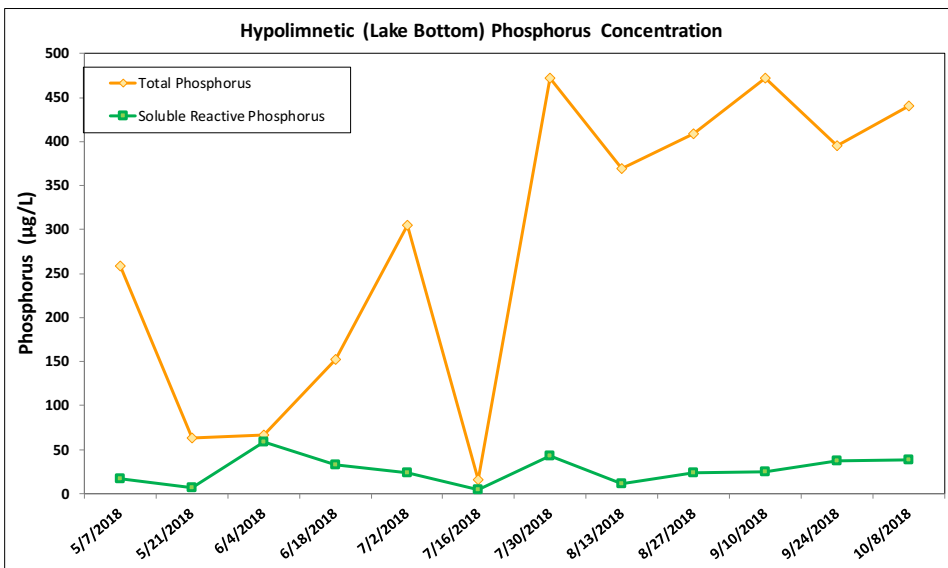
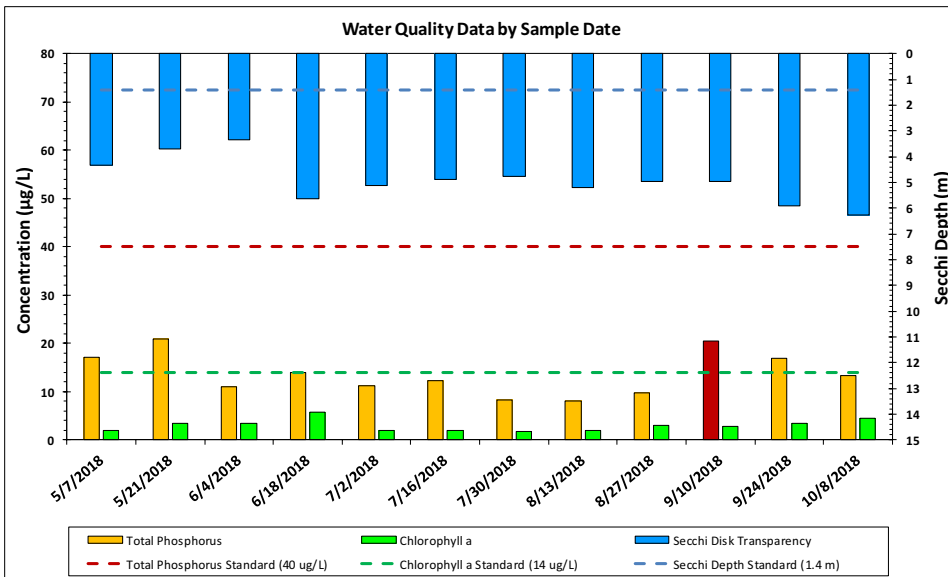
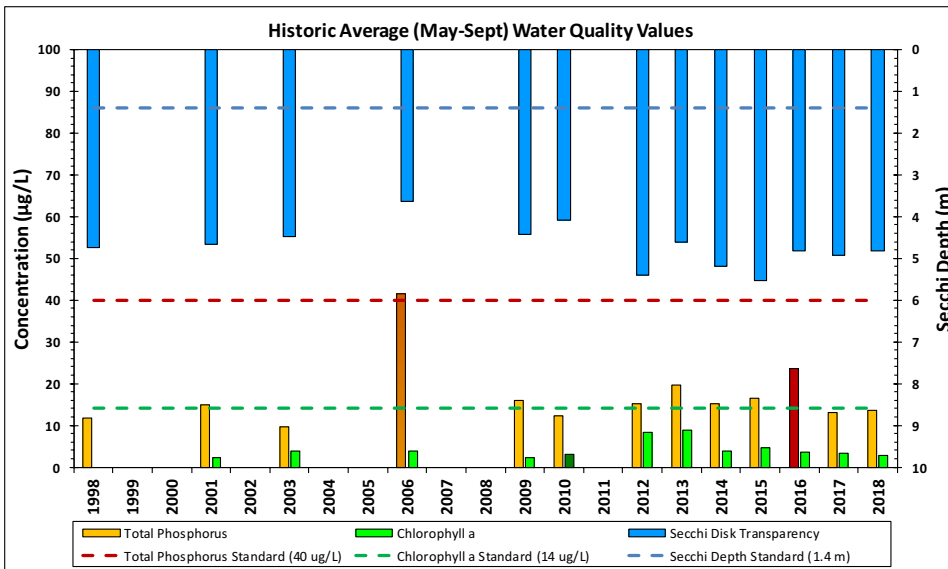
item 07c



Little Long Lake Bathymetry



| Lake and Watershed Characteristics | |
|------------------------------------|------------|
| DNR # | 27017900 |
| Watershed Area | 92 Acres |
| Lake Area | 53.5 Acres |
| Percent Littoral Area | 40% |
| Average Depth | 27.8 ft. |
| Maximum Depth | 80.5 ft. |
| Watershed Area:Lake Area | 1.7:1 |
| Impairment Classification | None |
| Classification | Deep Lake |

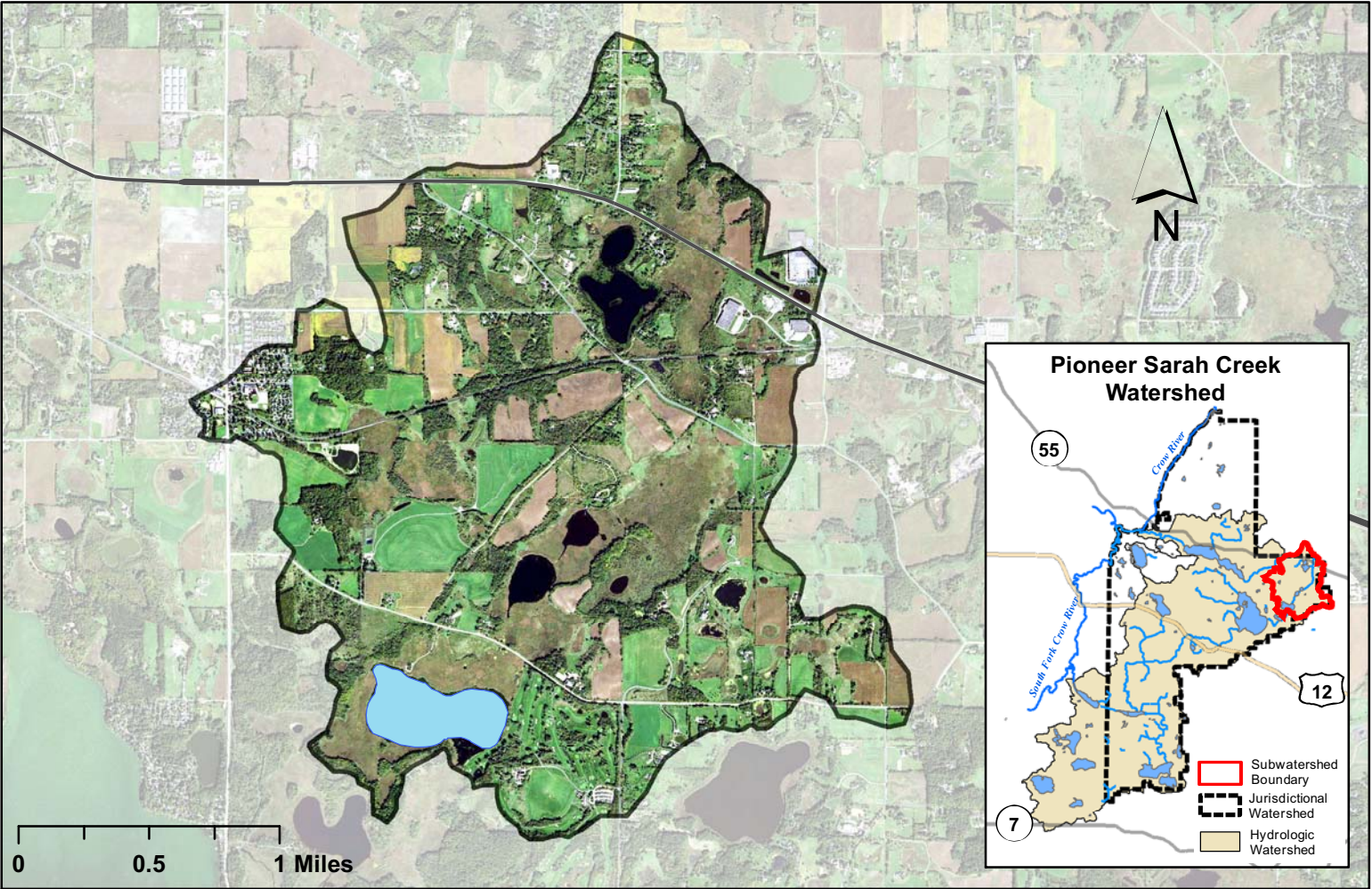


| Little Long Lake Water Quality Report Card | | | | |
|--|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 1998 | A | A | A | A |
| 1999 | | | | |
| 2000 | | | | |
| 2001 | A | A | A | A |
| 2002 | | | | |
| 2003 | A | A | A | A |
| 2004 | | | | |
| 2005 | | | | |
| 2006 | C | A | A | B+ |
| 2007 | | | | |
| 2008 | | | | |
| 2009 | A | A | A | A |
| 2010 | A | A | A | A |
| 2011 | | | | |
| 2012 | A | A | A | A |
| 2013 | A | A | A | A |
| 2014 | A | A | A | A |
| 2015 | A | A | A | A |
| 2016 | B | A | A | A- |
| 2017 | A | A | A | A |
| 2018 | A | A | A | A |
| MPCA Standard | C | B | C | C+ |

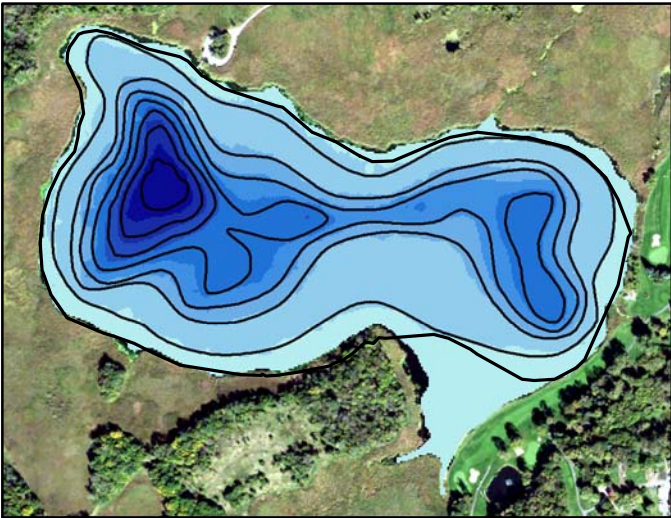
Met Council Grading System for Lake Water Quality

Spurzem Lake Watershed Map

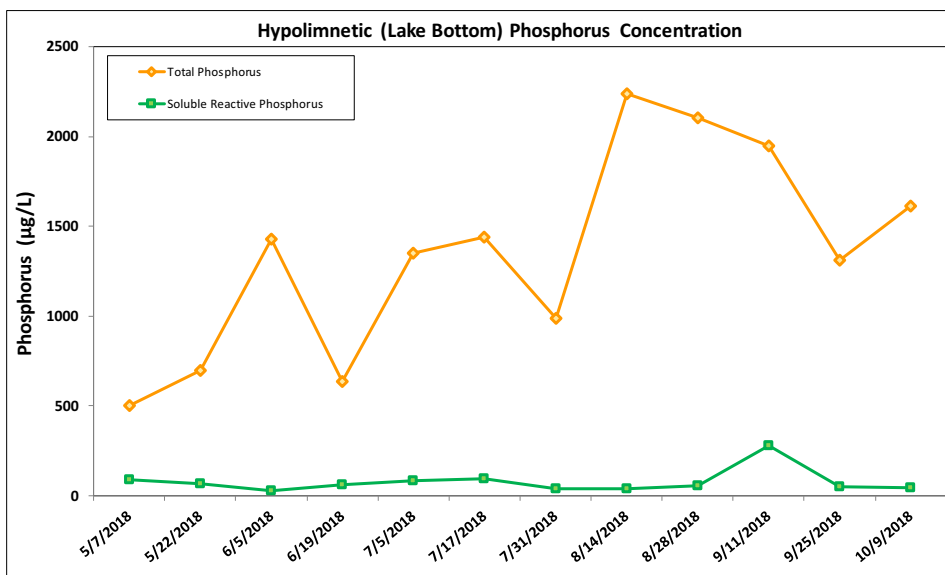
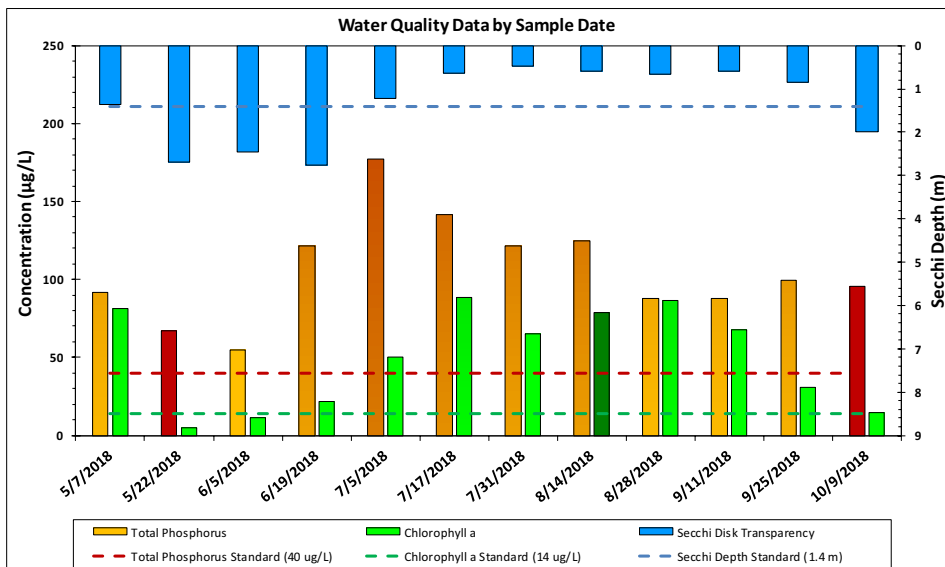
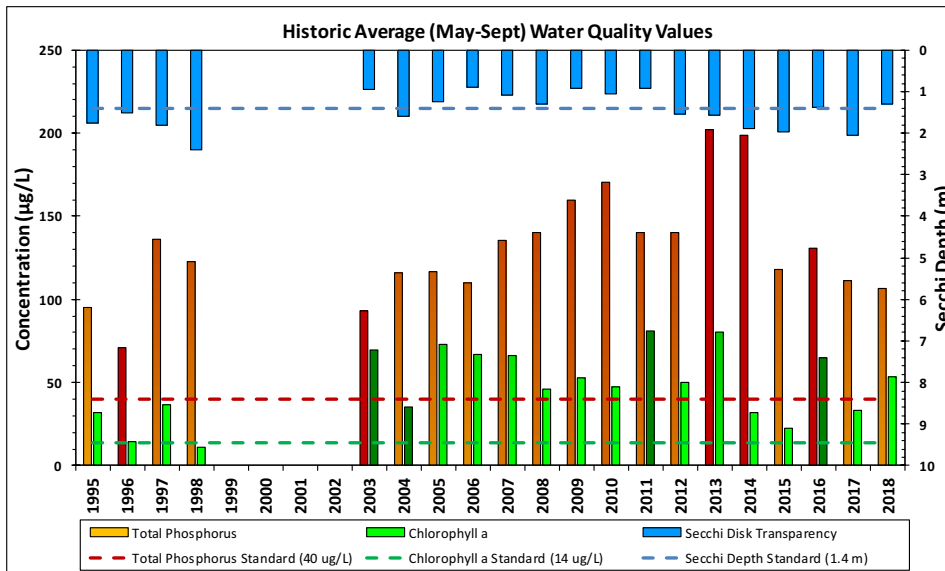
item 07c



Spurzem Lake Bathymetry



| Lake and Watershed Characteristics | |
|------------------------------------|-----------------------|
| DNR # | 27014900 |
| Watershed Area | 2,915 Acres |
| Lake Area | 78.6 Acres |
| Percent Littoral Area | 70% |
| Average Depth | 11.1 ft. |
| Maximum Depth | 37.4 ft. |
| Watershed Area:Lake Area | 37.1:1 |
| Impairment Classification | Excess Nutrients 2008 |
| Classification | Deep Lake |



| Spurzem Lake Water Quality Report Card | | | | |
|--|----|--------|--------|-----------|
| Year | TP | Chl -a | Secchi | Avg Grade |
| 1995 | D | C | C | C- |
| 1996 | D | B | C | C |
| 1997 | D | C | C | C- |
| 1998 | D | B | B | C+ |
| 1999 | | | | |
| 2000 | | | | |
| 2001 | | | | |
| 2002 | | | | |
| 2003 | D | D | D | D |
| 2004 | D | C | C | C- |
| 2005 | D | D | C | D+ |
| 2006 | D | D | D | D |
| 2007 | D | D | D | D |
| 2008 | D | C | C | C- |
| 2009 | F | D | D | D- |
| 2010 | F | C | D | D |
| 2011 | D | F | D | D- |
| 2012 | D | D | C | D+ |
| 2013 | F | F | C | D- |
| 2014 | F | C | C | D+ |
| 2015 | D | C | C | C- |
| 2016 | D | D | C | D+ |
| 2017 | D | C | C | C- |
| 2018 | D | D | C | D+ |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

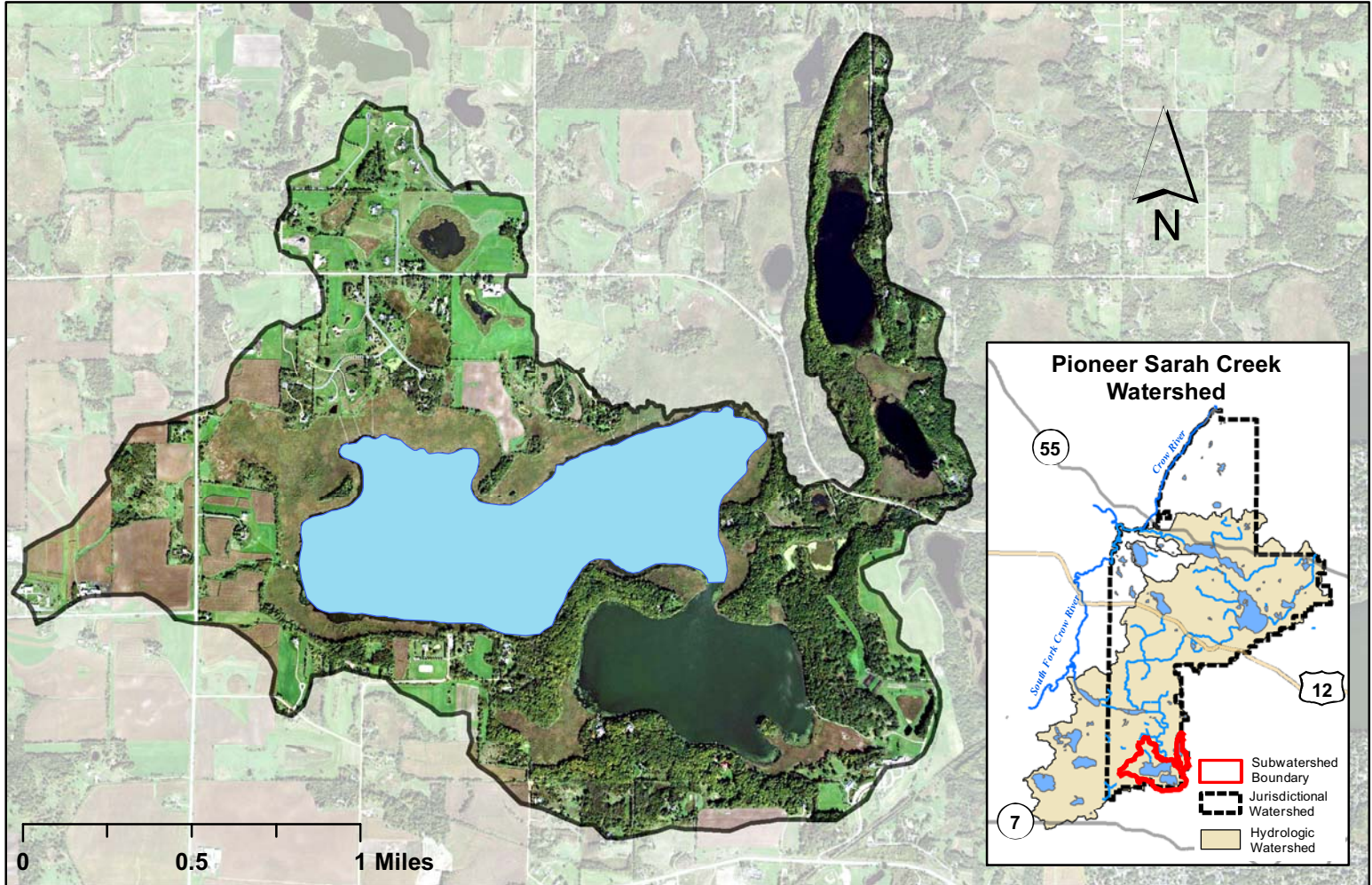


Division of Water Resources

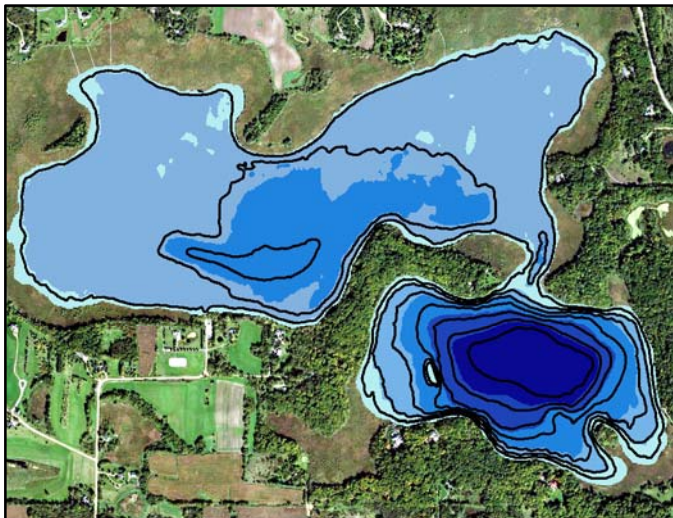
December 2018

Whaletail North Watershed Map

item 07c

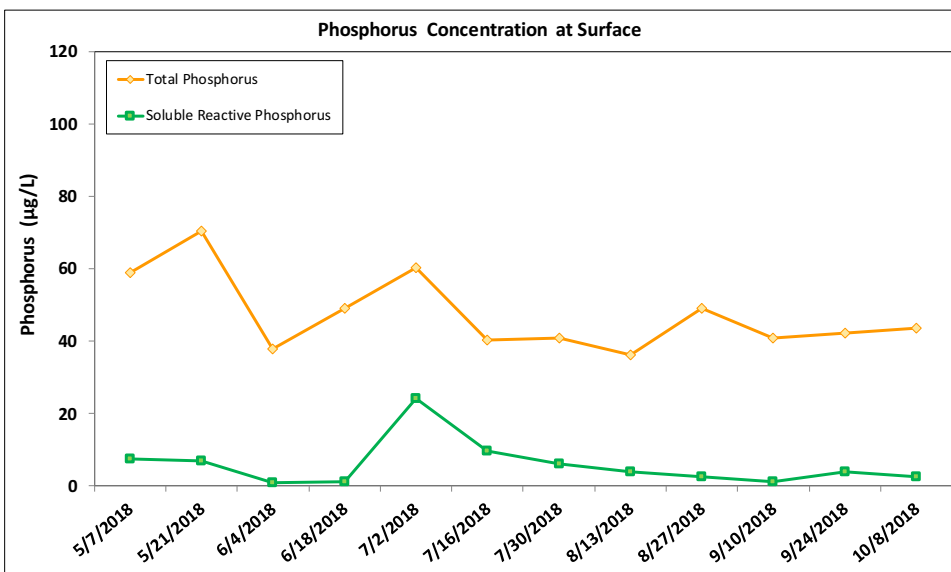
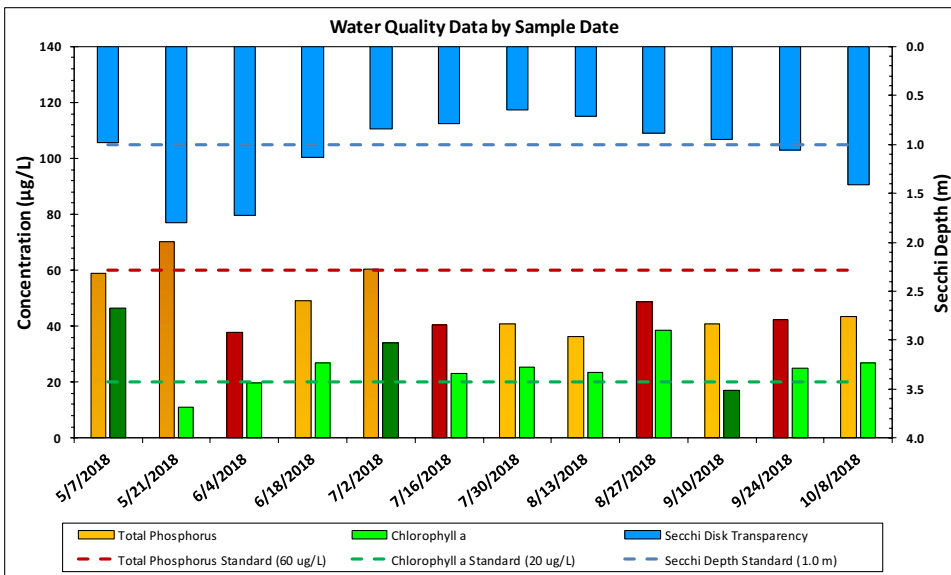
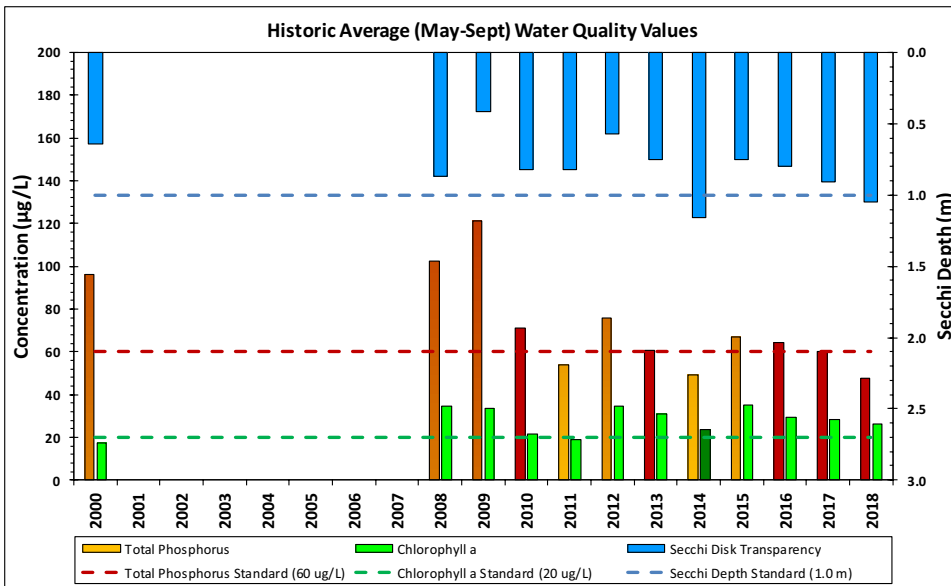


Whaletail North Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|--------------------------|
| DNR # | 27018401 |
| Watershed Area | 1,585 Acres |
| Lake Area | 370 Acres |
| Percent Littoral Area | 100% |
| Average Depth | 5.2 ft. |
| Maximum Depth | 10.3 ft. |
| Watershed Area:Lake Area | 4.3:1 |
| Impairment Classification | Proposed 2016 |
| Classification | Provisional Shallow Lake |

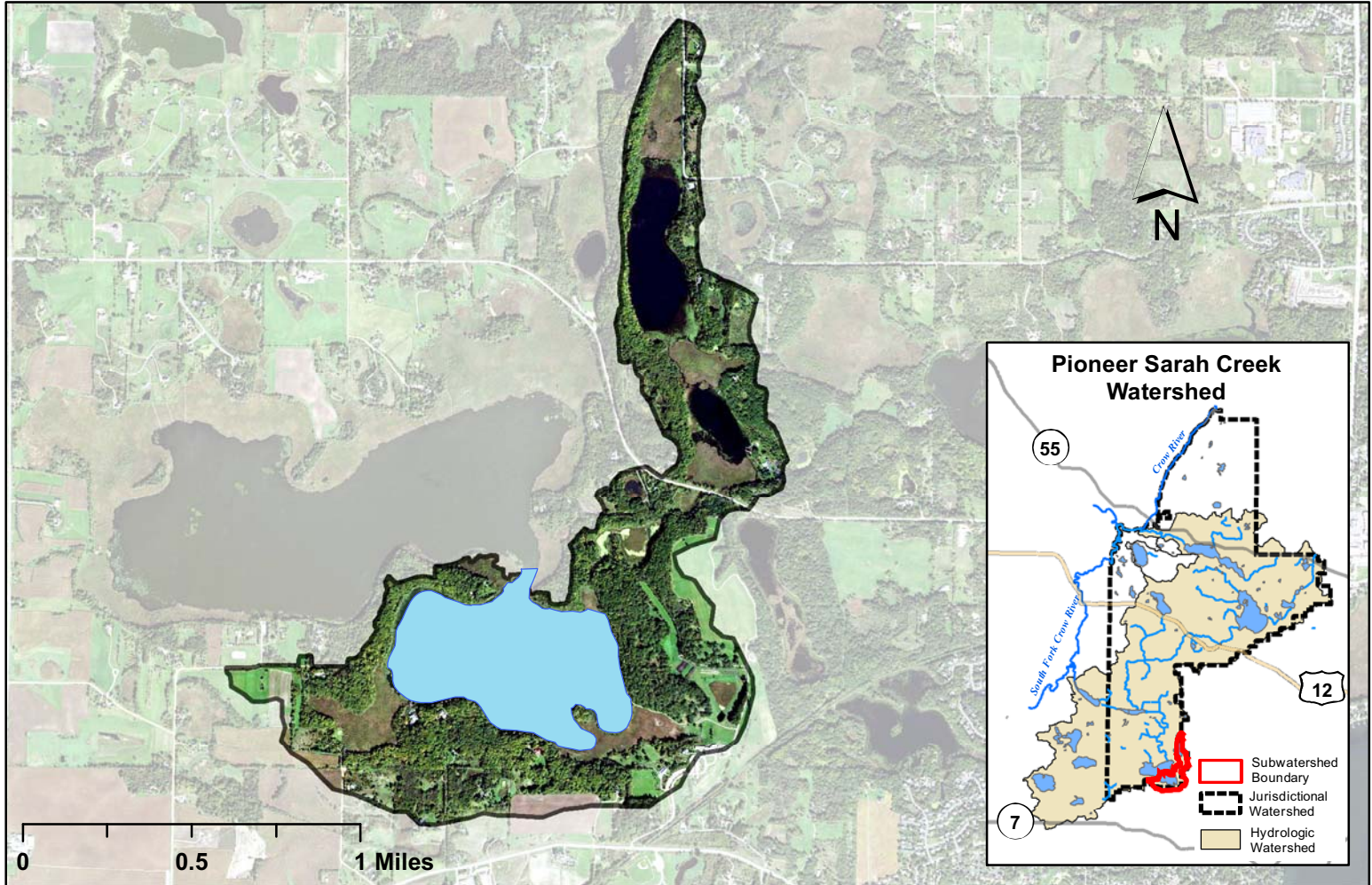


| Whaletail North Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2000 | D | B | F | D+ |
| 2001 | | | | |
| 2002 | | | | |
| 2003 | | | | |
| 2004 | | | | |
| 2005 | | | | |
| 2006 | | | | |
| 2007 | | | | |
| 2008 | D | C | D | D+ |
| 2009 | D | C | F | D |
| 2010 | D | C | D | D+ |
| 2011 | C | B | D | C |
| 2012 | D | C | F | D |
| 2013 | C | C | D | C- |
| 2014 | C | C | D | C- |
| 2015 | C | C | D | C- |
| 2016 | C | C | D | C- |
| 2017 | C | C | D | C- |
| 2018 | C | C | D | C- |
| MPCA Standard | C | C | D | C |

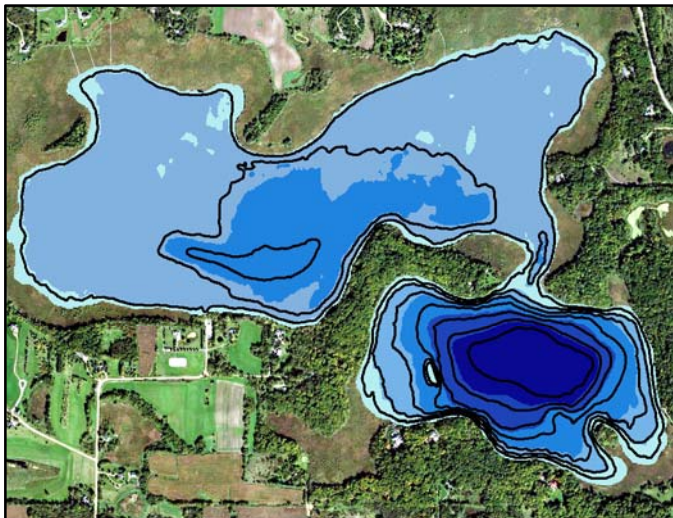
Met Council Grading System for Lake Water Quality

Whaletail South Watershed Map

item 07c

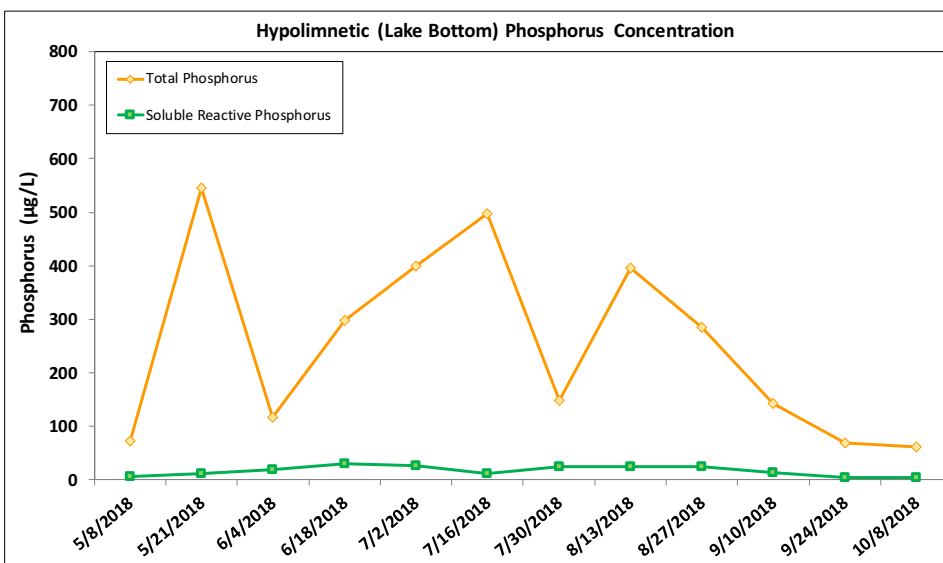
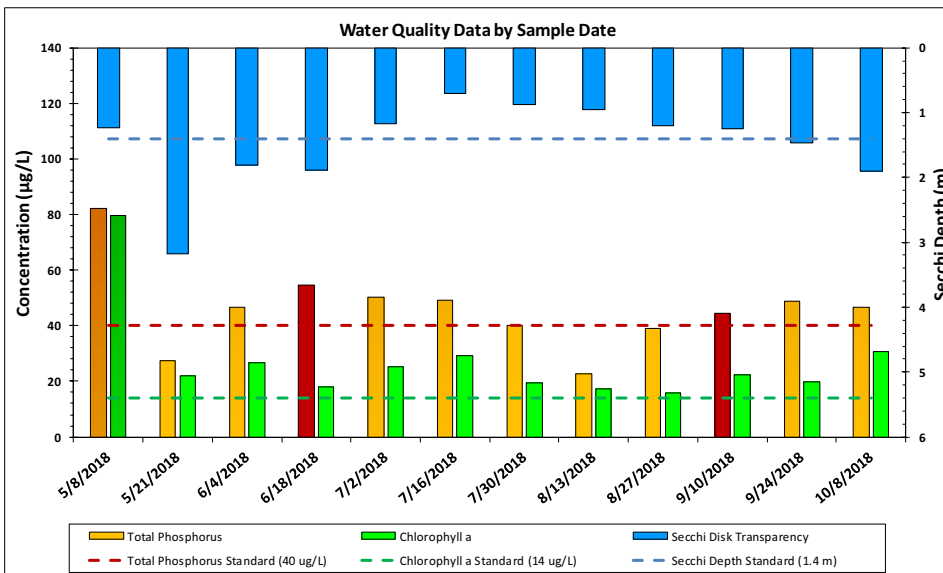
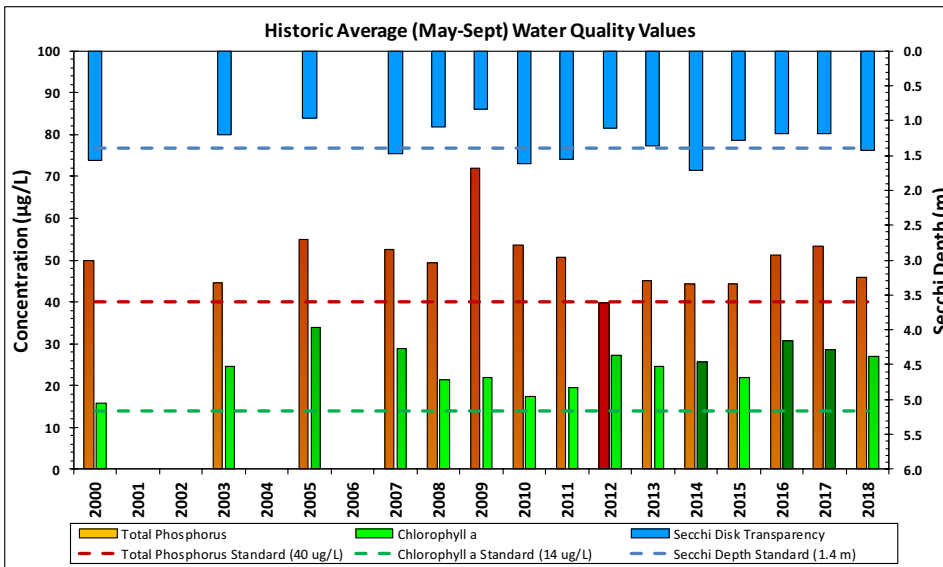


Whaletail South Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|-----------------------|
| DNR # | 27018402 |
| Watershed Area | 661 Acres |
| Lake Area | 156 Acres |
| Percent Littoral Area | 66% |
| Average Depth | 12.1 ft. |
| Maximum Depth | 23.3 ft. |
| Watershed Area:Lake Area | 4.2:1 |
| Impairment Classification | Proposed 2016 |
| Classification | Provisional Deep Lake |



| Whaletail South Water Quality Report Card | | | | |
|---|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 2000 | C | B | C | C+ |
| 2001 | | | | |
| 2002 | | | | |
| 2003 | C | C | C | C |
| 2004 | | | | |
| 2005 | C | C | D | C- |
| 2006 | | | | |
| 2007 | C | C | C | C |
| 2008 | C | C | D | C- |
| 2009 | D | C | D | D+ |
| 2010 | C | B | C | C+ |
| 2011 | C | B | C | C+ |
| 2012 | C | C | D | C- |
| 2013 | C | C | C | C |
| 2014 | C | C | C | C |
| 2015 | C | C | C | C |
| 2016 | C | C | D | C- |
| 2017 | C | C | D | C- |
| 2018 | C | C | C | C |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality



Division of Water Resources

December 2018

MEMORANDUM

TO: Pioneer-Sarah Creek Watershed Management Commission
FROM: James Kujawa and Kirsten Barta, Hennepin County Dept. of Environment and Energy
DATE: March 14, 2019
SUBJECT: Staff Report

1. **2016-05 Proto Labs Parking Lot Expansion, Maple Plain.** The Commission approved this project contingent upon three conditions. One condition remains open - receipt of an Operation and Maintenance agreement on the biofiltration basin per Staff findings dated September 6, 2016. The agreement has been signed but remains to be recorded on the property title.
2. **2017-03 Equestrian Facility (Bel Farms) Independence.** This is a 16.5 acre rural residential parcel located approximately 500 feet north of the intersection of CR6 and Nelson Road. The owner is proposing to construct a new garage/apartment, horse stall barn, indoor arena, outdoor arena, six grass and four sand paddocks for horses. Because this project disturbs greater than 1.0 acre and creates 3.1 acres of additional impervious area, it triggers the Commission's review for Rules D and E. Staff provided grading and erosion control approval contingent upon (1) the applicant assuming the risk and responsibility for any changes to the site plans necessary for final Commission approval and (2) the City of Independence approving a grading permit. In September 2017 the Commission approved the Stormwater Management Plan contingent upon receipt of an approved long-term pond/basin O&M plan between the landowner and City, to be recorded on the land title. No new information has been received.
3. **2017-05 Ostberg Equestrian Facility, Independence.** This is a 40-acre agriculture parcel located just southwest of the intersections of CSAH 6 and Game Farm Road. The owner is proposing to construct a new home, two garages, a horse stall barn, indoor arena, outdoor ring, eight horse paddocks and an access drive off of CSAH 6. The project will disturb 7 acres during construction and create 1.69 acres of new impervious areas. Because this project disturbs more than 1.0 acre and creates 1.7 acres of additional impervious area, it triggers the Commission's review for Rules D and E. There are also two wetlands that have been delineated on this site, so the Commission wetland buffer requirements (Rule I) are triggered. The project was approved by the Commission at their November 2017 meeting contingent upon receipt of an approved long-term pond/basin O&M plan between the landowner and the City, to be recorded on the land title. This information has not yet been received.
4. **2018-01 Salem Lane Reconstruction Project, Greenfield.** Salem Lane work must be reviewed for compliance with Rules E and F. A stormwater quality review is not necessary because the site disturbance is <1.0 acre and < 0.5 acres of new impervious area. At the January 2018 meeting, this project was approved per Staff recommendations. The only remaining item was Staff approval of the erosion and sediment control plans. SWPPP and Erosion Control Plans received March 8, 2019 meet the Commission's standards. Staff issued a final approval of the project on March 14, 2019. This project will be removed from the report.
5. **2018-02W Warren DaLuge Wetland Violation, Greenfield.** Staff met with DaLuge and came to an agreement for him to voluntarily remove any fill placed in the wetland on his farmstead by December 1, 2017. As of February 8 the work had not started. Staff requested a restoration order be issued for compliance by June 15, 2018. The order was sent by certified mail. Staff has stopped in on the site four or five times since the June 15th deadline. They have been actively moving dirt out of the wetland, but are only about 3/4 of the way done. As long as they continue to work on it, Staff will continue to monitor their progress and update the Commission.
6. **2018-010 Chippewa Estates, Loretto.** This is a 1.54-acre parcel located in the far northeast corner of Loretto on Chippewa Road. The project is proposing to subdivide the lot into four single family residential lots and triggers the Commission's review for Rules D and E. The applicant has requested administrative approval from Staff to begin grading the site. Staff provided this approval contingent upon the City of Loretto issuing a grading permit and that the applicant understands they assume all risks associated with changes that may be necessary for final Commission approvals. At their August 16, 2018 meeting, the Commission approved Staff findings with three conditions regarding the operations and maintenance plan, sequencing, and retrofitting of the pond.

RULE D - STORMWATER MANAGEMENT

RULE E - EROSION AND SEDIMENT CONTROL

RULE F - FLOODPLAIN ALTERATION

Language in red indicates current updates

* indicates enclosure

RULE G - WETLAND ALTERATION

RULE H - BRIDGE AND CULVERT CROSSINGS

RULE I - BUFFERS

It is Staff's understanding that the City chose not to expand their existing regional pond to accommodate this site's stormwater, so the back and side yard filter system will be installed per the site plans. Hence, the only remaining item necessary for final approval is the Operation and Maintenance agreement on the stormwater system. If the City chooses not to maintain the filter system, the applicant must provide an O&M maintenance plan that is acceptable to the City and the Commission and must be recorded on the title to the property.

7. 2018-017 Crow River Overlook, Greenfield. This is a 42-acre agriculture parcel located on CR 10 just north of 84th Avenue. Approximately 38 acres is east of CR 10, and 4 acres is located west of CR 10 along the Crow River. The applicant proposes to subdivide the property into an 8 large lot residential development. Lot sizes will range from 2.85 acres up to 10.1 acres. One cul-de-sac street will be constructed for access to the lots, with one street platted for future access to the property east of this project. One additional outlot will remain on the west side of CR 10. This project will be reviewed for Rules D, E, F and I. A complete application was received on October 15. Staff findings of January 16, 2019 were approved by the Commission at their January 17, 2019 meeting. Approval was contingent upon (1) an Operation and Maintenance agreement with city or HOA, (2) planting and seeding plans for the biofiltration basins and buffer areas that fall into the cropland areas that require seeding and (3) typical emergency overflow details noted on the plans. **No new information has been received as of this update.**

LOCAL WATER PLANS

Per the amended MN Rule 8410.0105, subp. 9, and 8410.0160, subp. 6, Local Water Plans must be prepared by metropolitan cities and towns and must become part of their local comprehensive plans. They must be revised essentially once every ten years in alignment with the local comprehensive plan schedule. A municipality has two years prior to its local comprehensive plan being due to adopt its local water plan. The next local comprehensive plans are due December 31, 2018; thus all cities and towns in the seven-county metropolitan area must complete and adopt their local plans between January 1, 2017 and December 31, 2018.

Local plans from the cities of **Loretto** and **Medina** were approved in 2017.

Minnetrista's Local Plan was approved by the Commission on October 18, 2018.

Greenfield's Local Plan was approved by the Commission at their February 14, 2019 meeting.

Independence's Local SWMP was reviewed at the February 2019 Commission meeting. The comments approved by the Commission were submitted to the City in March.

The Maple Plain local water plans were submitted on December 31, 2018. **Staff is reviewing the plans at this time and hopes to have a recommendation to the Commission at their meeting.**

RURAL CONSERVATIONIST UPDATES

The Buffer Law requirements going forward require staff to check each parcel in the county at least once every three years and spot check up to 15% of parcels. Hennepin has opted to section the county into thirds and check 1/3 each year, beginning in 2019. Those residents chosen to have a spot check done will be notified by letter. For 2019, review and inspections will take place in the western-most 1/3 of the County as indicated on the map. This will cover Independence, Greenfield, Loretto, Maple Plain, parts of Minnetrista, Medina, Corcoran, Rogers, and part of Orono.

Hennepin Transportation staff are presently evaluating culverts on County Roads 6, 26, 90, and 92 to make repairs and correct erosion issues. This will benefit Pioneer Creek directly as well as several streams/wetlands flowing into Lakes Independence, Sarah, Minnetonka, Whaletail, and Robina.

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RULE D - STORMWATER MANAGEMENT

RULE E - EROSION AND SEDIMENT CONTROL

RULE F - FLOODPLAIN ALTERATION

Language in red indicates current updates

* indicates enclosure

RULE G - WETLAND ALTERATION

RULE H - BRIDGE AND CULVERT CROSSINGS

RULE I - BUFFERS

FRESHWATER

Bridging Science and Society

May 9-10 | Science Museum of Minnesota, Saint Paul

Relying solely on the science and technology behind our work doesn't always lead to successful projects and programs. We often overlook the power of people. Knowing who to involve and when, as well as who is *not* involved and why, are critical pieces of the puzzle needed if we are to achieve our clean water goals.

At the 2019 Water Summit we will explore new and innovative ways to protect our surface and groundwater resources, while also highlighting the role people play in determining the outcomes of our work.

May 9:

- **Breakout sessions** featuring the latest in surface water protection, groundwater protection, landscape restoration, and water use and supply
- **Keynote presentation** on natural resource management through the lens of social systems
- **Plenary session** featuring updates from The Water Main, the University of Minnesota Water Resources Center, and the Stormwater Research Council regarding the public's EQ and IQ around water, current water research and trends, and work that is happening locally regarding the human dimensions of our work
- A lunchtime **Design Lab**, where *you* have an opportunity to drive the conversation and gain insight from others on a burning question that is central to your work
- One Powerful Idea - a fast-paced **Lightning Session** focused on “*What becomes possible if we....?*”

May 10:

- A narrated **field tour** highlighting innovative practices in urban water management, hosted by the Minnesota Stormwater Committee*

Who Should Attend:

Professional water resource staff and committed individuals with an interest in clean water protection, including resource managers, scientists, technicians, planners, engineers, landscape designers, architects, local decision-makers, environmental advocates, lake and river association members, citizen volunteers, and others concerned about water protection.

- Registration Fee*
 - Water Summit Registration - \$160
 - Special Rate for Freshwater Society Members - \$144 (this rate is available to sponsors)
- Friday Field Tour:*
 - I would like to attend the Friday, May 10 tour (11am-3pm). Tour starts at Capitol Region Watershed District and ends at Burning Brothers Brewing. Transportation, lunch, and drink ticket included - \$45 (limited to 50 participants)



Carp abundance estimate in Lake Independence and monitoring of carp movement using PIT antenna systems

Prepared for the Three Rivers Park District
Attn.: Brian Vlach

Prepared by: Carp Solutions LLC
Jordan Wein, Aaron Claus, and Przemek Bajer
January 28, 2019
www.carpsolutionsmn.com

Summary

In this report, we summarize work conducted during May 7, 2018 - January 28, 2019. Our goals were to estimate carp abundance in Lake Independence and determine major spawning migration routes of carp from Lake Independence into adjacent lakes. We used boat electrofishing surveys to estimate carp abundance and biomass in Lake Independence. These surveys suggested that Lake Independence was inhabited by approximately 9,000 carp whose biomass was 114 kg/ha and slightly exceeded the management threshold of 100 kg/ha. We also conducted a boat electrofishing survey in Ardmore Lake (one of the small interconnected lakes), where carp abundance was ~ 1,000 individuals and biomass was 383 kg/ha. All carp captured during electrofishing surveys in Independence (N=88) and Ardmore (N= 61) were implanted with passive integrated transponder (PIT) tags and released to monitor their movement. We then installed PIT antennas designed to detect the passage of PIT-tagged carp at all major inlets to and outlets from Lake Independence: 2 inlets (from Ardmore Lake and from Spurzem Chain) and one major outlet towards Ox Yoke Lake. The PIT data showed that most of the carp from Lake Independence migrated downstream towards Ox Yoke Lake (33 of 88 carp), some were also moving to Lake Ardmore 4/88. Only one carp moved towards the Spurzem Chain of Lakes.

Background

Lake Independence is a large (surface area 830 acres) and relatively deep (max depth 58 feet) lake located in south west Twin Cities Metro area. Lake Independence has two main inlets: Ardmore Creek from the north and Spurzem Creek from north east, and one major outlet Pioneer Creek which flows south-west towards two shallow lakes/marshes: Ox Yoke and Rice (Figure 1). Although carp have been studied in Lake Ardmore and in the Spurzem Chain of Lakes (lakes Half Moon, Spurzem, Thomas and Winterhalter), little is known about the carp population in Lake Independence. Observations from residents and Three Rivers Park District staff noted aggregations of carp around inlets to and outlets (culverts, for example) from Lake Independence. It was unknown the proportion of the Lake Independence population those aggregations represent or how passages through those creeks and streams compare. The peripheral lakes likely serve at times as nursery habitats, with adult carp using the creeks and streams to gain access to these areas to spawn in the spring. Furthermore, winterkills have been noted in these peripheral lakes making them likely sources of strong year classes of carp recruitment. A better understanding of the movement patterns would help to manage waterways the carp use in during spawning migrations.

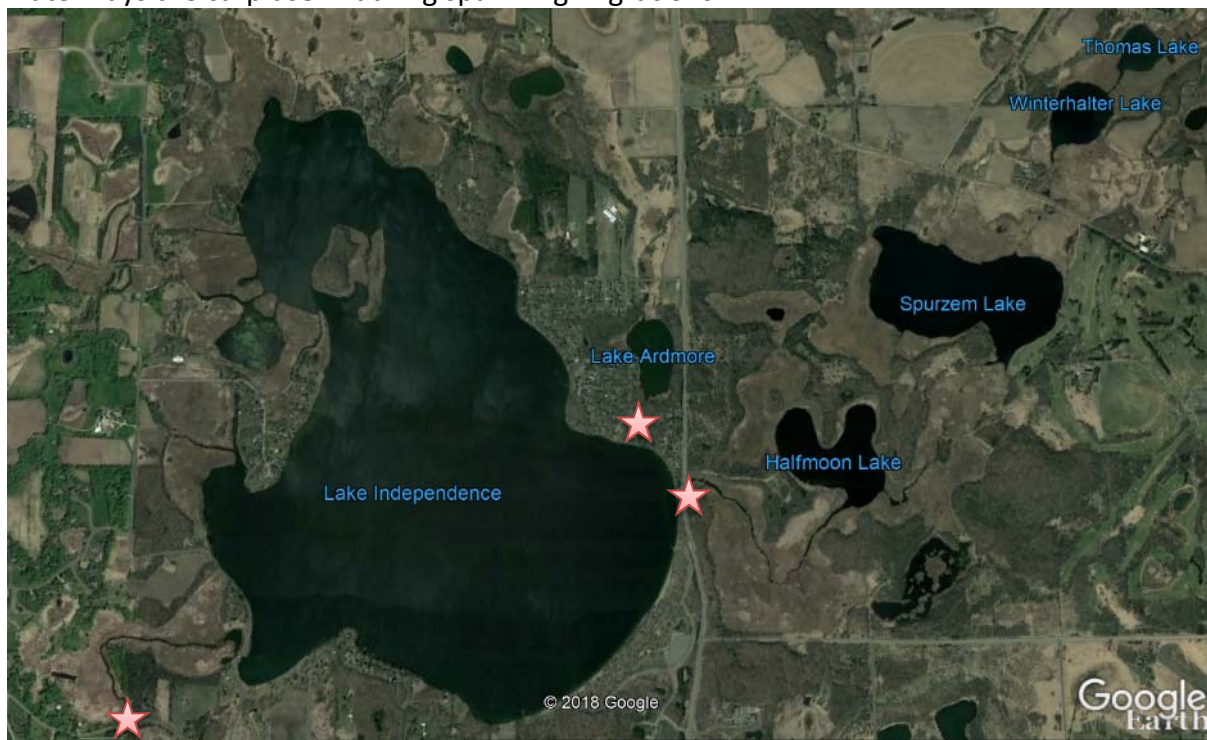


Figure 1: Lake Independence and some of the peripheral lakes that are connected to it at least periodically allowing for open fish passage. Stars indicate locations of PIT antennas in 2018.

Task 1: Carp population and biomass estimate within Lake Independence

Rationale and Methods

We conducted carp population abundance and biomass estimate for Lake Independence to determine if the biomass exceeds the management threshold of 100 kg/h (Bajer et al. 2009). We used boat electrofishing surveys to estimate the catch per unit effort (CPUE), which we then used to estimate carp abundance and biomass using established equations (Bajer et al. 2012; Claus et al. unpublished). Carp captured during those surveys were also implanted with PIT tags to facilitate carp movement analyses (Task 2 below). Overall, we conducted at least four random surveys (transects) on 5 different days (24 transects total) in Lake Independence. Each transect lasted 60 minutes (10 minutes of boat travel to transect location, 20 minutes of active electrofishing, 20 minutes of boat maneuvering, and 10 minutes to measure the carp). It was important that these transects were conducted on separate days as carp catch rates might be influenced by the weather. At the completion of each transect, all captured carp were implanted with a PIT tag and released.

In addition, we conducted one day of electrofishing in Lake Ardmore to generate a follow-up assessment of the population (in relation to our prior carp assessments in that system) as well as implanting carp with PIT tags. This sub-task was added due to the importance of prior work on Ardmore and the potential for a restructuring of the Ardmore Creek in the near future to install a carp barrier.

Results

A total of 88 common carp were captured during the electrofishing surveys in Lake Independence (Table 1). The carp ranged from approximately 400-900 mm in length (Figure 2). The mean weight was 4.4 kg. The mean CPUE was 5.87 carp/hour (we removed one transect from the analysis because a large group of carp were aggregating at an inlet and the catch rate was exceptionally high; 40 per transect; Table 1). The mean CPUE suggests that Lake Independence was inhabited by approximately 9,000 carp whose biomass was 114 kg/ha (Table 2). All 88 captured carp were implanted with PIT tags and released.

A total of 61 carp were captured during the one day of boat electrofishing surveys in Ardmore (Table 1). These fish ranged in length from approximately 400 to 800 mm (Figure 3) and their mean weight was 2.0 kg. The mean CPUE was 45.76 carp/hour, which suggests that Ardmore was inhabited by approximately 1,030 carp whose biomass was 383 kg/ha (Table 2). All of the 61 captured carp were implanted with PIT tags and released.

Table 1: Raw CPUE data for electrofishing surveys on Independence and Ardmore. *omitted from population estimate calculations

| LAKE | DATE | TRANSECT NO. | MIN | CATCH | TRANSECT CPUE |
|--------------|-----------|--------------|-----|-------|---------------|
| INDEPENDENCE | 5/7/2018 | 1 | 20 | 0 | 0.0 |
| INDEPENDENCE | 5/7/2018 | 2 | 20 | 5 | 15.0 |
| INDEPENDENCE | 5/7/2018 | 3 | 20 | 0 | 0.0 |
| INDEPENDENCE | 5/7/2018 | 4 | 20 | 0 | 0.0 |
| INDEPENDENCE | 5/15/2018 | 1 | 20 | 2 | 6.0 |
| INDEPENDENCE | 5/15/2018 | 2 | 20 | 0 | 0.0 |
| INDEPENDENCE | 5/15/2018 | 3 | 20 | 1 | 3.0 |
| INDEPENDENCE | 5/15/2018 | 4 | 20 | 0 | 0.0 |
| INDEPENDENCE | 5/15/2018 | 5 | 20 | 2 | 6.0 |
| INDEPENDENCE | 5/15/2018 | 6 | 30 | 1 | 2.0 |
| INDEPENDENCE | 5/16/2018 | 1 | 20 | 2 | 6.0 |
| INDEPENDENCE | 5/16/2018 | 2 | 21 | 3 | 8.6 |
| INDEPENDENCE | 5/16/2018 | 3 | 20 | 0 | 0.0 |
| INDEPENDENCE | 5/16/2018 | 4 | 20 | 1 | 3.0 |
| INDEPENDENCE | 5/16/2018 | 5 | 20 | 1 | 3.0 |
| INDEPENDENCE | 5/18/2018 | 1 | 22 | 1 | 2.7 |
| INDEPENDENCE | 5/18/2018 | 2 | 10 | 40 | *240.0 |
| INDEPENDENCE | 5/18/2018 | 3 | 20 | 1 | 3.0 |
| INDEPENDENCE | 5/18/2018 | 4 | 20 | 2 | 6.0 |
| INDEPENDENCE | 5/18/2018 | 5 | 10 | 1 | 6.0 |
| INDEPENDENCE | 6/25/2018 | 1 | 20 | 2 | 6.0 |
| INDEPENDENCE | 6/25/2018 | 2 | 20 | 5 | 15.0 |
| INDEPENDENCE | 6/25/2018 | 3 | 20 | 2 | 6.0 |
| INDEPENDENCE | 6/25/2018 | 4 | 32 | 16 | 30.0 |
| ARDMORE | 7/2/2018 | 1 | 20 | 21 | 63 |
| ARDMORE | 7/2/2018 | 2 | 20 | 9 | 27 |
| ARDMORE | 7/2/2018 | 3 | 20 | 20 | 60 |
| ARDMORE | 7/2/2018 | 4 | 20 | 11 | 33 |

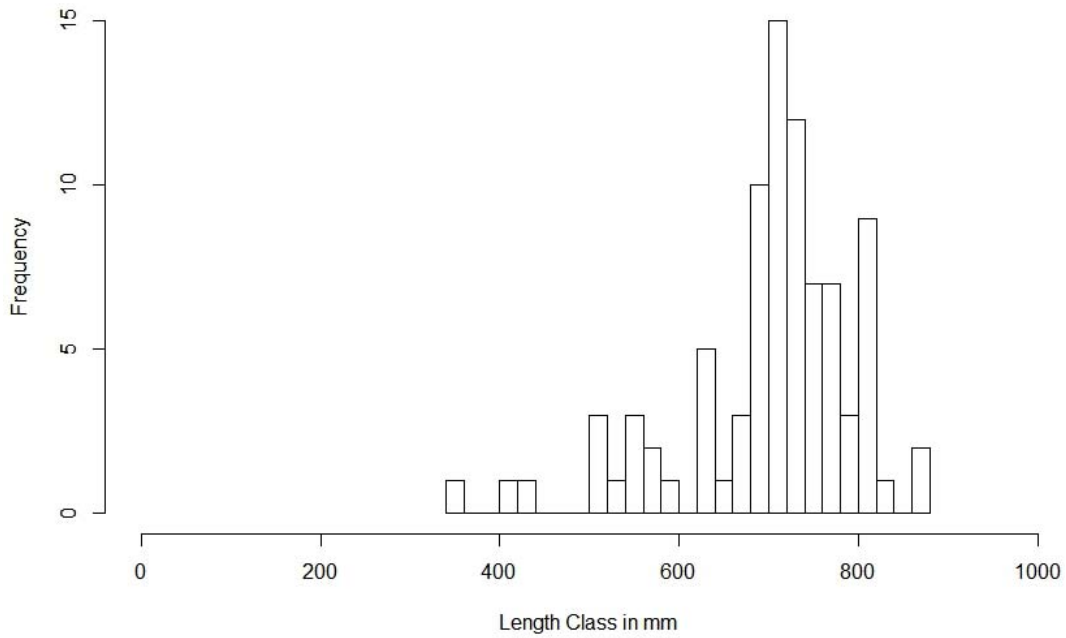


Figure 2. Length distribution of common carp captured during electrofishing surveys on Lake Independence (n=88).

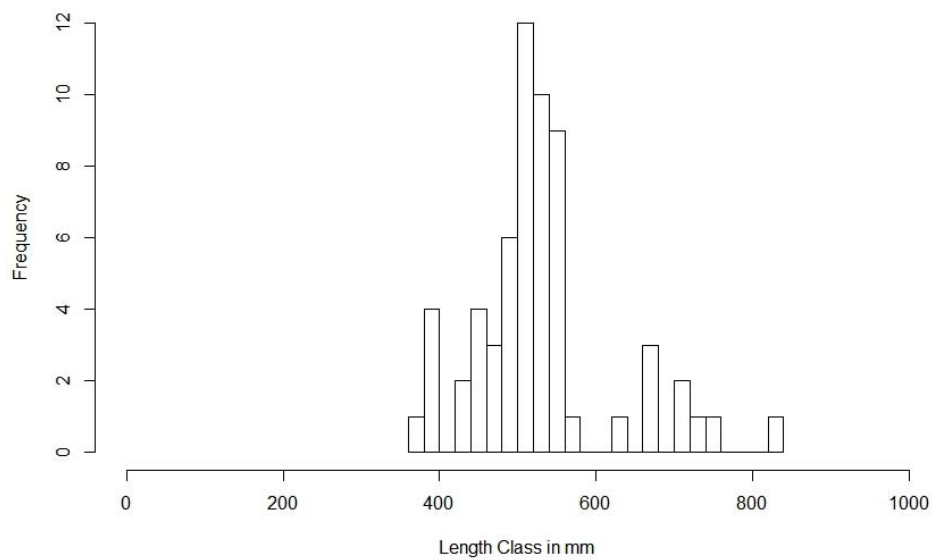


Figure 3. Length distribution of common carp captured during electrofishing surveys on Ardmore Lake (n=61).

Table 2: Summary table for the carp population in Lake Independence and Ardmore.

| Lake | Ave. length (mm) | Ave. Weight (kg) | Lake area (ha) | Population | Biomass (kg/ha) |
|--------------|------------------|------------------|----------------|------------|-----------------|
| Independence | 700 | 4.4 | 337 | 9,032 | 113.6 |
| Ardmore | 529 | 2.0 | 5.4 | 1,030 | 383.3 |

Task 2: Construction and installation of PIT antenna system and systems maintenance

Rationale and Methods

Antenna systems, like the one displayed in Figure 4, capable of detecting carp implanted with microtransmitter PIT tags (~ 12 mm in length, 3 mm in diameter) were positioned around culverts in three locations: within Ardmore Creek, at the culvert leading under Highway 19, and near the culvert at Pagenkopf Avenue near the southwest outlet of Independence (Figure 1) in order to monitor carp passage between the lakes. The data gathered by those antennas will determine if future barrier(s) is/are needed to block the movement of carp.



Figure 4: PIT antenna station installed near a potential carp migration route.

Results

Ardmore Creek Site PIT detections as of 1/24/19

There have been 7 tagged common carp detected at this site since installation in spring 2018 (Figure 5). Four of these carp were tagged in Lake Independence and were moving upstream to Ardmore Lake on 5/29 and 5/30/18. Three of these carp were tagged in Ardmore Lake on 7/2/18 and were moving downstream to Lake Independence on the same day.

This site (solar powered) has suffered daily power loss ranging from 4-8 hours late at night through dawn due to poor solar exposure. One week after installation, we doubled the area of solar panels (~\$200) and invested in extra equipment (~\$1000) that allowed the panels to be moved farther away from the PIT system in an attempt to remedy the problem, but this was unsuccessful. This system should be moved to a spot with open southern solar exposure for 2019 season or connected to permanent power from a nearby resident.

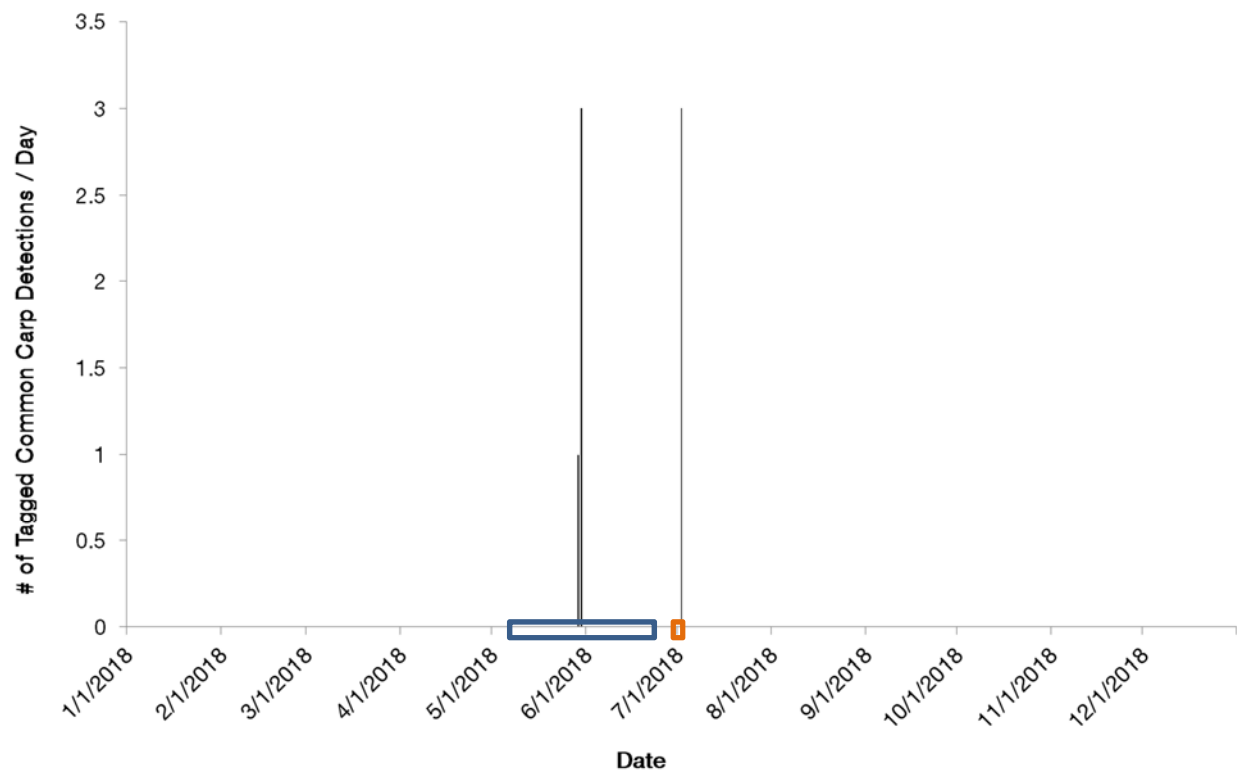


Figure 5. Number of tagged carp detected at Ardmore Creek site. Blue box indicates the tagging period in Independence, and the orange indicates the tagging period in Ardmore

Highway 19 Site PIT Detections as of 1/24/19

There has only been a single common carp detected at this site (tagged in Lake Independence), moving upstream towards Half Moon Lake on 6/21/18. Interestingly, this fish was also the tagged carp that moved upstream to Ardmore Lake on 5/29/18. This site has not suffered power loss since installation.

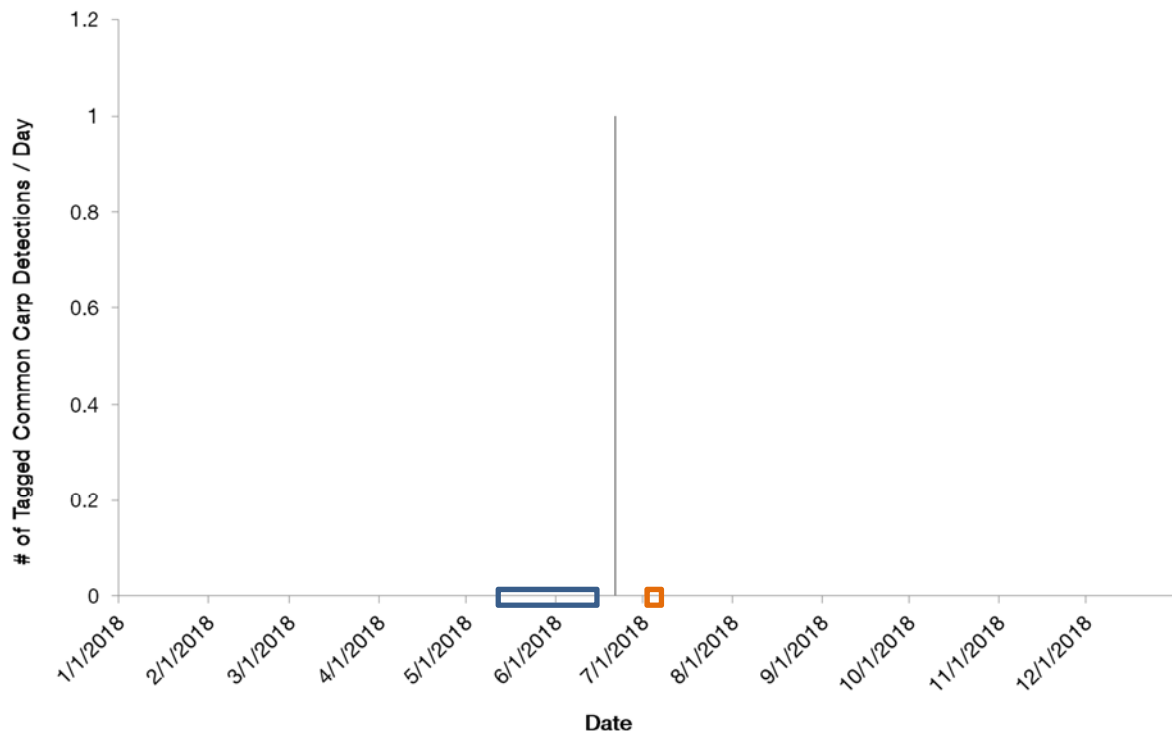


Figure 6. Number of tagged carp detected by day at Highway 19 site. Blue box indicates the tagging period in Independence, and the orange indicates the tagging period in Ardmore

Pagenkopf Ave Site PIT Detections as of 1/24/19

There were 33 tagged carp detected at this site in May and June of 2018, all of which were tagged in Lake Independence (Figure 7). These fish were moving downstream likely to spawn.

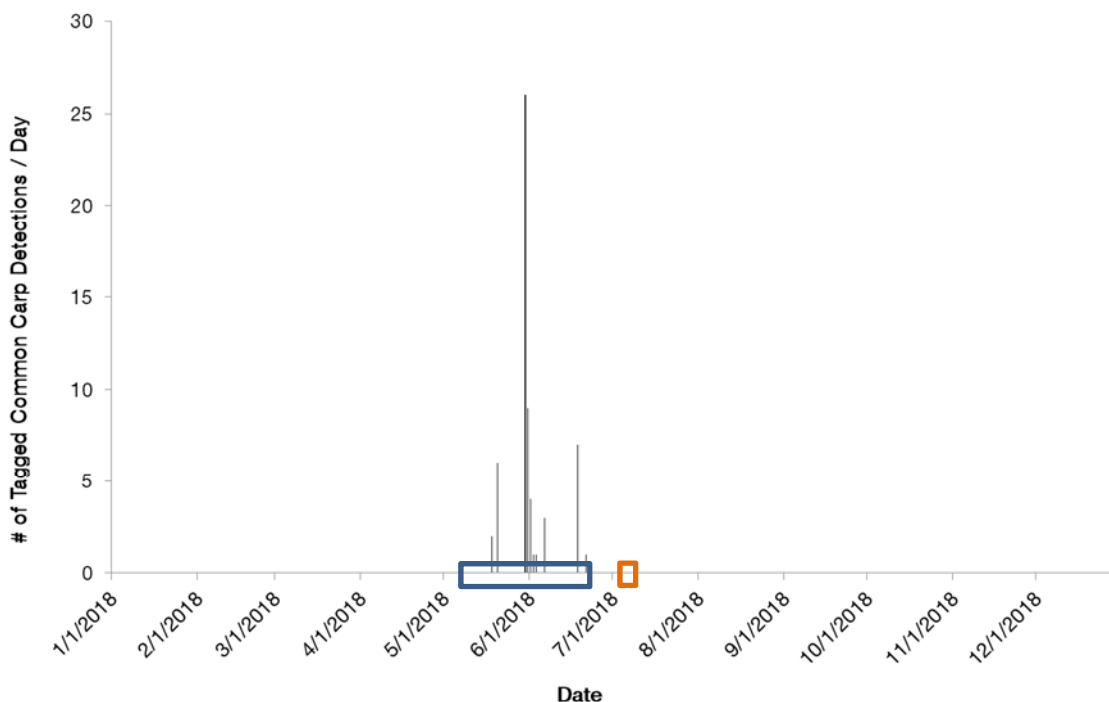


Figure 7. Number of tagged carp detected by day at Pagenkopf Ave site. Blue box indicates the tagging period in Independence, and the orange indicates the tagging period in Ardmore

Conclusions and Management Recommendations

- The biomass of carp in Lake Independence (114 kg/ha) appears to be slightly exceeding the management threshold of 100 kg/ha (Bajer et al. 2009). Our estimates are somewhat tentative because electrofishing surveys occurred during spring when carp were migrating to spawn.
- The biomass of carp in Lake Ardmore (383 kg/ha) exceeds the management threshold by nearly 4 folds. This is probably driven by carp migrations between Lake Independence and Ardmore. A barrier placed between Lake Independence and Ardmore might be needed to sustainably manage carp in Ardmore via physical removal. Notably, there was no evidence of recent recruitment in Ardmore as all collected carp were large.
- Surprisingly, PIT data suggests that the main spawning migration route is downstream, most likely towards lakes Ox Yoke and Rice. The migration to Ardmore also appears to be significant (and may be underestimated due to PIT system shut downs at night).

Currently, it doesn't appear many carp are moving out of Independence into the Spurzem Creek chain via Highway 19 culvert.

- We recommend that PIT antennas are maintained through 2019 to monitor the natural movement of carp (undisturbed by tagging). Also, adding more PIT tags would be beneficial, but even with the current sample size, it is clear that many carp migrate in and out of Lake Independence. Surveys of lakes Ox Yoke and Rice are also recommended (late summer surveys with trapnets) to determine if these systems function as carp nurseries. If YOY are present, some of them should also be implanted with PIT tags.
- Overall, the PIT systems performed very well, except for the Ardmore site. That system needs to be moved to a more exposed spot.
- If data collected by PIT antennas in 2019 verifies that carp move primarily towards Ox Yoke and Ardmore, strategic use of barriers should be considered at those locations to block the carp, or block and remove them.

References

Bajer, P. G. and P. W. Sorensen (2012). "Using Boat Electrofishing to Estimate the Abundance of Invasive Common Carp in Small Midwestern Lakes." *North American Journal of Fisheries Management* 32(5): 817-822.

Bajer, P. G., Sullivan, G., & Sorensen, P. W. (2009). Effects of a rapidly increasing population of common carp on vegetative cover and waterfowl in a recently restored Midwestern shallow lake. *Hydrobiologia*, 632(1), 235-245.

item 12b



0 0.125 0.25 0.5 Miles

Lake Independence ZM Suvey 10-3-2018

| Site | Time Searched (minutes) | # Staff | # ZM Found |
|------|-------------------------|---------|------------|
| 1 | 0:21 | 3 | 2 |
| 2 | 0:40 | 3 | 5 |
| 3 | 0:40 | 3 | 0 |
| 4 | 0:23 | 4 | 3 |
| 5 | 0:12 | 4 | 39 |
| 6 | 0:16 | 4 | 22 |
| 7 | 0:20 | 4 | 91 |



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