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# Middle Minnesota River Watershed Approach Civic Engagement Project Summary

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## Introduction

Civic engagement and public participation was a major focus during the Middle Minnesota River Watershed Approach occurring from 2013 through 2017. The MPCA worked with county and SWCD staff in the watershed, consultants, citizens, and other state agency staff to work on eight projects to promote civic engagement collaboratively in the area. Projects were tailored to local partner interest and capacity.

The Middle Minnesota Watershed Civic engagement projects were:

- Middle Minnesota Watershed Zonation Analysis: Page 3
- Minnesota River at Mankato: Stakeholder Identification and Analysis: Page 8
- Minneopa and Fort Ridgely Watershed Interpretive Signs: Page 24
- Middle Minnesota Watershed SWCD WRAPS Strategy: Page 27
- Middle Minnesota Watershed Renville County WRAPS Strategy: Page 71
- Middle Minnesota Watershed Lakes WRAPS Strategy: Page 99
- Middle Minnesota Watershed Nicollet County WRAPS Strategy: Page 284
- Lake Hallett Civic Engagement Project: Page 398

The following pages contain the summary, results, final reports and attachments of each of the eight projects.

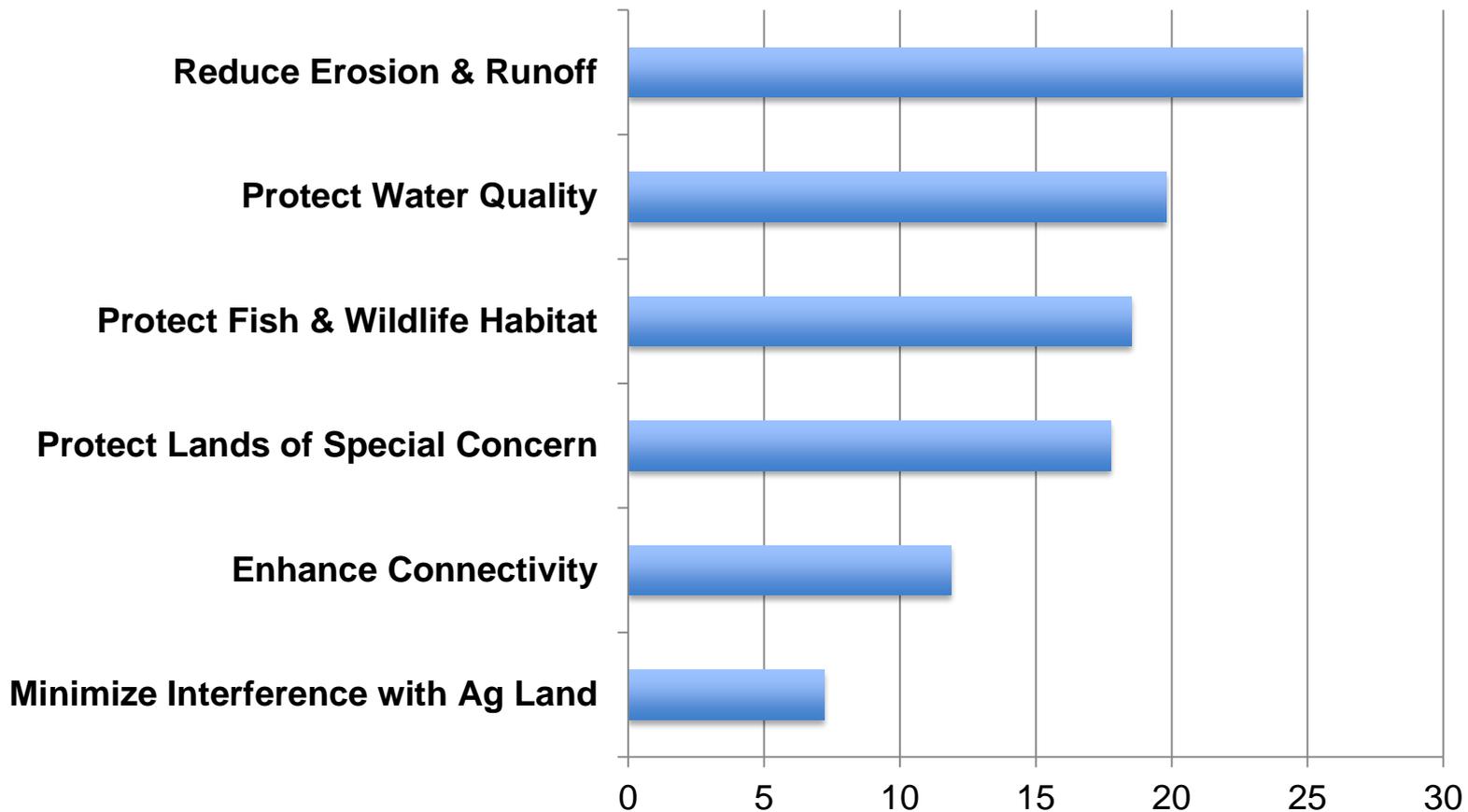
### **Middle Minnesota Watershed Zonation Analysis**

Zonation Analysis is a process to help identify and prioritize areas important for protection and restoration based on Minnesota DNR's five-component healthy watershed conceptual model (biology, hydrology, water quality, geomorphology and connectivity). Watershed, county and SWCD staff were surveyed for their values and perceptions in relation to water resource management concerns. This "valuation data" is used to weight each of the healthy watershed categories. The valuation data was utilized by GIS analysis to identify geographic priority areas within the watershed. Data was also collected on priorities for conservation practices. This data was overlaid with geographic priorities to identify areas for restoration and protection based on social interest and to create maps of potential restoration and protection areas in the watershed. The process generated collaborative discussion among the Middle Minnesota Watershed technical staff and helped identify focal areas and practices for implementation.

# Survey Results (Protection)

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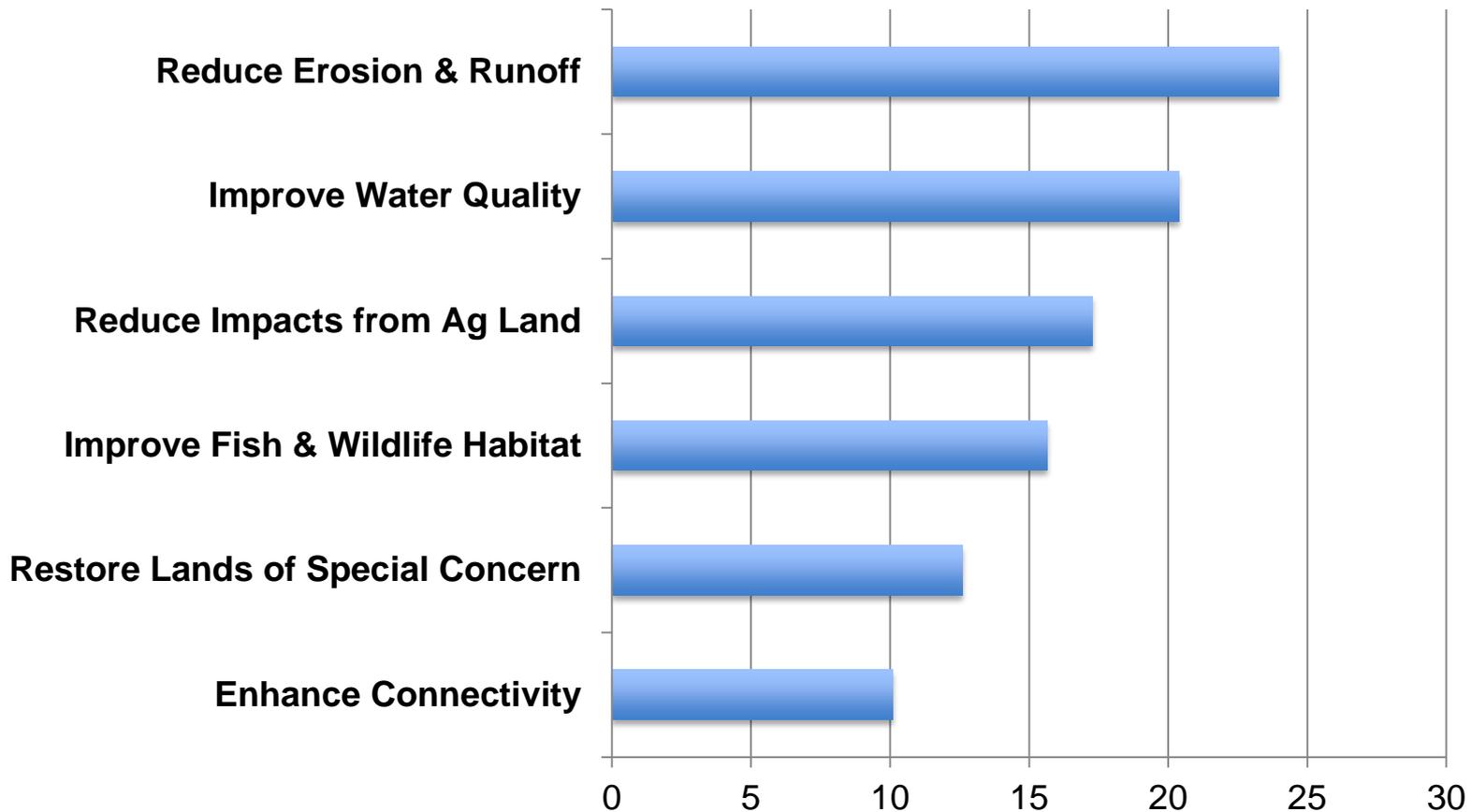
## AHP-Derived Weights



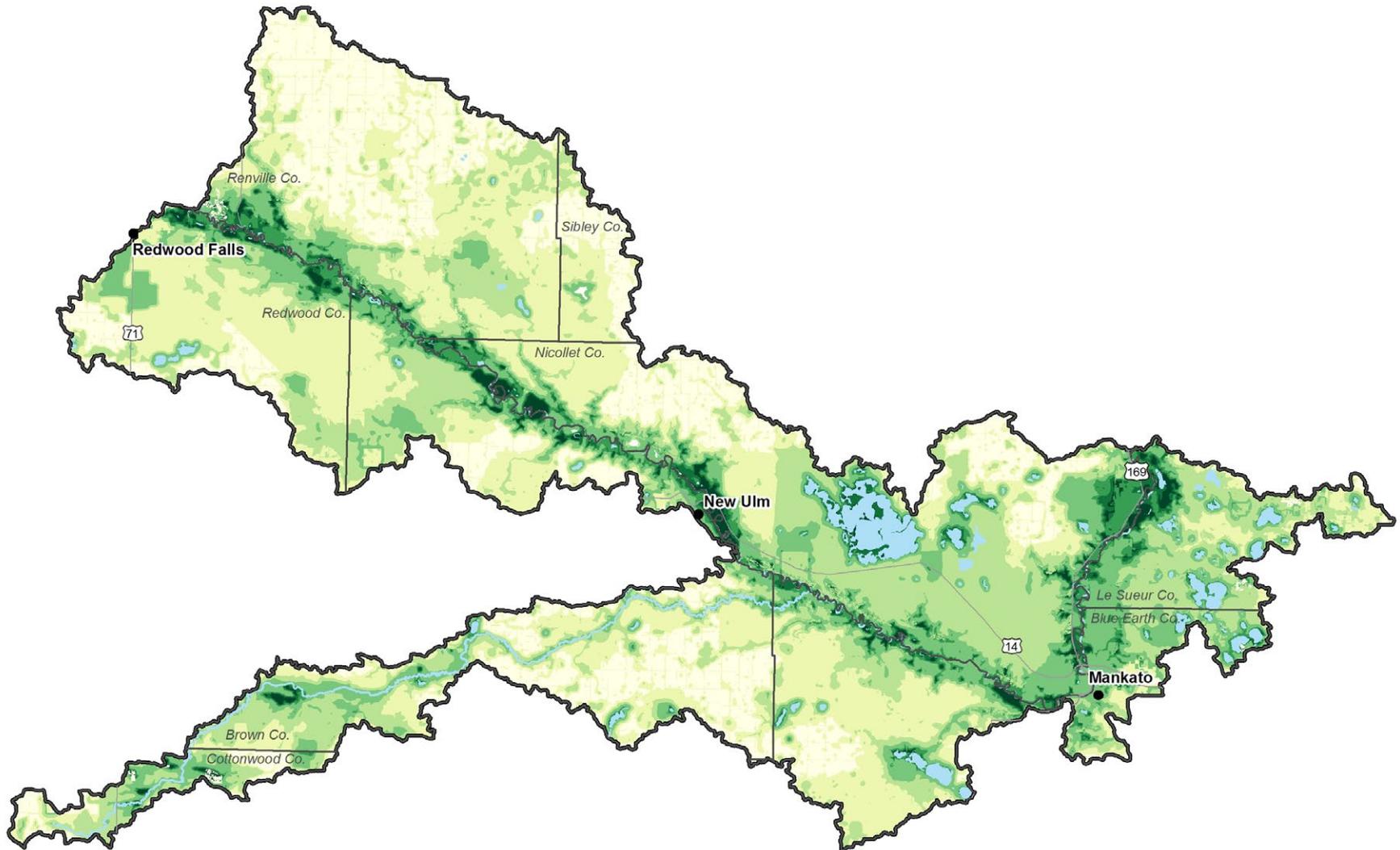
# Survey Results (Restoration)

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## AHP-Derived Weights



# Protection Output



Conservation Priority

Low

High

20%

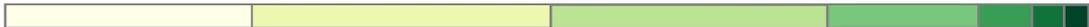
50%

75%

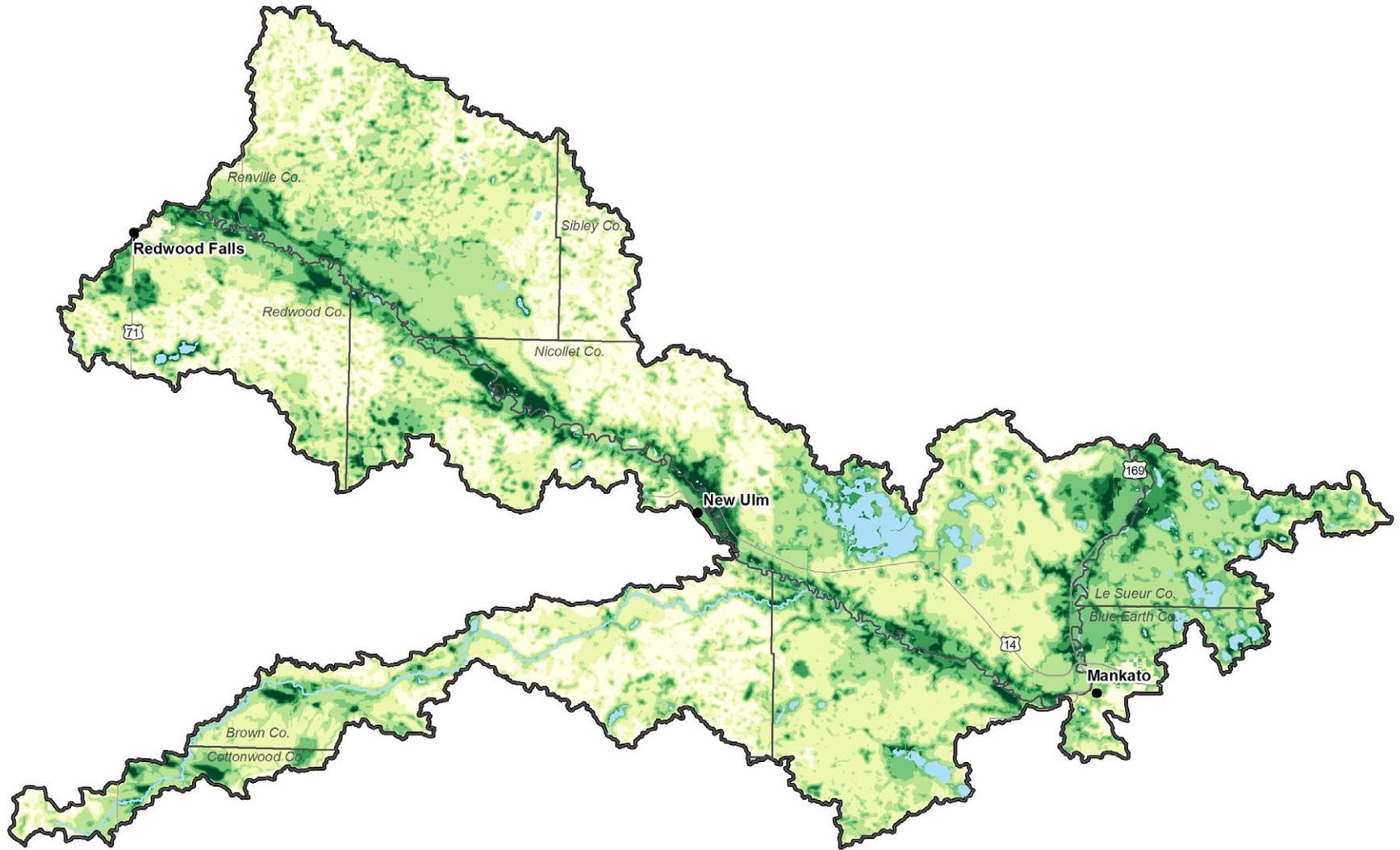
90%

95%

98%



# Restoration Output



Conservation Priority

Low

High

20%

50%

75%

90%

95%

98%



### **Minnesota River at Mankato: Stakeholder Identification and Analysis**

Fortin Consulting Inc. (FCI) created a directory to identify organizations working in the watershed and develop connections between watershed stakeholders. The directory is a comprehensive network of businesses, organizations, government agencies, and some individuals who are interested in water resources for recreation and economic opportunities in the watershed. Listings were compiled from many sources. Many contacts found were interviewed by phone or email to find out more about their organization as well as to ask about other organizations they thought should be included.

FCI worked with the MPCA project manager to determine the format(s) for the directory. It was decided to create an Excel worksheet that could be sorted by the project partners and updated as needed. In addition, a pdf version was created that is posted on the MPCA web site (Middle Minnesota River Watershed Directory).

# **Middle Minnesota River Final Summary Report**

## **Fortin Consulting, Inc. 1-27-15**

### **How the Watershed Directory was created**

Fortin Consulting was hired to create a directory of contacts for the Middle Minnesota River Watershed (Directory). The Directory was funded through the Clean Water Land and Legacy Amendment to help with citizen engagement as part of the Minnesota Pollution Control Agency's Watershed Restoration and Protection Strategy (WRAPS) process. The Directory was created to help make the different organizations working in the watershed aware of each other and develop connections. It consists of businesses, organizations, government agencies and some individuals who are interested in water resources, recreation and economic opportunities in the watershed. Listings were compiled from many sources. It started with a short list of names from the Minnesota Pollution Control Agency (MPCA). Extensive internet searches were completed to gather as much information as possible. Organizations listed on others' web sites were further investigated through internet searches or phone calls to determine if they should also be listed. A Survey Monkey was prepared and sent to organizations identified in order to gather additional information about them. A booth at the second Minnesota River Congress was set up to make people aware of the project and gather information about different groups that participated in the Congress. Many contacts found were interviewed by phone or email to find out more about their organization as well as to ask about other organizations they thought should be included and find out more about who else they work with.

FCI worked with the MPCA project manager to determine the format(s) for the directory. It was decided to create an Excel worksheet that could be sorted by the project partners. In addition, a pdf version would be created that could be posted on the MPCA web site. This makes it much more difficult for someone to obtain the contact information and send out SPAM. A draft Directory was sent out to the main WRAPS contacts for their review. A few comments were received and incorporated. A meeting was held with the project partners on January 20, 2015 to present the directory and talk about how it was created and how it could be used. An additional review period was added and a couple of comments received, and the directory was edited based on these comments.

The Directory contains 317 listings of organizations and individuals. For some organizations, multiple contacts are listed, raising the total number to about 350 contacts. For government agencies, all individuals that work on the Middle Minnesota may not be included, but a supervisor or main contact is listed. The directory provides

information on the organization type, mission, types of resources they may be able to provide, geographic area where they primarily work (related to the Middle MN River watershed), contact information, web site, and additional notes on their work. The Directory combines contacts all in one document. The digital version can be sorted by any of the columns.

The directory can be used to help organizations contact various stakeholder groups, find sources of volunteers, funding, help with advertising events, places to meet groups to educate, means to contact farmers, and more. Below are some ideas for using the directory.

## **Uses for the Directory**

### ***Sort for your specific interests***

Because the directory is in an Excel worksheet, you can sort it by the various columns. Two versions are already included in the Directory workbook, 1) sorted by organization, and 2) sorted by county. You may find it useful to sort by city or zip code, or sort by the organization type. Where there are multiple listings in a cell, it will only sort by the first one listed. You can use the search function to search for a specific organization or individual. The sheet that is sorted by organization is “locked” so that it cannot be accidentally mis-sorted, which is easy to do in Excel if everything isn’t highlighted. The password to unlock it is “MPCA”. The pdf version is also password protected. The password is “MPCA215fci”. Project partners will receive the Excel version. Others will receive the pdf version, but may request the Excel version from the MPCA.

### ***Find local sources of financial and technical support, and volunteers***

The directory was not intended to be a list of grants and other sources of funding, but as the information was collected, organizations were asked about potential financial support. This includes grants and donations of money, plus donations of products or services. Some organizations are willing to provide space for meetings or office assistance such as copies or help in advertising an event. This information is noted in the “Resources” column of the directory. In most cases, whether or not financial support is available depends on the type and location of the project.

We also asked what other resources, if any, the organization might be willing to provide. This included donations of in-kind administrative time, technical assistance, office supplies or services and meeting rooms.

More information on resources the groups can offer is provided under the listing for the various groups.

### ***Access to various stakeholder groups***

The directory includes a variety of groups (potential stakeholders) that may not be directly interested in participating in watershed activities, but are organized groups that already have established meetings and means of communicating to their members. Some are interested in water quality and other watershed issues. These groups may be a good source for you to present information and gather input from stakeholders as part of a civic engagement process. You would not have to organize an event, but rather would just present at an existing meeting. These groups include veteran's organizations, student groups, sportsmen's clubs, agricultural producers, cooperatives, and many service organizations. Many of these groups may be receptive to presentations or other educational opportunities.

## **Types of Groups Listed**

### ***Agricultural producers***

In general, those that work with farmers didn't want to give out names. We determined that the best way to contact farmers would be through SWCDs, NRCS, FSA, Seven Mile Creek Watershed, Fishers and Farmers, the Minnesota Agriculture Water Resources Center (MAWRC). Educational programs offered to the FFA programs in the high schools may be helpful to get information out to farm families.

Several co-ops are located in the watershed. Many of these have some funds that may be available for watershed projects, especially related to agriculture. The agricultural co-ops are another potential way to reach farmers by participating in programs they offer to their members. The Co-ops hold meetings with farmers. One we spoke to indicated it may be possible to have someone working on watershed projects included as part of the Co-ops scheduled programs.

The Directory also includes contacts for the state and regional organizations that represent the various types of agricultural producers, such as Minnesota Corn Growers, Cattleman's Association, and Pork Producers and the Southern Minnesota Beet Sugar Cooperative.

### ***Businesses***

A number of larger businesses were contacted. Some did not want to be listed. Some didn't respond. Others were willing to participate with volunteers or donation of funds or products. Many of the businesses are willing to contribute if asked. They want to know

specifically what the money would be used for. Some have priorities for what types of projects they will fund. Most of the funding is small amounts, but could help fund or sponsor an event, or contribute toward a project. Some are willing to donate items for a silent auction or an event. For example, Alumacraft is willing to donate silent auction items or door prizes, Bent River Paddling is willing to donate use of kayaks for river clean ups.

3M in New Ulm is interested in becoming more active in the community. They have two avenues through which they can do this. 3M Community Giving is a company-wide program. The New Ulm location has access to company funds and can use them for projects related to the environment. 3M may also be able to provide volunteers for different efforts. They have organized a team they call the River Restoration Action Team (RRATs) through which they have participated in river clean ups in the past. The contact for the RRATs, Tony Miller, is interested in organizing river clean-ups and may be interested in helping with other projects. He would like to see the group reactivated.

Unimin Corporation has a fairly new staff person whose job includes working with the community. OMG Midwest, another mining business, is very interested in becoming more active in the community.

Some of the utility companies have funds that are available by application. The environment is usually one of their priorities.

### ***Economic Development Organizations***

Organizations interested in economic opportunities in the watershed were listed in the Directory. These included local chamber of commerce groups and economic development organizations such as Mankato Growth, as well as other groups that had an economic interest, such as Rural Advantage.

### ***Education programs***

In addition to the schools, there are a few organizations that focus on education. Putting Green in New Ulm is one of the organizations actively working to promote conservation practices and education regarding the Minnesota River. Scott Kudelka, MNDNR, does a lot of education with various groups, including interpretive paddling trips on the river. The River Rangers also provide education in the watershed. Elk's Nature Center is located in the Mankato area. Several history centers are located in the watershed, providing education on the history of the area. There are a few parks in the watershed that provide educational opportunities and/or access to the river.

### ***Environmental and Land Conservation Groups***

There are several citizen groups and non-profit groups and joint powers groups that are listed in the directory that have an interest in natural resources. These included the Izaak Walton League, "Friends" groups such as Friends of Minneopa State Park,

Mankato Area Environmentalists, Sierra Club, Audubon, Prairie Enthusiasts, and Save the Kasota Prairie. Organizations such as Citizens for a Cleaner Minnesota River are very active in the Watershed. Other non-profits work in a larger area which includes the Middle Mn River. These groups include, Clean Up Our River Environment, Hawk Creek Watershed Project, Friends of the Minnesota Valley, Greater Blue Earth River Basin Alliance, and the Minnesota River Basin Alliance, Nature Conservancy, as well as others.

### ***Lake/River Associations and Organizations***

There are several lake and river associations or organizations in the watershed. Some are much more active than others. Not all lakes have an active association. Lake Washington is one of the active lake associations. The Crystal Waters Project is also an active organization. The river groups that work in the watershed are generally non-profits or joint powers organizations, such as the Seven Mile Creek Watershed Project and the Redwood-Cottonwood Rivers Control Area. Some of the river groups focus on other parts of the Minnesota River basin but will have some involvement in the WRAPs process for the Middle Minnesota River.

### ***Government agencies***

The Directory includes listings of many governmental organizations in the watershed including federal and state agencies, municipalities, and local governmental organizations. Often there are several individuals in each agency that work within the Middle Minnesota River. We included those individuals that were identified as doing more work in the watershed or supervisors of programs. These individuals can connect you with others at the agencies if needed. Some contacts are not located in the watershed, but conduct work or provide assistance in the watershed.

The MNDNR has a new Fisheries staff member (Tony Sindt) designated as the Minnesota River Specialist. He is interested in reaching out to different groups.

### ***Other Citizen groups***

Several other groups that may not fit into the categories listed include the League of Women Voters, and Veteran's groups. These groups may have meeting facilities that could be used and are a potential audience for education programs and citizen engagement.

### ***Service Clubs***

We identified 25 service clubs in the watershed; the Lions club, Jaycees, Women of Today, Rotary club, Kiwanis club, Optimists club and the St. Peter Ambassadors. These groups provide access to a variety of individuals and different interests. Many that are members of service clubs are involved because they enjoy volunteering. Although most do not work on environmental issues, they may be willing to participate in these efforts.

Service clubs are a possible source of funding. A lot of the groups raise funds through fundraising events or pull tabs and donate to the community. Most hold monthly meetings. Some invite speakers to their meetings. This may be a good opportunity to present some education programs about the Middle Minnesota Watershed.

### ***Sportsman's Groups***

There are over 25 sportsman's groups listed in the directory. They consist of local sportsman's clubs; and national, state or regional organizations such as Trout Unlimited and the Minnesota Deer Hunter's Association. In addition to state organizations, groups like Pheasants Forever have local chapters. Some of these groups are a potential source for volunteers. Some have funding available. Some have club houses and may be able to provide meeting space. Many have a focus on habitat and fund and lead habitat improvement projects which also may also be beneficial for water quality. The New Ulm Area Sport Fishermen is one of the more active groups that have done some work related to the Middle Minnesota River. Some of its members are also active in other groups listed in the directory.

### ***Universities, Colleges, and Student Groups***

Student groups may be a good source of volunteers. There are contacts and specific student groups listed for Gustavus Adolphus College, Minnesota State University Mankato and several smaller colleges and schools. Some colleges may be interested in participating in monitoring or other research projects too. There may be a fee for this type of work. Minnesota State Mankato has the Water Resources Center which does a lot of work in the Minnesota River Watershed and hosts the Minnesota River Data Basin Center web site.

There are several FFA groups associated with the high schools in the watershed. We spoke with one of them that indicated the students may be interested in participating in projects. Presentations to FFA groups may also be a good way to get messages out to farm families, by having the students bring information home with them. Contacts for area Girl Scout, Boy Scout and 4H groups are also included. These are all potential sources of volunteers.

### **Existing Networks**

There are already a number of partnerships doing work in the watershed. These include groups or projects like the Seven Mile Creek Watershed Project, and Fishers and Farmers. Here are some additional examples:

Coalition for a Cleaner Minnesota River has a lot of partners. For example, they have teamed up with the New Ulm Area Sport Fishermen and the 3M RRAT group for river clean ups. They cooperate or are affiliated with several other organizations and have a

lot of supporters (business, individual, other) for their projects. Not all are included in the directory but are listed on the CCMR web site.

Crystal Waters Project works with Crystal Loon Recreation Association, Ducks Unlimited and the local co-op on a fundraising ice fishing event.

Sporting groups- there is overlap between some of these groups. For example the New Ulm Sport Fisherman membership includes Scott Sparlin of CCMR, and Tony Miller who organizes projects for 3M RRATs.

Greater Blue Earth River Basin Alliance is a partnership of ten counties. The Soil and Water Conservation Districts often work with the counties, NRCS, and other agencies. Many agencies will work together and also with local groups such as lake associations.

The Minnesota River Watershed Alliance has been active in organizing various groups in the entire Minnesota River basin. Key leaders in this group are Scott Sparlin and Ted Suss, who are leaders of non-profit groups in the watershed. They have successfully gathered many groups and individuals for meetings and are leading the Alliance into a new type of group based on input from everyone involved.

## **Key Leaders**

A list of key leaders identified during the project is attached as part of this report. It was difficult to identify key leaders. Some individuals didn't really see themselves as key leaders and when asked to identify others, not many were named. It seemed like there are some that just need to be asked and would be willing to help. This was sometimes indicated in the Directory notes.

## **Challenges**

The survey monkey was not a very useful way to gather the information. We had only 29 responses to the survey. We had some organizations or businesses that didn't return our phone calls, some that didn't want to share their lists of organizations in the watershed, and others that were very helpful.

It was somewhat difficult to decide who to include, especially with businesses. We focused on larger businesses or those that have more of a connection with the River.

Those listed in the Directory are not a static group. Staff changes and office moves make it necessary to update the Directory periodically. For groups like the service organizations, they may elect a new president each year. However, usually that contact listed would be willing to pass on the new information. Participants at the MPCA

meeting held on January 20 expressed a desire to have a Directory that can be easily updated. One suggested searching for an App or program that will allow those listed to update the information themselves. There seemed to be a desire to have this Directory resource available and updated.

The Minnesota River Data Basin Center has an online listing of organizations. However it is not up to date. They may be a possible host for an ongoing directory if MPCA does not want this task. If funding was available, possibly student help could be used to update the contact information periodically.

## **Information learned from the contacts**

Due to the size of the watershed, it may be best to have regional meetings or open houses rather than one location.

Lake Associations- most lakes in the watershed either don't have a lake association, or it is not very active. Lake Washington was one that has an active lake association. Crystal Lake has an association, but more work is being done through the Crystal Lakes Project. Duck Lake Association is also somewhat active.

There are a lot of service organizations in the watershed, such as Lions and Jaycees. These are a good source for volunteers and potentially funding for small projects or events. They would also be a possible way to reach an audience.

Unimen Mines has a new staff person that has part of his job to work with the community. He also sounded willing to allow access to the river through their land if needed.

I spoke with some of the Co-ops. Some of them have some funds that could be applied toward projects. They are also a good connection with farmers. They host meetings where you might be able to participate.

3M New Ulm is interested in reactivating their community giving program as well as the River Rats program.

Deb Dirlam the Environmental Office Director for the Lower Sioux Indian Community seemed excited that the Directory was being created. They may be a good partner for some projects.

After speaking with the chamber of commerce in St. Peter we found out that they do not hold any events that focus on the river. It might be beneficial to encourage the City to

work with some of the partners to hold some event to help make the citizens more interested in the Minnesota River watershed in the St. Peter area.

### **Important information to pass on**

I spoke to a city council member that asked me to pass on this information. Something that would be really helpful is to have access to funds to purchase land that becomes available after someone passes away or purchase easements for flood control. A lot of the land is tied up for very long periods of time. If property is tied up in a trust and the owner passes away, the Department of Human Services holds a lien on the property and there is a short window to purchase the property after which it is likely tied up again for a long period. Funds would have to be set aside and accessed with short notice.

As you know, citizens probably don't care a whole lot about a resource they don't know anything about. Any way you can help the project partners inform the public about the resources in their area and get them excited or concerned about it will help you engage them in future activities and projects in the watershed. For example, Scott Kudelka, DNR, takes students on paddling trips. Once they get a chance to experience the river, they are more likely going to be interested in caring for it and maybe sharing this with their parents.

### **Distribution of the Directory**

A link to the Directory was sent to all that provided an email address. Printed copies were mailed to the few (11) that requested them and to those that attended the MPCA meeting. The project partners were emailed the digital Excel version of the Directory so that they can sort it and use it to create mailing lists as needed. They were also provided with the list of Watershed Leaders and the information on "Uses for the Directory". The "Uses" information is also included at the end of the pdf file.

## Grant Project Summary

Project title: Minnesota River at Mankato: Stakeholder Identification and Analysis

Organization (Grantee): Fortin Consulting Inc.

Project start date: 8-15-14 Project end date: 2-28-15 Report submittal date: 2-28-15

Grantee contact name: Carolyn Dindorf Title: Limnologist/Vice President

Address: 215 Hamel Road

City: Hamel State: MN Zip: 55340

Phone number: 763-478-3606 Fax: \_\_\_\_\_ E-mail: carolyn@fortinconsulting.com

Basin (Red, Minnesota, St. Croix, etc.): Minnesota County: multiple

### Project type (check one):

- Clean Water Partnership (CWP) Diagnostic
- CWP Implementation
- Total Maximum Daily Load (TMDL) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL Implementation

## Grant Funding

Final grant amount: \$21,500 Final total project costs: \$21,486.86

Matching funds: Final cash: \$ Final in-kind: \$ Final Loan: \$

Contract number: 7107 MPCA project manager: Bryan Spindler

## For TMDL Development or TMDL Implementation Projects only

Impaired reach name(s): \_\_\_\_\_

AUID or DNR Lake ID(s): \_\_\_\_\_

Listed pollutant(s): \_\_\_\_\_

303(d) List scheduled start date: \_\_\_\_\_ Scheduled completion date: \_\_\_\_\_

AUID = Assessment Unit ID

DNR = Minnesota Department of Natural Resources

### \*Major watershed(s): [Select all that apply - To check the box: double click the box, select checked, and click okay.]

- |  |  |   |   |  |
|--|--|---|---|--|
| <input type="checkbox"/> Statewide           | <input type="checkbox"/> Kettle River                        | <input type="checkbox"/> Miss Rvr – GrandRpds   | <input type="checkbox"/> Rainy Rvr – Baudette                   | <input type="checkbox"/> So Fork Crow River                    |
| <input type="checkbox"/> Big Fork River      | <input type="checkbox"/> Lac Qui Parle River                 | <input type="checkbox"/> Miss Rvr –Headwaters   | <input type="checkbox"/> Rainy Rvr – Black Rvr                  | <input type="checkbox"/> Lower St. Croix Rvr                   |
| <input type="checkbox"/> Upper Big Sioux Rvr | <input type="checkbox"/> Lake of the Woods                   | <input type="checkbox"/> Miss Rvr –LaCrescent   | <input type="checkbox"/> Rainy Rvr – Rainy Rvr                  | <input type="checkbox"/> Upper St. Croix Rvr                   |
| <input type="checkbox"/> Lower Big Sioux Rvr | <input type="checkbox"/> Lake Superior – North               | <input type="checkbox"/> Miss Rvr – Reno        | <input type="checkbox"/> Rapid River                            | <input type="checkbox"/> St. Louis River                       |
| <input type="checkbox"/> Blue Earth River    | <input type="checkbox"/> Lake Superior – South               | <input type="checkbox"/> Miss Rvr – Sartell     | <input type="checkbox"/> Red Lake River                         | <input type="checkbox"/> Red Rvr of the North<br>Tamarac River |
| <input type="checkbox"/> Bois de Sioux River | <input type="checkbox"/> Le Sueur River                      | <input type="checkbox"/> Miss Rvr – St. Cloud   | <input type="checkbox"/> Upper Red Rvr                          | <input type="checkbox"/> Thief River                           |
| <input type="checkbox"/> Buffalo River       | <input type="checkbox"/> Leech Lake River                    | <input type="checkbox"/> Miss Rvr – Twin Cities | <input type="checkbox"/> Redeye River                           | <input type="checkbox"/> Two Rivers                            |
| <input type="checkbox"/> Cannon River        | <input type="checkbox"/> Little Fork River                   | <input type="checkbox"/> Miss Rvr – Winona      | <input type="checkbox"/> Redwood River                          | <input type="checkbox"/> Upper/Lower Red Lk                    |
| <input type="checkbox"/> Cedar River         | <input type="checkbox"/> Little Sioux River                  | <input type="checkbox"/> Miss Rvr – Lake Pepin  | <input type="checkbox"/> Rock River                             | <input type="checkbox"/> Upper Iowa River                      |
| <input type="checkbox"/> Chippewa River      | <input type="checkbox"/> Long Prairie River                  | <input type="checkbox"/> Mustinka River         | <input type="checkbox"/> Root River                             | <input type="checkbox"/> Vermillion River                      |
| <input type="checkbox"/> Clearwater River    | <input type="checkbox"/> Red Rvr of the North<br>Marsh River | <input type="checkbox"/> Nemadji River          | <input type="checkbox"/> Roseau River                           | <input type="checkbox"/> Upper Wapsipinicon<br>River           |
| <input type="checkbox"/> Cloquet River       | <input type="checkbox"/> MN Rvr – Yellow<br>Medicine River   | <input type="checkbox"/> No Fork Crow River     | <input type="checkbox"/> Rum River                              | <input type="checkbox"/> Watonwan River                        |
| <input type="checkbox"/> Cottonwood River    | <input type="checkbox"/> MN Rvr – Headwaters                 | <input type="checkbox"/> Otter Tail River       | <input type="checkbox"/> Red Rvr of the North<br>Sandhill River | <input type="checkbox"/> DesMoines Rvr Hdwtrs                  |
| <input type="checkbox"/> Crow Wing River     | <input checked="" type="checkbox"/> MN Rvr – Mankato         | <input type="checkbox"/> Pine River             | <input type="checkbox"/> Sauk River                             | <input type="checkbox"/> Lower DesMoines Rvr                   |

- |   |  |   |   |  |
|---|--|---|---|--|
| <input type="checkbox"/> E Fork DesMoines Rvr                       | <input type="checkbox"/> Lower MN River      | <input type="checkbox"/> Pomme de Terre Rvr | <input type="checkbox"/> Shell Rock River | <input type="checkbox"/> Wild Rice River |
| <input type="checkbox"/> Red Rvr of the North<br>Grand Marais Creek | <input type="checkbox"/> Miss Rvr – Brainerd | <input type="checkbox"/> Rainy Rvr – Hdwtrs | <input type="checkbox"/> Snake River      | <input type="checkbox"/> Winnebago River |
|   |  |   |   | <input type="checkbox"/> Zumbro River    |

- \*Organization type:**
- |  |   |
|--|---|
| <input type="checkbox"/> Federal government    | <input type="checkbox"/> Local/Regional government  |
| <input checked="" type="checkbox"/> For-profit | <input type="checkbox"/> Private college/university |
| <input type="checkbox"/> Individual            | <input type="checkbox"/> Public college/university  |
| <input type="checkbox"/> Non-profit            | <input type="checkbox"/> State government           |

- \*Project type:**
- |   |                                     |  |
|---|-------------------------------------|--|
| <input type="checkbox"/> Analysis/Interpretation                  | <input type="checkbox"/> Modeling   | <input type="checkbox"/> Research                |
| <input type="checkbox"/> Assessment/Evaluation                    | <input type="checkbox"/> Monitoring | <input type="checkbox"/> Restoration/Enhancement |
| <input type="checkbox"/> Demo/Pilot project                       | <input type="checkbox"/> Planning   | <input type="checkbox"/> Technical assistance    |
| <input checked="" type="checkbox"/> Education/Outreach/Engagement |                                     |  |

**Executive Summary of Project** (300 words or less)

The Minnesota Pollution Control Agency (MPCA) began a Minnesota River at Mankato Major Watershed (MRMW) project in the summer of 2013. In the summer of 2014, it was decided to initiate a watershed directory to outline who is active in the watershed and what collaborations might be achieved. Challenges in connecting the various stakeholder groups had been identified by the MPCA during their outreach. The MRMW covers approximately 862,000 acres across parts of eight counties in south-central Minnesota. The MRMW is comprised of several small first and second order streams that drain directly into the Minnesota River. Due to its size and shape, those in the watershed do not necessarily connect, even around environmental interests, within the watershed’s geography. A meeting in a location at one end or another might well be ignored by those at the other end, despite complementary goals and interests.

FCI accomplished this project by making personal connections to the stakeholders, collecting background and organizational information from them as appropriate, and providing a hard copy and digital version on time and to the satisfaction of the project manager. The watershed directory created will provide a useful tool for citizens, local and state governments in identifying key existing organizations and driving the potential for new synergy of efforts to both protection and education around the Minnesota River. FCI also identified people and organizations in the MMRW who are willing to participate with the MPCA to maintain visibility and communication around the water protection needs of the region.

√ Section 1 -- Work Plan Review

**Objective 1:** Create a watershed directory for the MRMW. This was completed prior to 15 January 2015 and approved by the MPCA project manager by the deadline.

**Task A:** FCI coordinated with the MPCA project manager to delineate the benefits expected from the directory and the better known individuals and programs in the area. It was found that more phone conversations were needed than expected, that contacts were not sufficiently identifiable from on-line searching or surveys. FCI used survey monkey and networking with initially identified stakeholders to increase the number of valuable entries in the directory. Considerable time was necessary to appropriately flesh out the entries in the directory. FCI had a booth at the second Minnesota River Congress event to let attendees know about the Directory, network and gather information for the Directory.

**Task B:** FCI made numerous phone calls to gather information for the Directory but to also find out how the various organizations currently interacted and how they might work together in the future. FCI worked with the MPCA project manager to determine what was needed to narrow the search and set the basis for the format and information within the directory. A form was created to help us collect the same type of information about each organization. As information was collected, it was added to the draft directory in an Excel format. The format was reviewed and approved by the MPCA project manager. In addition to the Directory entries, FCI created a first page which included background information about the directory and instructions for its use. The final version of the Directory included 391 entries, some of them with multiple contacts.

**Task C:** FCI printed 25 copies of the approved final directory and distributed to those stakeholders in the watershed who have indicated a need for hard copy version. Only 11 requests for hard copies versus digital access were made. Hard copies were also provided to the attendees of the MPCA-Mankato stakeholder meeting held in February 2015.

**Objective 2:** Create a digital version of the directory. FCI compiled all of the information gathered during Objective 1 tasks into a digital directory, including hyperlinks to websites or on-line documents. All deadlines were met within this objective.

**Task A:** The MPCA project manager was given a copy of the digital format, initially for review, and then as a deliverable. It was decided that the Excel format was the best format for using the directory as it could be sorted and searched. Hyperlinks were created and checked. Two versions were created, 1) Digital workbook version with first worksheet sorted by organization and "protected" and second worksheet sorted by County and left unprotected. 2) pdf version with working hyperlinks and password "protected" so that it could not be easily used to send out Spam emails. All versions included a first page which explained the Directory.

**Task B:** The digital Excel file version of the Directory was sent out to the MPCA list of partners. A link to the MPCA Middle Mn River at Mankato web site where the Watershed Directory will be posted was sent out to all of the organizations listed in the Directory.

**Objective 3:** Work with MPCA to develop stakeholder relationships in the MRMW. All deadlines were met within this objective.

**Task A:** FCI attended a Listening Session which was part of the Minnesota River Congress meetings, in order to gauge interest and identify key stakeholders. FCI participated, with a booth, at the second Minnesota River Congress meeting in New Ulm on October 30, 2014. FCI worked with MPCA to create a handout with information about the Directory and networked with those that attended to provide information about the Directory and network with stakeholders. FCI had created a form to collect information for Directory entries which was completed by attendees. This was a good opportunity to meet with a number of key stakeholders in the Minnesota River. FCI was able to speak with a number of people who provided information on who others to contact. Numerous phone calls were made to gather the information that is included in the Directory. During the interviews, FCI asked who others thought were key leaders. FCI staff interacted with most involved in the MMRW and provided a summary report to MPCA. This report provided possible strategies as well as key players for the MPCA's future work.

**Task B:** A meeting of stakeholders was held at the MPCA office on January 20, 2015. FCI staff presented information about the development of the Directory and how it could be used. Printed copies of the Directory were provided to meeting participants. Information about potential uses was later emailed to participants along with the digital Excel version of the Directory.

**Task C:** FCI documented potential future strategies in the MRMW for community building and asset leveraging, including information gained from the stakeholder meeting.

**Objective 4:** Project Administration.

**Task A:** FCI senior staff scheduled and conducted communication with the MPCA project manager through phone calls and email.

**Task B:** FCI maintained financial records and prepared a final financial report. A change order was processed in January to reflect that there was much less need for funding of hard copy directories (and mailing of them) and more opportunity to have FCI staff develop stakeholder information into its most useable form. A second change order was processed in February was done to provide even more development of stakeholder information and data gathering. A final invoice was provided to MPCA on 28 February 2015.

## **Section II – Grant Results**

- ✓ **Measurements:** Attached is a copy of the Middle Minnesota Watershed Directory as provided to the MPCA project manager.
- ✓ **Products:** Attached is the expanded project report created by FCI senior staff. It discusses the stakeholders and strategic approaches that the MPCA might use to foster a strong base among those interested in the Middle Minnesota River. It also includes a list of key leaders.
- ✓ **Public outreach and education:** FCI had a booth at the Minnesota River Congress meeting which had attendance of over 100. FCI spoke to all that visited the booth and interacted with others to let them know about the Directory. FCI spoke to over 100 through phone calls and interacted with others through email about the project. FCI presented the Directory and potential uses at the stakeholder meeting held. Approximately 16 WRAPs partners attended.

✓ **Long-term results:**

This project provides a better overview and understanding of the key players in the Middle Minnesota River Watershed, and gives stakeholders a means of reaching out to one another to collaborate and, potentially, increase the activities within the watershed that will lead to better protection of this resource. It can be hoped that the MPCA-Mankato staff can build upon this foundation. Several groups that were contacted were very interested already in the watershed and its protection and appeared to view the directory as a tool that could help their efforts. On its website, FCI posted a link to the survey used during the project and some metro area environmental groups have expressed curiosity about the project and how it might be replicated in other watersheds.

**Goals** (Include three primary goals for this project.)

- 1st Goal: Develop a directory of current individuals and organizations who focus on water resources, recreation and economic opportunities in the Minnesota River at Mankato major watershed.
- 2nd Goal: Identify connections between watershed groups and citizen engagement in the watershed, to improve awareness of the challenges in the watershed and chart a path toward future collaboration.
- 3rd Goal: Provide the MPCA-Mankato organization with more connections and background to further its work in the watershed.

**Results that count** (Include the results from your established goals.)

- 1st Result: An electronic and hard copy version of the directory were created.
- 2nd Result: FCI provided MPCA-Mankato with a report detailing background and current information on active individuals and organizations within the watershed.
- 3rd Result: FCI participated in a meeting with stakeholders to explain the directory and connect individuals and organizations with each other and the MPCA.

**Picture** (Attach at least one picture, do not imbed into this document.)

Description/location:

Worksheet 1 of Watershed Directory with instructions for its use

**Acronyms** (Name all project acronyms and their meanings.)

WRAPs Watershed Restoration and Protection Strategies

**Partnerships** (Name all partners and indicate relationship to project)

Not applicable

**Section III – Final Expenditures (spreadsheet represents change order from February 2015)**

Project title: MINNESOTA RIVER AT MANKATO																	MPCA Use Only					
STAKEHOLDER IDENTIFICATION AND ANALYSIS																	Swift #: 80186					
																	CR #: 7107					
1. Personnel										2. Other Expenses					3. Total Cost							
Project Budget	Project Manager	Invoice 1	Invoice 2	Senior Staff	Invoice 1	Invoice 2	Technician	Invoice 1	Invoice 2	Assistant	Invoice 1	Invoice 2	Printing	Invoice 1	Invoice 2	Mailing	Invoice 1	Invoice 2	Mileage	Invoice 1	Invoice 2	Totals
\$ Rate per Hour/Unit	\$90.00			\$75.00			\$60.00			\$30.00									\$0.55			
Objective 1 hours	25			75			40.5			70												
Objective 1 \$	\$2,250.00	\$2,182.50	\$67.50	\$5,625.00		\$5,625.00	\$2,430.00	\$2,130.00	\$300.00	\$2,100.00			\$2,100.00	\$175.00		\$173.31	\$75.00		\$74.27			\$12,655.00
Objective 2 Hrs	8			29			22.5			29.5												
Objective 2 \$	\$720.00	\$675.00	\$45.00	\$2,175.00	\$1,950.00	\$225.00	\$1,350.00	\$630.00	\$720.00	\$885.00			\$885.00									\$5,130.00
Objective 3 Hrs	20.5			17			0.5			0												
Objective 3 \$	\$1,845.00	\$1,642.50	\$202.50	\$1,275.00	\$225.00	\$1,050.00	\$30.00		\$30.00	\$0.00									\$235.00	\$112.20	\$112.08	\$3,385.00
Objective 4 Hrs	2			2			0			0												
Objective 4 \$	\$180.00		\$180.00	\$150.00		\$150.00	\$0.00			\$0.00												\$330.00
Total Project Hours	55.5			123			63.5			99.5												
Total budget per position	\$4,995.00	Remaining	\$0.00	\$9,225.00	Remaining	\$0.00	\$3,810.00	Remaining	\$0.00	\$2,985.00	Remaining	\$0.00	\$175.00	Remaining	\$1.69	\$75.00	Remaining	\$0.73	\$235.00	Remaining	\$10.72	\$21,500.00
Total Labor Hours	341.5																					
FTE	0.16																					
																\$485.00						Total Expenses
																\$21,015.00						Total Personnel Cost

### **Minneopa and Fort Ridgely Watershed Interpretive Signs**

This education and outreach project was designed to inform the public about the sub-watersheds of Minneopa Creek and Fort Ridgely Creek in the Middle Minnesota River Watershed. Interpretive signs were installed at Minneopa and Fort Ridgely State Parks to provide an overview of the sub-watersheds, three major water quality issues, five examples of how to improve water quality, and how to find additional information. Both Minneopa Creek and Fort Ridgely Creek are suffering from water quality issues including excessive sediment, nutrients and fecal coliform bacteria. The interpretive signs have the potential to educate thousands of visitors annually, as these state parks are popular destinations in the Middle Minnesota Watershed.



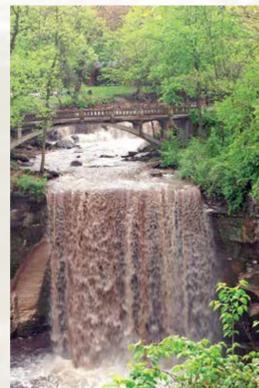
# MINNEOPA CREEK

## A REFLECTION OF ITS WATERSHED

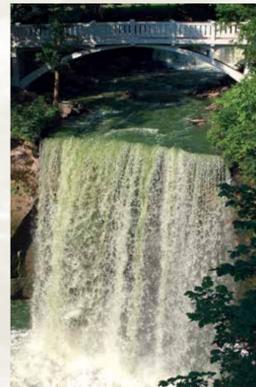
Minneopa Creek flows seventeen miles across a 54,000-acre watershed to its confluence with the Minnesota River at Minneopa State Park. From the headwaters at Lake Lilly the stream channel has been straightened to Lake Crystal. From there it follows the original channel eastward towards Minneopa State Park.

A large percentage of the watershed has been converted to agriculture with a much smaller portion consisting of urban areas, prairie, wetlands, and woodlands.

Three major types of pollution can affect the creek. Often you can tell which type is impacting the creek by looking at the water color.



**Sediment**  
A brown color indicates sediment pollution from dirt, soil, and other organic material.



**Nutrients**  
Excessive nitrogen and phosphorus can result in algae blooms that turn the water green.



**Fecal Coliform Bacteria**  
Runoff from manure and failed septic systems can raise bacterial counts and may make a person sick.



**Aerial Photograph of Minneopa Creek Watershed**  
Minneopa Creek (shown in dark blue) is one of hundreds of streams drained by the Minnesota River. Water running into Minneopa Creek is either cleaned or impaired by what happens on the land.

### Ways We All Can Improve Water Quality

- Use buffer strips along waterways.
- Maintain proper septic systems.
- Use conservation tillage on crop fields.
- Mulch or compost your grass clippings/leaves.
- Build a rain garden and use native plants.

### For More Information

MPCA - [www.pca.state.mn.us](http://www.pca.state.mn.us)  
 Minneopa State Park - [mndnr.gov/state\\_parks/minneopa](http://mndnr.gov/state_parks/minneopa)  
 Crystal Waters Project - [www.crystalwatersproject.org](http://www.crystalwatersproject.org)  
 Friends of Minneopa - [www.minneopa.org](http://www.minneopa.org)





# FORT RIDGELY CREEK

## A REFLECTION OF ITS WATERSHED



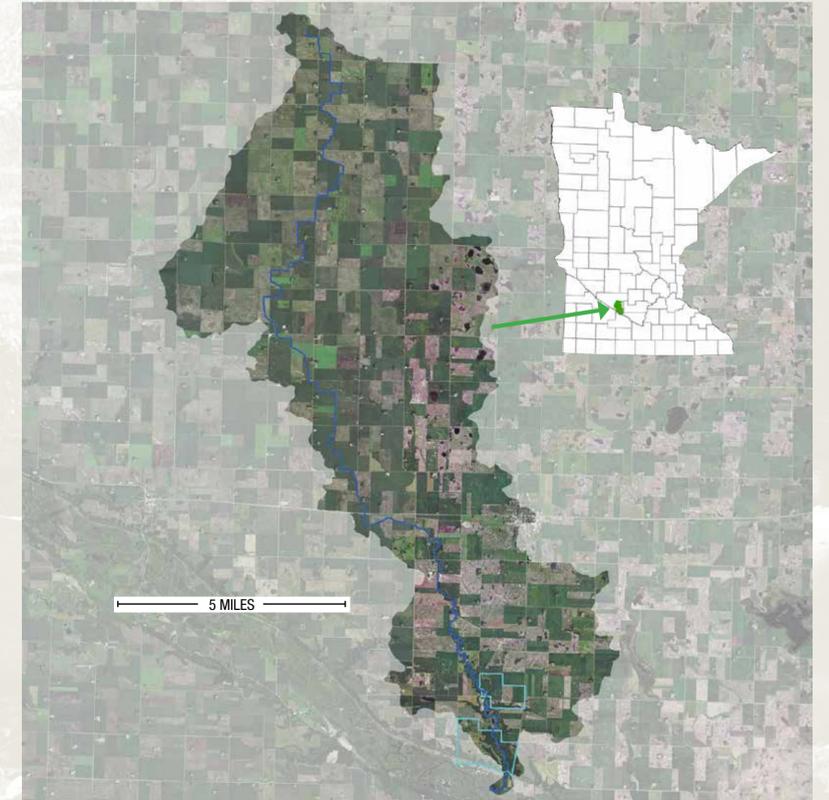
Canoeists at the confluence of Fort Ridgely Creek with the Minnesota River.



Rainbow trout find a new home in Fort Ridgely Creek.



Collecting freshwater invertebrates by 7th grade students from Gibbon-Fairfax-Winthrop School.



**Aerial Photograph of Fort Ridgely Creek Watershed**

Fort Ridgely Creek (shown in dark blue) is one of hundreds of streams drained by the Minnesota River. Water running into Fort Ridgely Creek is either cleaned or impaired by what happens on the land.

Fort Ridgely Creek flows more than twenty eight miles through its 44,561 acre watershed starting in south central Renville County to its confluence with the Minnesota River near Fort Ridgely State Park. Though the lower reach of the creek follows much of its original channel, the headwaters have been highly modified through straightening and channelization. Prior to settlement the watershed was dominated by grassland with a scattering of wetlands. Hardwood forest dominated the floodplains lower reach. Today the floodplain remains similar



Fort Ridgely Creek at flood stage.

but much of the upper areas would be unrecognizable having been converted to agriculture with some urban and recreational development. The lower reach of the creek is one of the few streams in south central Minnesota managed for trout with annual stocking of catchable size rainbow and brown trout.



Minnesota Pollution Control Agency

### **Middle Minnesota Watershed SWCD WRAPS Strategy**

The purpose of the Middle Minnesota Watershed SWCD WRAPS Strategy project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality within the Middle Minnesota Watershed portions of Blue Earth County, Brown County, Cottonwood County, Le Sueur County, and Redwood County. There were six partners involved in this project, Brown Soil and Water Conservation District, Brown County Water Planner, Blue Earth Soil and Water Conservation District, Cottonwood Soil and Water Conservation District, Le Sueur Soil and Water Conservation District, and Redwood Soil and Water Conservation District. Each of the partners approached the civic engagement portion of the project by varying methods, which included one-on-one landowner interviews, survey mailings, or landowner workshops/public meetings. Overall, the civic engagement results varied, mostly due to the fact that each district utilized different methods for the outreach completed in their respective counties.



### Grant Project Summary

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Project title: Middle Minnesota Watershed SWCD WRAPS Strategy

Organization (Grantee): Brown Soil and Water Conservation District

Project start date: 5/11/2015 Project end date: 6/30/2017 Report submittal date: 7/28/2017

Grantee contact name: Melanie Krueger Title: District Manager

Address: 300 2<sup>nd</sup> Ave SW

City: Sleepy Eye State: MN Zip: 56085

Phone number: 507-794-2553 Fax: n/a Email: melanie.krueger@brownswcdmn.org

Basin (Red, Minnesota, St. Croix, etc.) Minnesota River Basin. Middle MN Blue Earth, Brown,  
/Watershed & 8 digit HUC:: Watershed 07020007 Cottonwood, Le  
County: Sueur, Redwood

**Project type** (check one):

- Clean Water Partnership
- Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL/WRAPS Implementation

### Grant Funding

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Final grant amount: \$87,030.00 Final total project costs: \$76,901.34

Matching funds: Final cash: \$ n/a Final in-kind: \$ n/a Final Loan: \$ n/a

MPCA project manager: Bryan Spindler

**\*SEE ATTACHED FINAL EXPENDITURES REPORT**

### Project Partners

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1. Brown Soil and Water Conservation District
2. Brown County Water Planner
3. Blue Earth Soil and Water Conservation District
4. Cottonwood Soil and Water Conservation District
5. Le Sueur Soil and Water Conservation District
6. Redwood Soil and Water Conservation District

## **Executive Summary of Project** (300 words or less)

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The purpose of the Middle Minnesota Watershed SWCD WRAPS Strategy project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality within the Middle Minnesota Watershed portions of Blue Earth County, Brown County, Cottonwood County, Le Sueur County, and Redwood County. There were six partners involved in this project, Brown Soil and Water Conservation District, Brown County Water Planner, Blue Earth Soil and Water Conservation District, Cottonwood Soil and Water Conservation District, Le Sueur Soil and Water Conservation District, and Redwood Soil and Water Conservation District. Each of the partners approached the civic engagement portion of the project by varying methods which included one-on-one landowner interviews, survey mailings, or landowner workshops/public meetings. The final summary from each partner detailing their project work and outcomes follows on pages 3 through 20 of this report. Overall, the civic engagement results varied, mostly due to the fact that each district utilized different methods for the outreach completed in their respective counties. The grant amount awarded for the Middle Minnesota WRAPS project was \$87,030.00. Of that amount, \$76,901.34 has been spent by each of the six partners to complete the work objectives. Objective 1, WRAPS Development totaled \$62,979.20 and Objective 2, Administration – Reporting and Tracking totaled \$13,922.14. A detailed final expenditures report is attached with this final report and lists the breakdown of all expenses by objective and project partner. The results of the project work completed by each of the partners will be included in the final WRAPS Report of the Middle Minnesota Watershed being developed by the MPCA. Once completed, the final comprehensive WRAPS report will be used at the local level to prioritize and focus the implementation of future conservation work in the Middle Minnesota Watershed.

# **BLUE EARTH SWCD**

## **MIDDLE MINNESOTA WRAPS PROJECT FINAL REPORT**

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### **Introduction**

The Blue Earth Soil and Water Conservation District (SWCD) targeted landowners to contact within the Middle Minnesota Watershed. Our plan was to continue to build relationships through education and discussion in order to develop shovel-ready conservation projects. Although the SWCD did want a sense of cohesiveness amongst the interviews to gain insight into opinions on water quality subjects, we wanted to create a conversational setting to build further communication and conservation efforts that would go beyond simple information gathering. The Blue Earth SWCD was already gearing up for a Clean Water Fund (CWF) grant focused on phosphorus reduction in the County Ditch 56 watershed. With plans to intensely investigate and promote Best Management Practices (BMPs) within the CD56 watershed the Middle Minnesota WRAPS Civic Engagement was going to be an even greater ability to discuss issues with the landowners in CD56 and the neighboring subwatersheds that make up the Middle Minnesota Watershed.

### **Landowner Targeting and Statistics**

Initially, the Blue Earth SWCD planned to target 35 landowners in the Middle Minnesota Watershed. In the end 36 landowners were interviewed. As we had hoped in our planning we did have follow up meetings for further discussion with some landowners. Most of the second and third meetings involved more detailed discussions of potential BMPs and ideas for farm operations. The summary of all 36 landowners is included in this report.

The landowners targeted were all in the Minneopa Creek Watershed which is the largest Middle Minnesota minor watershed in Blue Earth County. We further divided the Minneopa Creek Watershed and concentrated the majority of the landowner discussions in the CD56 and City of Lake Crystal subwatersheds. CD56 and the City of Lake Crystal are the two major contributors of water to the impaired Crystal Lake.

46 Landowners were contacted. Only 1 of the 46 was not interested in participating. 5 people never responded to our request. 4 people expressed interest, but timing never allowed for an interview. 78% of the 46 contacted did participate in the interviews. 20 rural landowners, 9 Lake Crystal City landowners, and 7 Crystal Lake recreators made up the 36 total landowners interviewed.

### **Interview Framework**

All SWCD staff had the opportunity to sit down with landowners to discuss the Middle Minnesota Watershed. We had a great response rate from landowners due to the fact the SWCD was already invested in the Lake Crystal area watersheds. Although we asked many of the same questions to keep the group of interviews comparable, we kept the discussions conversational. Our plan was to continue established relationships and build new relationships. We didn't want the interview to be the only interaction with the landowners. We wanted to have multiple conversations that would lead to new conservation efforts in the watershed.

A typical interview involved an introduction and summary of conservation efforts in the watershed. Following the introduction we would get the conversation going with the broad questions typically asked to all landowners. After hearing their thoughts and opinions on the common questions we went one of two ways with the questions and conversations. We had two different sets of questions related to the location and livelihood of the landowner. Producer and rural landowners were guided through one set of questions, and urban or lakeshore owners were asked questions more relatable to their situation. The more specific questions flowed organically through conversation. We never pressed the landowner to answer questions. Our plan was to get questions answered over multiple conversations if necessary. The most important goals of the first one or two meetings was gaining baseline information, continuing established relationships, and earning trust of new landowners.

### **Main Topics Discussed and Common Response Themes**

The main focus for data collection involved questions related to these topics

- The current water quality condition compared to years past
- The sources contributing to poor water quality in the area
- How to improve the water quality
- Current contributions of the residents to improve the water quality

Although not everyone agreed in their responses, in general a consensus of opinions could be drawn from the discussions.

- Most residents talked about their connection to Crystal lake and the issues within Crystal Lake
- Roughly 85% of interviewees said water quality was worse, but many also thought the water was comparably as bad years ago.
- The majority hadn't noticed improvements in Crystal Lake from current practices, but a few expressed that overall the BMPs and operation changes had improved water quality in drainage ditches and some water bodies in the Middle Minnesota Watershed
- Most landowners agreed that major sources of impairments were coming from both farms and urban areas
- Many viewed sources from farmland are related to poor field management including over tillage and excess nutrient loading
- Sources from urban areas are from lawn fertilization, storm water runoff, and sewage water.
- Most believe wetland restoration, shoreline restoration, carp removal, nutrient and tillage management education, and County Ditch 56 repair and will improve water quality.

### **Additional Insights**

As the SWCD continued conversations with landowners helpful insights would come up through extended discussion outside our planned questions.

- Everyone genuinely seems to care about the problems in Crystal Lake. They want answers on how exactly to fix the problem, even if it means they personally have to change how they operate and live.

- Many rural landowners are very excited to see research and sampling results if they come from a trusted source. In fact many had insight as to where to perform further samples and what might be causing specific sample results.
- The urban and rural landowners both have a distrust of many government agencies and the MSU-Water Resource Center after grant and research projects focused on the Crystal Lake watershed failed to show results. The landowners also felt they were left out of the process with many of those projects.
- Over half of the urban landowners were engaged in watershed and lake groups, and are actively looking for ways to improve the water being discharged from the city.
- A number of the rural landowners expressed the need to continue education about tillage and nutrient management, especially, in the CD56 watershed where coarse soils exist.

### **Shovel Ready Projects and Cost**

The Blue Earth SWCD originally planned to use the civic engagement as the base data for grant applications to show willing landowners with ready to go projects. Between the SWCD and Blue Earth County, we have been awarded grants and have utilized other grant sources to implement projects in the CD56 watershed before the civic engagement was complete. Through our discussions we have been able to have landowners commit to incorporating nutrient management, tillage management, and cover crops. Landowners are very interested in trying denitrifying bioreactors and phosphorus removal tank systems.

The SWCD is currently working on contracts with landowners to implement 1,200 acres of nutrient management, 800 acres of strip/no-till, and 800 acres of cover crops. These contracts will be three year commitments. 4 denitrifying bioreactors and 4 phosphorus removal structures will be installed through the grant. The CD56 landowners have committed to a ditch cleaning and establishment of buffers along the ditch. The CD56 landowners are also installing 10 water control BMPs to compliment the CD56 project. Those 10 BMPs are also partially grant funded.

The total conservation project costs through the current grant funded projects will be nearly \$519,000.00. These projects and costs are just the first phase of projects planned. We fully expect more projects to happen as we continue discussions and hear further ideas from landowners. The full Crystal Lake watershed will require a few phases to get lasting results.

### **Final Thoughts**

The staff at the Blue Earth SWCD feels face to face conversations with landowners are the best opportunity to achieve conservation and water quality improvement goals. You will not accomplish voluntary conservation without landowner input and involvement. This type of civic engagement is much more personal and far more productive.

Our initial conversations with landowners have already led to many project ideas and landowner interest in the area. We also believe that the people sitting down with the landowners can't be just any agency. The landowners need to have a degree of trust in the person they are talking to. Staff from the SWCD are perfect examples of people that landowners trust. Staff from SWCDs also have the ability to implement projects directly with the landowners. SWCD staff offer a sense of stability for project follow through from idea to project implementation.

# **BROWN SWCD & BROWN COUNTY WATER PLANNER MIDDLE MINNESOTA WRAPS PROJECT FINAL REPORT**

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## **Introduction**

The Brown County Soil and Water Conservation District (SWCD) and Brown County Water Planner were seeking the public's opinion on water resources and conservation in Brown County's portion of the Middle Minnesota Watershed. To accomplish that, we drafted a survey and sent it to both urban and rural residents within the watershed to ensure unbiased results. The Middle Minnesota Watershed is split into a northern section and southern section within the county that have similar if slightly varied land uses. Row-crop agriculture is common to both areas, but the northern portion also has land in the Minnesota River floodplain or is heavily wooded while the southern portion has more crop diversity and livestock on the landscape. Our expectation was to use the survey results to better concentrate on specific water resource concerns and address these concerns with conservation practices that are more likely to be implemented.

## **Survey Background**

The "Brown County Landowner Survey – Middle Minnesota Sub Watershed" survey was developed based on questions used by Nicollet County in their survey of watershed residents. The mailing included an introduction letter, a sub-watershed map of the Middle Minnesota Watershed, and eight survey questions. We made the decision to use fewer questions with the intention to focus more on the specific resource concerns, landowner responsibility and potential conservation practices that could be implemented. The survey was sent to 3,000 residents with a response rate of 15 % or 458 responses. Not all respondents answered all of the questions nor were able to identify which sub-watershed they are associated with. One interesting thing that happened is that both the SWCD and County Water Planning Office received numerous phone calls from urban residents saying they "are not landowners" or don't think that they need to complete the survey because it does not pertain to them. This was a good point of education to let the resident know that no matter where they live, be it rural or urban, they are a part of a watershed. These contacts would not have been made without the survey effort.

## **Survey Results**

In reviewing the survey responses for question 1, most residents believed that water resources in Brown County were adequately protected. This was a conundrum as residents believed statewide protection was lacking. Residents largely agreed that water pollution affects human health and that runoff contributes to soil and nutrient loss yet felt that environmental protection laws limit their freedom and choices. Residents had an overall positive response for conservation practices, agreeing that they promote aquatic life, increase quality of life, and reduce runoff on farmland. Tile drainage was strongly supported with respondents believing that tile drainage contributed to increased water downstream. Overall, responses to this question made it clear that water resources are important for both quality of life and business in Brown County.

Question 2 evaluated the respondents' opinion of water resource responsibility and who should be held accountable. The responses indicated that residents believe it is a personal responsibility to protect water and that landowners should make sure their land isn't contributing to water resource problems.

Residents strongly agreed that everyone should be held responsible for protecting water whether it's a farmer, urban resident, located upstream or downstream, local government, or State government. An interesting result from the survey indicated that most people felt the government should be responsible but whether it should be local or state was not differentiated.

The purpose for question 3 was to discover landowners' opinion of how much of a problem some of the water pollutants/issues within the watershed are. A surprising trend from the survey showed that most residents have little knowledge of some of the major pollutant/issues regarding water. More well-known pollutants/issues such as sediment, flooding, and erosion were recognized but were not considered severe. This question shows that the Brown County Water Planning efforts need to more clearly focus on informing residents of the pollutant concerns in their watershed – an opportunity for education!

Potential sources of water pollutants/issues and how much of a problem they were was covered in question 4 of the survey. An unexpected finding from the survey was the emphasis on urban related practices. Fertilizer management for lawn care and urban/suburban runoff were considered moderate problems. Streambank erosion was characterized as a slight problem overall but also had the most votes within the severe problem column. Agricultural land uses such as tile drainage, surface ditch drainage, and improperly sized/maintained septic systems were not considered a problem by residents. Other potential sources such as unregulated contaminants, wind erosion and increased frequency or intensity of storms were considered slight problems or no problem at all. At this point in water quality research, unregulated contaminant pollution is still largely unknown; in Brown County these contaminants have not been tested for.

Question 5 addressed landowner opinion of farm/land management. Respondents strongly agreed that they can achieve whatever they want on their property if they work hard for it and agreed that most of what happens on their farm is within their control. However, it was clear by the responses that residents did not feel they had much control over policies that affect their land. Landowners' belief of not having control of policy would be a perfect opportunity for civic engagement.

With question 6 we were trying to gain insight on what conservation practices are currently being used and what landowners/property owners are interested in using in the future. The results of this question clearly show that landowners are interested in implementing conservation measures on their property that they would have more control over and could potentially install themselves. Some of the top conservation practices already installed or are planned on being installed are buffer strips, conservation tillage, protection of natural areas on their property, and minimizing fertilizer usage. Larger infrastructure projects such as conservation drainage management practices, vertical drop side inlets or agriculture waste management facilities or systems were not being done currently and landowners did not intend to install them in the future. Interestingly enough the survey showed that a majority of landowners are not currently using cover crops, but a majority plan on using them in the future.

The purpose of question 7 was to gauge landowners' personal obligation over water resource concerns. Most respondents felt strongly that it is their personal obligation to do whatever they can to prevent water pollution. A majority of respondents believe they need to maintain their operations in ways that do not contribute to water resource concerns. The use of conservation practices on the landscape was strongly supported along with more knowledge exchanged about conservation practices. Respondents did not appear overly receptive to attending public hearings or meetings about water quality. Therefore

this indicated that one-on-one conversations with residents may be a better avenue for community engagement in the future.

Question 8 focused on the likelihood of landowners adopting new conservation practices and/or their willingness to continue using them on the landscape under certain conditions. The question was largely answered with “neither agree nor disagree” which suggests either the survey was too long or landowners truly do not have much information regarding conservation practices. This question revealed a large issue with the lack of information available to landowners regarding conservation practices. It shows that this is an area that local governments could and should focus their efforts on. Through the education of landowners on the benefits of conservation practices we feel they would be more apt to adopt said practices.

### **Survey Results Conclusion**

The survey of residents provided valuable information to the Brown County SWCD and Brown County Water Planning. Normally we have only received information on a larger scale through the process of updating our County Water Plan, implementing new state regulations (i.e. buffer law) or meeting with individuals. We feel the survey provided us with an unbiased opinion of the state of water resources within Brown County. By sending the survey to 3,000 residents within the county we were able to receive a wide range of responses from multiple frames of mind, whether they owned many acres of land or just owned a house. Though interviews would have been an added bonus to this project, due to staffing limitations and time restrictions we were unable to accomplish them. Through interviews it is highly likely to receive biased responses due to the base of interviewees as most people interviewed through our departments are familiar with conservation and/or actively interested in conservation practices therefore giving biased opinions of the process. We feel through the survey we were able to reach a broader base of people with multiple points of view.

This survey, though worthwhile, offered no new and useful information to us as local government units. If anything, it strengthened some of the views we had regarding the thoughts behind water resources protection within the county. Primarily the difference of outlooks between urban and rural residents. Through the tallying process of the survey it was fairly easy to differentiate between the two based on the answers supplied. These differences were noticed through rural residents believing urban residents cause the majority of the pollution and the urban residents feeling the rural residents cause it.

The buffer law, though not having anything directly to do with this project, we feel affected responses from a majority of rural residents. The general consensus of dislike for the law and how it is being enforced caused many people to answer in a more negative light. We feel that this could have skewed some of the data that we received.

This survey has given us insight on where to focus our resources and time. It appears that landowners and residents do want to be engaged in improving water quality, but would tend to shy away from attending public meetings to gather that information. Offering more avenues of education to residents of Brown County seems to be the prevalent theme deduced from this survey. By increasing landowner education on water resource issues we feel we can increase conservation within the county and also landowner participation. In the area, there are many local interest groups representing both urban and rural residents. Meeting with these interest groups as well as individuals may be a better path to reach real results of conservation on the ground. Something that we may want to dive deeper into is why

residents consider themselves to be responsible for protecting water resources; is there a moral obligation as being a citizen, is it for religious reason, or is there some other reason they believe they are responsible.

### **Middle Minnesota WRAPS Conclusion**

Overall, there were some challenges faced and some positive outcomes from the Middle Minnesota WRAPS civic engagement project. The challenges Brown SWCD and Brown County faced were mainly related to staff changes within the SWCD which presented difficulties in accomplishing the project goals in a timely and knowledgeable manner. We feel the positive outcome from the survey mailing completed was the decent response rate of 15% and of those responses there did appear to be a variance in urban versus rural respondents. The results of the survey also indicate to both our offices the type of outreach strategies that will work best for the future in trying to implement more conservation practices in the Middle Minnesota watershed within our County. What did work for us was using a common set of survey questions to send to all residents within the watershed, regardless of acreage owned, to ensure a fair chance at responses from both urban and rural property owners. What we felt didn't work well was not having a common process for civic engagement throughout all areas in the Middle Minnesota watershed. Each area approached this project with a different method, which was either interviews or surveys, but we think the outcome would have been better and more measurable if a standardized approach had been used. The use of different methods for civic engagement doesn't allow for a uniform set of results to adopt new watershed goals for. However, the Brown SWCD and Brown County Water Planning will now be able to take the information learned and incorporate it into our Local Water Plan as well as the SWCDs annual plan to prioritize goals for future work in the Middle Minnesota Watershed in Brown County.

## **COTTONWOOD SWCD MIDDLE MINNESOTA WRAPS PROJECT FINAL REPORT**

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**How many meetings/interviews did you have?** March 28, 2017. One Soil Health Meeting held in Comfrey, 106 people attended, 46 surveys filled out after presentation by David Brandt and others.

March 8<sup>th</sup> 2016. The Cottonwood SWCD staff presented the Enviroscope Watershed Model presentation to the elementary students of the Comfrey School. We explained the watershed concept, talked about the watersheds they live in, and answered many questions. Estimate 40 students.

March 7, 2016. The Cottonwood SWCD staff presented a tree presentation to the Comfrey elementary students. During this presentation it is explained that what we do in our watershed affects the water quality in our rivers, lakes and streams. A question and answer session followed. Estimate 40 students.

**Who was involved at the meetings?** Soil Health Workshop: Landowners, operators, and staff from agricultural businesses and conservation organizations were involved. We targeted landowners in the Middle Minnesota Watershed in Cottonwood County and mailed them an invitation to the soil health workshop. After the workshop, the attendance sheet was cross-referenced with the targeted landowners in the watershed. These landowners were provided a personalized follow-up letter thanking them for their attendance and included a cover crop guide that can help them make decisions about implementing living covers on their property. Although landowners from the Middle Minnesota were targeted, we had attendees from all over the region and State (see attached spatial distribution of workshop attendees). What topics were discussed? Agenda attached. Attendees to the Soil Health Workshop received a packet of information about soil health and soil health practices, as well as an informational handout on the Intensive Watershed Monitoring process (see attached handout). A short introduction to the IWM process and the need for their input was also presented at the beginning of the workshop. Attendees were later provided an opportunity to identify restoration and protection strategies that they felt would benefit the Middle Minnesota Watershed (survey).

The workshop was intended to be interactive. Attendees were asked to bring their own soil sample and run a soil slake test at their table in order to assess their own soil health. They were also provided an opportunity to ask questions to a panel of local agricultural producers who have experience implementing soil health practices on their farms. The workshop was also designed to allow ample time during workshop activities for attendees to discuss amongst themselves.

**Any general themes related to water quality or BMPs?** From the Soil Health Workshop Survey, cover crops and practices associated with limiting tillage were most often listed as viable restoration and protection strategies.

**What survey questions did you ask?** Soil Health survey attached.

**What was the response rate?** 46 out of 106 responded after the soil health workshop.

**Any good insights?** A lot of interest in the cover crops value to soil health.

**Overall, how did the project go?** We are very happy with the civic engagement projects we implemented in the watershed.

**What were some positives and what were some things that could be improved related to civic engagement in the Middle MN?** The program gave us some funding to do outreach/civic engagement in our county.

**Any general strategies for water quality improvement that we should consider for Middle MN?** A much more consistent conservation effort in the watershed is needed to achieve any improvements in water quality. A good place to start is on every acre in the watershed, which means soil health improvements.

**Attachments:**

1. Soil Health Workshop Agenda
2. IWM Handout
3. Spatial Distribution of Soil Health Workshop Attendees
4. Copy of Soil Health Workshop Survey
5. Soil Health Workshop Survey Results
6. Personalized, targeted follow-up letter

**LE SUEUR SWCD**  
**MIDDLE MINNESOTA WRAPS PROJECT FINAL REPORT**

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**Middle Minnesota WRAPS Civic Engagement – Le Sueur County**  
**Summarized Landowner Interview**

**Description:**

The Minnesota River at Mankato Watershed (MRMW) covers approximately 862,000 acres across parts of eight counties in south-central Minnesota. The MRMW portion in Le Sueur County (LSC) accounts for approximately 56,000 acres or about 6.5% of the watershed. LSC has several watercourse in the watershed cherry and dog creek and several county ditches the outlet to the Minnesota River. The Watershed is located in the southwest quarter of LSC and has the community of Cleveland with the population of 719 and several lakes such as Emily, Henry and Washington.

The LSC SWCD met with nine landowners one on one to discuss six groups of questions ranging from farm and community, water resources, farm decision making, conservation practices and background information.

The information gathered will be used for future planning efforts in the watershed.

**Findings:**

***Your farm and your community***

1. Define your community?

**Summarized Response:**

**A small, rural, farming community with the ability to raise a family and have sustainable livelihood farming.**

2. What does farming mean to you? How would you describe your farm to a friend?

**Summarized Response:**

**A way of life, career and livelihood.**

3. What concerns do you have about your farm or farming in general? If you could change something about farming what would you change?

**Summarized Response:**

**The two common responses received were family farms disappearing turning into farming for profit and not what is right for the land and too many entities and regulations controlling agriculture.**

4. What do you like most about living here? What would you say are the biggest assets of your community?

**Summarized Response:**

**Small close knit communities that everyone knows who you are and are involved locally with strong support of the school systems. Seasonal changes allow for many outdoor recreation activities such as hunting and fishing.**

5. Do you have any concerns about your community? Explain?

**Summarized Response:**

**Information on farming is not understood between the city and lake home owners. The school district has unfairly taxed farmland, while farmers carry the burden of increased school levies. Livestock is almost nonexistent, the community is more recreational and less Ag.**

6. Has your community changed in the last 10 years? How so?

**Summarized Response:**

**Small farming operations are gone, business are less, livestock does not exist, the community focuses more on recreation and has more separation of city, lake and farm people.**

### ***Broader community capacity***

1. I'd like you to think of a time when your community or a group of community members came together to rally around some issues, opportunity, or problem? Please describe the situation to me. Who was involved? What was accomplished?

**Summarized Response:**

**Although the majority of farmers dislike the extra burden of school taxes, most described the proud achievements the community has made when rallying for the school to stay independent. Their community also welcomed home a very severely injured military veteran and held benefits for his family along with building them a handicap accessible home.**

2. Are there certain individuals, groups, or organizations that are generally trusted by community members? What makes them trusted?

**Summarized Response:**

**Local township boards along with the local SWCD and USDA Service Center were the most trusted organizations these landowners mentioned. The landowners surveyed have a good working relationship with these agencies and welcome the staff's recommendations on programs and projects.**

***Water Resources***

1. How important are local water resources such as streams and lakes to you and your family? Explain.

**Summarized Response:**

**All questioned agreed that local water resources were VERY important to them and their families. Water is the lifeblood of the ecosystem and it needs to be taken care of so farming and recreation can continue.**

2. How important are local water resources such as streams and lake to quality of life in your community? Explain.

**Summarized Response:**

**Humans and animals, the soil and seed, all need water to survive. It is our responsibility to continue to work on ways to keep our water clean. It is the utmost importance stated by all interviewed.**

3. How would you describe water resources in this area? Do you have any concerns about water quality or access to clean water in the area? Explain.

**Summarized Response:**

**Most of the landowners didn't feel that there are concerns in their community. One landowner felt agriculture producers can always work harder on controlling erosion into the lakes and streams.**

4. Whose responsibility is it to keep water resources in this area healthy?

**Summarized Response:**

**It is everyone's responsibility, rural, city, young and old. Conservation efforts can take place in the city homes as well as the farm fields.**

***Farm decision making***

1. How do you evaluate the success of your operation?

**Summarized Response:**

**Answers for this question ranged from successful and efficient to good crop production and management. Overall the landowners felt very fortunate to be able to farm the land and stressed the importance of raising a family in a rural environment.**

2. Have you changed the way that you farm in the past 5 years in attempt to make your farm more successful?

**Summarized Response:**

**All indicated that they have changed their farming methods. Less tillage, more conservation practices, less chemical application, improved manure management and retired highly erodible acres.**

3. What are the most important decisions you have to make on your farm?

**Summarized Response:**

**Financial decisions, expenses and marketing. It is suggested that when cash flow for the upcoming season is limited, nonessential items are cut out of their operating expenses.**

4. What are the most important considerations for you when making decisions about conservation practices on your farm? To what extent does the Farm Bill impact how you operate your farm?

**Summarized Response:**

**Financial was the common answer again. Decisions need to be efficient, economically possible and sustainable. The Farm Bill is important to the landowners but remarked on the amount of record keeping and time it does take them.**

5. Who are your trusted sources of information about farm management decisions? What makes them trusted?

**Summarized Response:**

**All named the local SWCD and USDA Service Center as their most trusted sources of information; agronomists, Coops, and Land magazine articles were also mentioned. Landowners felt local experts on farm management had their best interests in mind.**

6. Who are your trusted sources of information about conservation decisions? What makes them trusted?

**Summarized Response:**

**The SWCD and USDA Service Center are the most knowledgeable with the latest conservation practices and benefits. These offices help find funding sources to help offset the costs when installing practices.**

***Conservation Practices***

1. When you think of agricultural conservation practices, what comes to mind?

**Summarized Response:**

**Land preservation**

2. Do you use any conservation practices on your land?

**Summarized Response:**

**All responded yes!**

- a. Please describe them for me?

**Summarized Response:**

**Erosion control structures, CRP, manage management, waterways, buffers, and residue management**

- b. What problems are you trying to address with them?

**Summarized Response:**

**Erosion**

- c. What first motivated you to use this practice?

**Summarized Response:**

**Responses varied for this question. Some mentioned family began erosion control projects and they continued because he saw the benefit. Another commented on the need to control the soil so installing practices was worth a try. And one landowner talked about that the terrace he installed that replaced a waterway made farming easier and more convenient.**

- d. How well are the practices working for you?

**Summarized Response:**

**The practices are all working well. One landowner discussed after a large rainfall he experiences slight problems but overall he is happy with his decisions.**

3. Are there other practices you've considered implementing? What has kept you from doing more implementation?

**Summarized Response:**

**Answers varied again on this question. Time and money (cost of practice) seemed to be the most common response but others remarked about crop prices and now the upcoming buffer law that they need to follow.**

4. What do you see as the primary barriers or constraints to adopting these other practices? (List practices and corresponding barriers)

**Summarized Response:**

**Time and money**

5. Would you be willing to try out any of these practices if those barriers could be addressed?

**Summarized Response:**

**Definitely all would be interested.**

6. Would any of the following programs or conditions increase the likelihood that you would try out a new conservation practice?
- a. Payments - **Yes**
  - b. Cost –share - **Yes**
  - c. Technical assistance - **Yes**
  - d. Stories from farmer who have had success with the practice - **Yes**

7. What has been your experience with the SWCD and/or NRCS?

**Summarized Response:**

**All say their experience has been good and felt they have good communication with each agency in the service center.**

8. What has been your experience with other governmental units?

**Summarized Response:**

**Answers were “no response” to “fine”.**

9. When you want information or resources related to conservation practices, where do you go for help?

**Summarized Response:**

**SWCD and USDA Service Center, internet**

***Background information***

1. Do you own or rent most of your land?

**Summarized Response:**

**The majority that participated in this survey own their land. Two individuals own and rent and there were none that just rented.**

2. Describe your farm operation. Acres owned/rented, tillage decisions, fertilizer/pesticide decisions, crop rotations, rollers, etc.

**Summarized Response:**

**Cash crop, corn/soybean rotation, hog operation and conservation tillage.**

3. Do you treat rented and owned land differently? **NO**

4. How long do you plan to farm and who will farm after you retire? **All responded until retirement and a family member plans on taking over the operation.**

5. Can we contact you in the future with more questions or information about upcoming events or anyone else you know? **ABSOLUTELY**

## **REDWOOD SWCD**

### **MIDDLE MINNESOTA WRAPS PROJECT FINAL REPORT**

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Middle Minnesota Watershed Summary:

Redwood SWCD was the lead for the portion of the Middle Minnesota Watershed that lies in Redwood County.

This is a part of the county where there has not been a lot of success in connecting with landowners, this is due in part that this is some of the highest valued land in the county. Another factor is there has not been any monitoring or assessments completed in this watershed before the WRAPS started.

Our first step in the WRAPS process was to develop a mailing list of everyone who lives in the watershed. In the end we refined the list to include individuals who actually lived in the county. In the end there was approximately 600 landowners that would receive correspondence.

Due to lack of landowner contact in the past, we felt it necessary to send them introductory materials. We developed a brochure that showed boundary of major watershed along with the boundaries of the minor watersheds. We also included information about the watershed, ex. miles of open water, county ditches, etc. With the brochure we mailed a letter asking them if they knew certain items about their watershed and listed about 12 questions we wanted them to think about as they thought about the water as it fell and left the watershed.

We spent considerable amount of time developing a questionnaire that we hoped would be straight forward and meaningful.

About 6 weeks after mailing the first mailing, we mailed 600 questionnaires to the same individuals. Postage paid envelopes were included with the hopes of have good return. We also did not require a name, which we also hoped would encourage individuals to return them. We were very disappointed as we only got 62 returned to our office. Replies were all over the board from, blaming the farmer, to blaming individuals who live in cities and cities themselves. Some said everyone is doing everything they can, to some saying not nearly enough is being done. We felt the questionnaire was a waste of time and money.

It was decided to hold a meeting and invite all citizens in the watershed. We decided we would hold one for the whole watershed rather than trying to hold two. Before we planned the meeting, we met with 6 active individuals in the watershed and asked for their input in meeting material. All individuals thought it was important that it be producer lead and our office staff would be there as resource people. It was held during an evening. Once again it was very frustrating as only 12 individuals attended. There was a great discussion among most of the individuals that attended and several positive items came out of the meeting, however for the most part we felt we were "preaching to the choir".

At the meeting we discussed many different topics including: what it meant to live in a watershed, who is responsible for water quality issues, what type of good things do you see happening where you live, what are some things that need to be done to possibility improve water quality, what can we do to get more citizens involved in water quality issues across the county, nitrates in ground and surface water.

Since we have not had funds through other programs to offer cost share or incentives to individuals in the Middle MN Watershed, we diverted some of our Water Plan Implementation funds to this watershed. WE offered incentive payments to producers for four different practices; no till/strip till, cover crops, variable rate and alternative intakes. We had a limited dollar and told the producers through a letter that it would be first come first serve and set a deadline date. Fifteen individuals were able to receive funds. The unfortunate part about the 15 applications is we had worked with over half of the applicants who participated in the program.

With this being my first WRAPS I did not know what to expect. It was a fragmented approach due to the size and shape of watershed size which in my mind made it difficult. We had too many groups doing various items within the watershed, which did not lead to continuity. It is hard when one group does one things and another group does something else. One of the problems I saw was that some groups did not remember that civic engagement was really about how to engage the public, in particular the adults, in the process.

One improvement that could have helped, would have been an umbrella organization to work with PCA to help them with the process.

We felt it gave us a reason to communicate with individuals in a part of the county that we have not worked in very much. We are unsure if the communication had an impact on the citizens, as many that responded were individuals that we had worked with in the past.

Staff feels the most positive changes in water quality will come with the practices that we offered to the citizens; no-till/strip till, nutrient management, cover crops and alternative intakes. This part of our county does not have as many needs for structural practices, as other parts of the county.



**Brown Soil and Water  
Conservation District**

300 2nd Ave. SW • Sleepy Eye, MN 56085 • Phone: 507-794-2553  
[www.brownsxcdmn.org](http://www.brownsxcdmn.org)  
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## **Brown County Landowner Survey** Middle Minnesota Sub-Watershed

Dear Brown County Landowner,

We are writing to ask for your help in a study about landowners and their relationship with our water resources. This study is being conducted by the Brown County Soil & Water Conservation District in partnership with Brown County Water Planning and the Minnesota Pollution Control Agency. We are contacting you because you are a landowner in the Middle Minnesota watershed in Brown County and we want to know what you think about water resources in your watershed.

The purpose of this survey is to help local resource managers and community leaders better understand landowner's views and develop better communication and outreach programs in the County. We sincerely appreciate you taking the time to help us with this survey. The questionnaire should take no more than 15 minutes.

For your reference, a map is enclosed displaying the Middle Minnesota watershed boundaries in Brown County, including townships.

This survey is voluntary and completely confidential. Please answer the questions as completely as possible. Once you have **completed the questionnaire, please mail it back in the enclosed self-addressed, postage-paid envelope.**

We would be happy to answer any questions or listen to any comments you may have about this study. Please feel free to contact Brown Soil & Water Conservation District by phone at 507-794-2553, or by email to [melanie.krueger@brownsxcdmn.org](mailto:melanie.krueger@brownsxcdmn.org). If you would like to contact the Brown County Water Planning Office, please call 507-233-6641 or email to [john.knisley@co.brown.mn.us](mailto:john.knisley@co.brown.mn.us).

We hope you enjoy completing the questionnaire and we look forward to receiving your response.

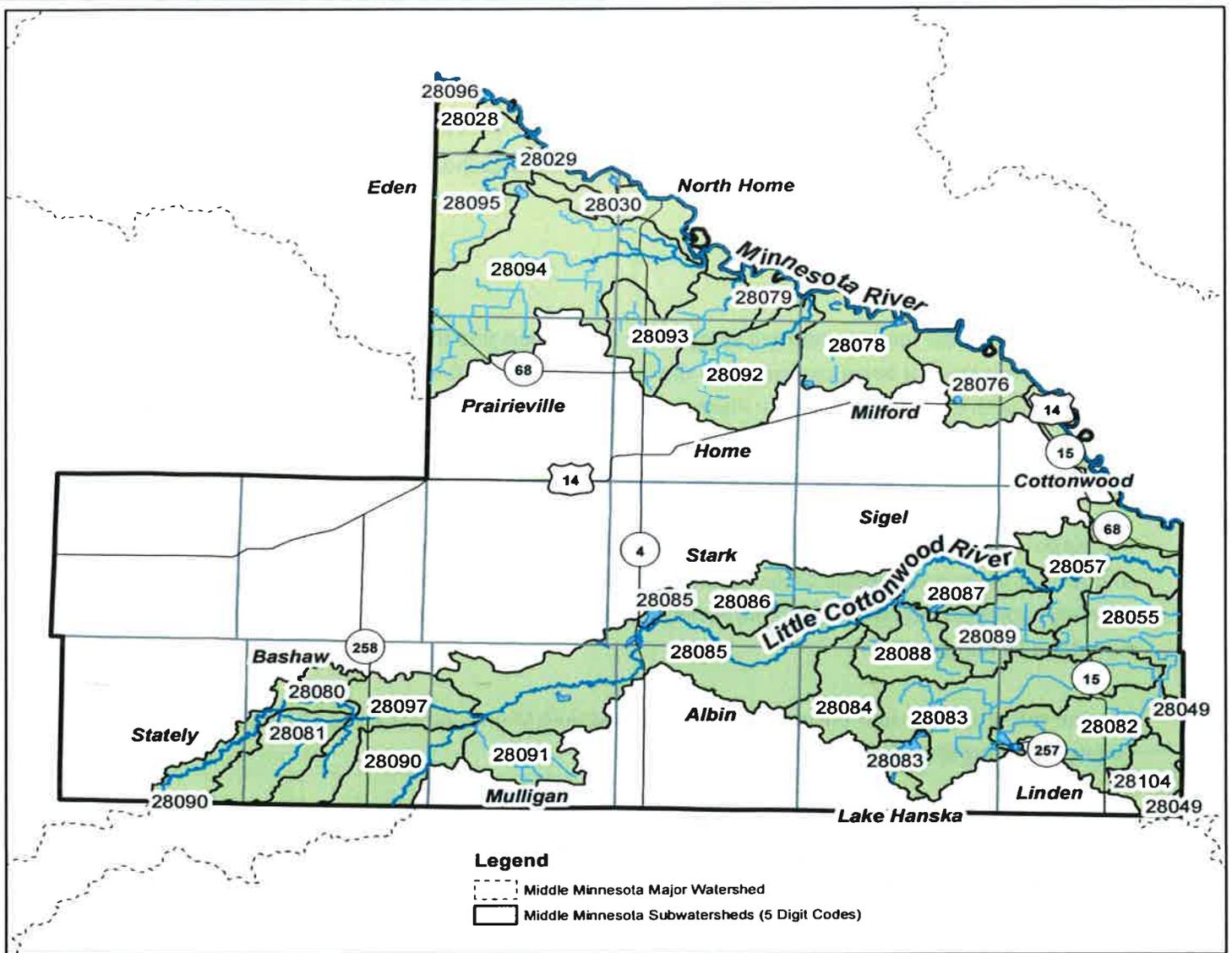
Sincerely,

Melanie Krueger  
Brown Soil & Water Conservation District

John Knisley  
Brown County Water Planner

# Your Perspectives on Local Water Resources

## Middle Minnesota Sub-Watershed



### **Before you begin:**

We are conducting this survey to better understand landowner opinions and practices and to improve conservation programming. This survey is voluntary and confidential. Please answer the questions as completely as possible.

**Please respond and return no later than April 25, 2017!**

### **As you complete the survey, please keep in mind the following definitions:**

**Buffer/filter strip:** a strip of vegetation (grasses, trees, and shrubs) planted and maintained adjacent to streams, ditches, and lakes that filters water, stabilizes the stream bank, and provides wildlife habitat.

**Conservation drainage management:** Technologies and practices that remove excess water from lands while reducing potential pollutants (includes controlled drainage, shallow drainage, bioreactors, saturated buffers, rock inlets, storage basins, and ditch designs).

**Conservation cover:** Converting environmentally sensitive areas to vegetative cover to reduce soil erosion, improve water quality, and enhance forest and wetland resources (includes Conservation Reserve Program and land retirement).

**Conservation tillage:** Soil cultivation that leaves the previous year's crop residue on fields before and after planting the next crop to reduce soil erosion and surface runoff (includes no, minimum, strip, ridge, mulch-till).

**Thank you for your help!**

**Brown County Landowner Survey  
Middle Minnesota Sub-Watershed**

**Contact Information: (All Information is voluntary and will remain confidential)**

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**Based on the map, what sub watershed are you/your land located in? (5 Digit code)\_\_\_\_\_**

**1. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Water resources in Brown County are adequately protected.	-2	-1	0	1	2
b. Water resources in Minnesota need better protection.	-2	-1	0	1	2
c. Water resource protection will threaten jobs for people like me.	-2	-1	0	1	2
d. Laws to protect the environment limit my choices and personal freedom.	-2	-1	0	1	2
e. Water pollution affects human health.	-2	-1	0	1	2
f. Excessive water runoff causes soil and nutrient loss.	-2	-1	0	1	2
g. Conservation practices protect aquatic life.	-2	-1	0	1	2
h. Conservation practices contribute to quality of life in my community.	-2	-1	0	1	2
i. Conservation drainage management reduces water runoff from farmland.	-2	-1	0	1	2
j. Drainage tiling increases crop yield.	-2	-1	0	1	2
k. Drainage tiling contributes to higher water flows downstream.	-2	-1	0	1	2
l. Conservation tillage decreases crop yield.	-2	-1	0	1	2

**2. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. It is my personal responsibility to help protect water.	-2	-1	0	1	2
b. It is my personal responsibility to make sure that what I do on the land doesn't contribute to water resource problems.	-2	-1	0	1	2
c. Landowners upstream should be responsible for protecting water downstream.	-2	-1	0	1	2
d. The state government should be responsible for protecting water.	-2	-1	0	1	2
e. Local government should be responsible for protecting water.	-2	-1	0	1	2
f. Urban residents in Brown County should be responsible for protecting water.	-2	-1	0	1	2
g. Farmers in Brown County should be responsible for protecting water.	-2	-1	0	1	2

**3. In your opinion, how much of a problem are the following water pollutants/issues in your watershed [see map]? (Please circle one number for each row)**

	Not a problem	Slight problem	Moderate problem	Severe problem	Don't know
a. Sediment (cloudiness)	1	2	3	4	DK
b. Phosphorus	1	2	3	4	DK
c. Nitrogen in surface water	1	2	3	4	DK
d. Nitrogen in drinking water	1	2	3	4	DK
e. Flooding	1	2	3	4	DK
f. Drought	1	2	3	4	DK
g. <i>E. coli</i> (bacteria)	1	2	3	4	DK
h. Pesticides	1	2	3	4	DK
i. Herbicides	1	2	3	4	DK
j. Soil erosion	1	2	3	4	DK

**4. In your opinion, how much of a problem are the following potential sources of water pollutants/issues in your watershed [see map]? (Please circle one number for each row)**

	Not a problem	Slight problem	Moderate problem	Severe problem	Don't Know
a. Industrial discharge to streams, rivers, and lakes	1	2	3	4	5
b. Urban land development	1	2	3	4	5
c. Improperly sized/maintained septic systems	1	2	3	4	5
d. Soil erosion from farmland	1	2	3	4	5
e. Wind erosion	1	2	3	4	5
f. Stream bank erosion	1	2	3	4	5
g. Fertilizer management for lawn/turf care	1	2	3	4	5
h. Fertilizer management for crop production	1	2	3	4	5
i. Livestock operations	1	2	3	4	5
j. Tile drainage	1	2	3	4	5
k. Surface ditch drainage	1	2	3	4	5
l. Grass clippings and leaves entering storm drains	1	2	3	4	5
m. Urban/suburban water runoff	1	2	3	4	5
n. Unregulated contaminants (e.g., pharmaceuticals, personal care products)	1	2	3	4	5
o. Natural causes (e.g., natural erosion, wildlife)	1	2	3	4	5
p. Increased frequency or intensity of storms	1	2	3	4	5

**5. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. There is <u>nothing</u> that we can do to keep the costs of farm/land management from going up.	-2	-1	0	1	2
b. I can usually achieve what I want on my farm/land when I work hard for it.	-2	-1	0	1	2
c. Most of what happens on my farm/land is <u>beyond my control</u> .	-2	-1	0	1	2
d. It is <u>difficult</u> for us to have much control over policies that affect our farms/lands.	-2	-1	0	1	2
e. By adapting my farm/land management practices, people can become more resilient to changes in weather patterns.	-2	-1	0	1	2

**6. Do you use the following practices on your land/property? Do you intend to use these practices on your land/property in the future? (Please check yes/no for each)**

	Do you <u>use</u> the practice on your land/property now?		Do you <u>intend</u> to use the practice on your land/property in the future?		Not Applicable
	Yes	No	Yes	No	
a. Buffer/filter strip along streams and ditches or field edges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conservation drainage management practices (e.g., controlled drainage, storage basins)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conservation tillage practices (e.g., no till, minimum till)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Land in conservation cover (e.g., Conservation Reserve Program)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Drainage tiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Terraces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Vertical drop side inlets (adjacent to ditches)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Water and sediment control basins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Agriculture waste management facility or system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Rotation grazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Cover crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Drainage water management planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Protect wetlands on the land/property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Plant trees as a windbreak on the land/property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Follow a nutrient management plan on the farm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. Minimizing use of fertilizers/pesticides on lawns and gardens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**7. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

I feel a personal obligation to...	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Do whatever I can to prevent water pollution	-2	-1	0	1	2
b. Maintain my land/farm in a way that <u>does not</u> contribute to water resource problems.	-2	-1	0	1	2
c. Talk to others about conservation practices.	-2	-1	0	1	2
d. Use conservation practices on my land/property	-2	-1	0	1	2
e. Work with other community members to protect water resources.	-2	-1	0	1	2
f. Attend meetings or public hearings about water.	-2	-1	0	1	2

**8. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

I would be more likely to adopt new conservation practices or to continue to use practices if...	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. I knew more about how to implement and maintain conservation practices.	-2	-1	0	1	2
b. I knew more about the wildlife benefits of conservation practices.	-2	-1	0	1	2
c. I had help with the physical labor of implementing and maintaining conservation practices.	-2	-1	0	1	2
d. I had access to cost share resources to help me adopt conservation practices.	-2	-1	0	1	2
e. I could talk to other landowners or farmers who are using conservation practices.	-2	-1	0	1	2
f. I could attend a workshop or field day on conservation practices.	-2	-1	0	1	2
g. I could be enrolled in a program that recognizes local conservation stewards.	-2	-1	0	1	2
h. My neighbors maintained conservation practices.	-2	-1	0	1	2
i. There were regulations that mandated using a conservation practice.	-2	-1	0	1	2
j. Conservation programs were more flexible.	-2	-1	0	1	2
k. I could get higher payments for adopting conservation practices.	-2	-1	0	1	2
l. I could learn how to maintain conservation practices for soil conservation.	-2	-1	0	1	2
m. I had evidence that the conservation practice improved water resources.	-2	-1	0	1	2
n. I was compensated for lost crop production because of conservation practices.	-2	-1	0	1	2
o. Conservation program requirements were less complex.	-2	-1	0	1	2
p. I had evidence that conservation practices <u>did not</u> reduce crop yield.	-2	-1	0	1	2
q. A conservation assistance professional would visit my land to discuss conservation practice options.	-2	-1	0	1	2

# Soil Health Workshop

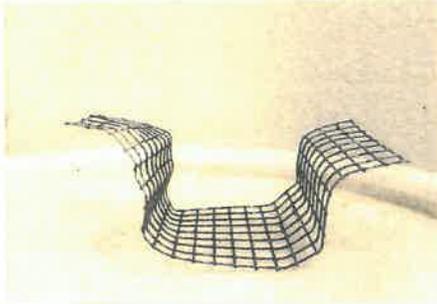
Tuesday March 28th, Comfrey, MN

- 9:30—10:00      Registration
- 10:00—10:30      Introductions—Kelly Pfarr NRCS and Dustin Anderson SWCD
- 10:30—12:00      David Brandt—Ohio Farmer Implementing Soil Health Practices
- 12:00—12:45      Lunch
- 12:45—1:15      Rainfall Simulator—Holly Hatlewick, Renville Co. SWCD
- 1:15—1:45      Run Your Own Soil Slake Test
- 1:45—3:00      Farmer Panel (David Brandt, Grant Breitreutz, JD Tippin, Tom Muller, Ben Olsem, Jerry Ackermann)



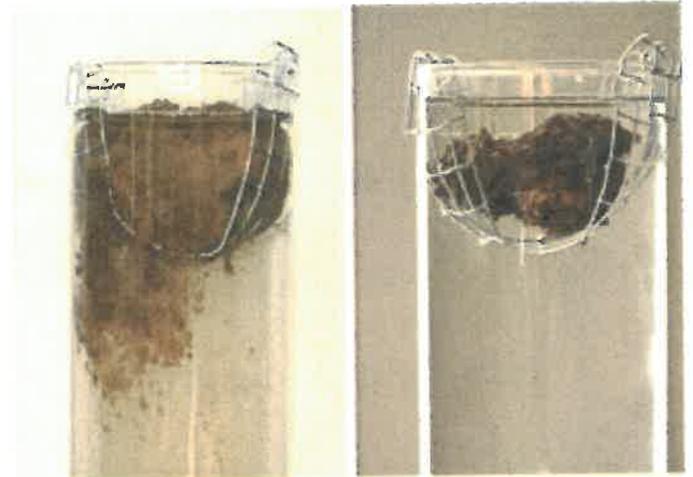
## How to Run a Slake Test

First of all, what is a slake test and why do it? A slake test measures the stability of the soil when exposed to rapid wetting (the soil's ability to push the air out of its pores while it lets the water into its pores). Slaking occurs when aggregates are not strong enough to withstand internal stresses caused by rapid water uptake which is influenced by tillage, micro/macro-organisms, structure, aggregation, organic matter, what and for how long plants are growing out there, among others.



Have your air dried soil clod that was carefully dug out of the topsoil-not balled up, smushed, or compacted. Have a tall clear container (cups work perfectly fine) with a bent strip of wire fencing with 1/4" hole size. Bend the fencing to have it grasp the sides of the container while allowing the soil clod to be fully emerged in the water.

Gently place your soil clod in the water setting on the wire fencing and watch how your soil reacts to the internal and external pressures. Does it stay together? Do small chunks fall off but mostly stay intact? Does it all fall apart within minutes from submerging it? How your soil reacts will give you an indicator of the condition of your soil's health-use that with other tools to determine where it's at and build to optimal conditions.



**Specific problems that might be caused by poor function:** Slaked soil particles block soil pores, form a soil crust, reduce infiltration and water movement through soil, and increase runoff and erosion. Small aggregates produced by slaking settle together resulting in smaller pore spaces than where present with larger aggregates. Pore volume may be reduced and the ability of plants to use water stored in pore spaces may be altered.

Conservation practices that lead to slaking include:

- Conventional tillage methods that disturb soil and accelerate organic matter decomposition,
- Burning, harvesting or otherwise removing crop residues, and
- Using pesticides harmful to soil organisms that cycle organic matter and promote aggregation.

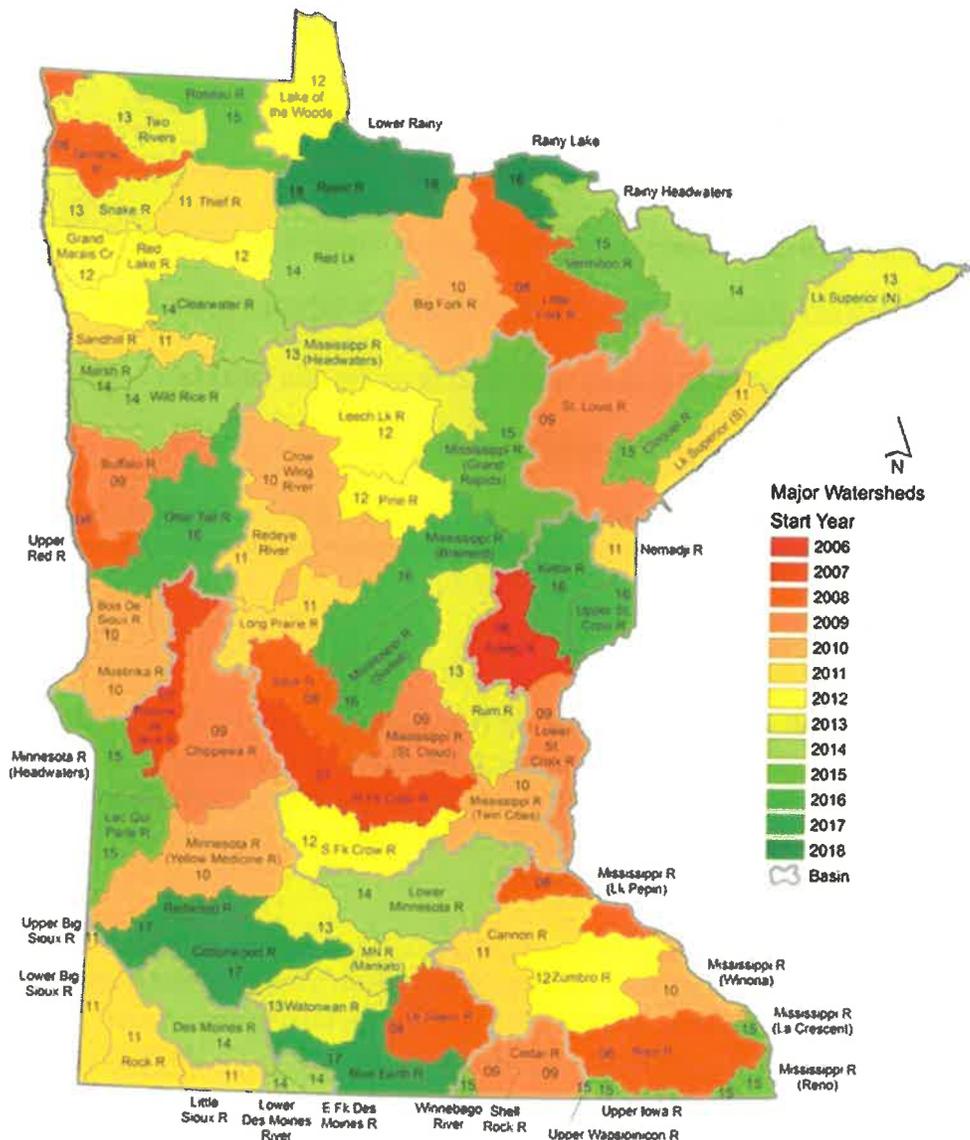
**What you can do:** Conservation tillage systems, such as no-till, reduce slaking by reducing soil disturbing activities that break aggregates apart and accelerate decomposition of organic matter. No-till and residue management lead to increased soil organic matter and improved aggregate stability and soil structure, particularly when cover crops or sod-based rotations provide an additional source of residue.

Conservation practices that minimize slaking include:

- Conservation Crop Rotation
- Cover Crops
- Prescribed Grazing
- Residue and Tillage management

# Intensive Watershed Monitoring

One of the goals of the Clean Water Legacy Act (CWLA) is to identify impaired waters and those waters in need of additional protection so as to protect, restore, and preserve the quality of Minnesota's surface waters. The Minnesota Pollution Control Agency (MPCA) is identified in the CWLA as the state agency responsible for establishing a strategy for monitoring and assessment and identifying impaired waters under the Clean Water Act. This is accomplished through MPCA monitoring efforts and the efforts of local, state and federal agencies and citizens that also monitor the condition of Minnesota water resources. The MPCA has established a strategy and goal, recognized by the legislature and Clean Water Council, to assess the condition of Minnesota's waters via a ten year cycle. The key organizing approach used in this strategy is that of the "major," or eight digit hydrologic unit code (HUC), watershed. There are 81 major watersheds in Minnesota (see below).

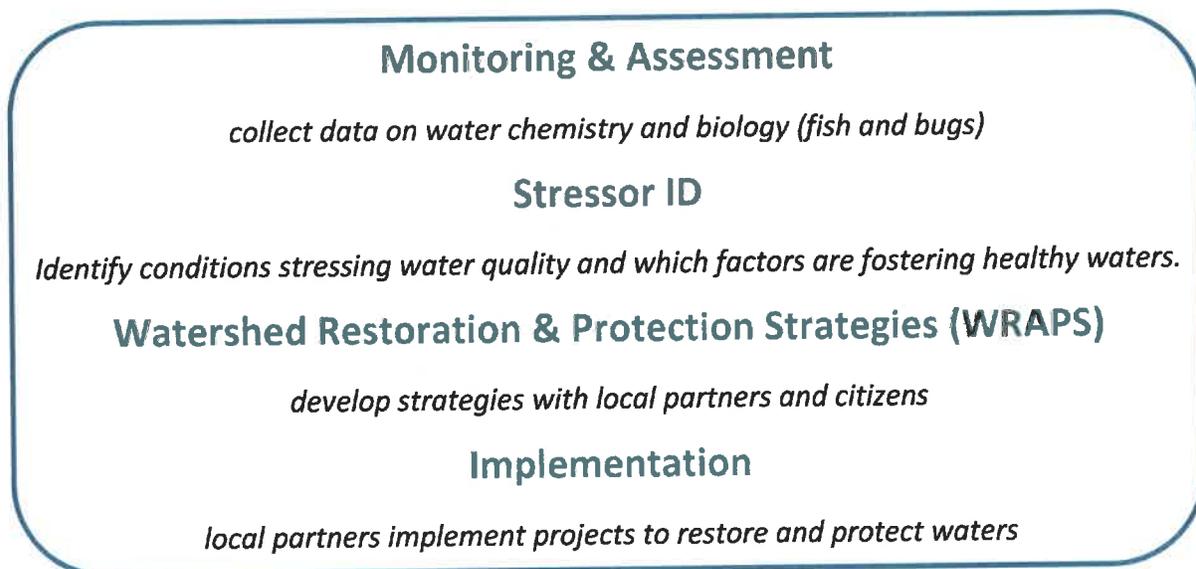


The idea behind the watershed approach is to intensively monitor the streams and lakes within a major watershed to determine the overall health of the water resources, identify impaired waters, and identify those waters in need of additional protection efforts to prevent impairments. Follow up monitoring is then done in biologically impaired subwatersheds to determine the cause(s) of the impairments (the "stressors" impacting the biological community) and to begin to identify pollutant sources.

# 10-Year Cycle

The intensive watershed monitoring of rivers/streams aggregates watersheds from a coarse to a fine scale. The foundation of this approach is the 81 major watersheds. Sampling occurs in each major watershed once every ten years. In this approach, subwatersheds are sampled along with the major watershed outlet to provide a complete assessment of water quality. Sites are selected near the outlet or “pour point” at all watershed scales. This approach provides robust assessment coverage of rivers and streams without monitoring every single stream reach

## The Process:



## We need your input!

Another benefit of this watershed approach is that it provides an opportunity for citizens and local government to proactively engage in the monitoring work through volunteer and local monitoring activities. This up front engagement helps set the stage for local involvement in any ensuing TMDLs or protection strategies, and enhances the information available for good planning efforts and successful implementation of restoration/protection strategies.

We've heard from you that practices that promote soil health and soil quality is important! This event is part of the civic engagement process to help develop restoration and protection strategies for the Middle Minnesota River Watershed. Please help us identify the types of best management practices or activities that YOU think will lead to better water quality in southern Minnesota by contacting your local Soil and Water Conservation District!



Cottonwood SWCD  
339 9<sup>th</sup> St.  
Windom, MN 56101  
(507) 831-1153 x3



Brown SWCD  
300 2<sup>nd</sup> Ave SW  
Sleepy Eye, MN 56085  
(507) 794-2553



# Soil Health Workshop Survey

Thank you for attending our event! We hope that you were able to learn some new information or techniques that you could apply to your operation to make it more profitable and sustainable. Now please help us learn how we can make these events better by filling out this survey.

## 1. What motivated you to attend today's event? (circle all that apply)

Other: \_\_\_\_\_

*Cash Crop Profitability*

*Farm Sustainability*

*Soil Conservation*

*Water Conservation*

*Nutrient Management*

*Livestock Profitability*

*Minimize tillage*

*Cover Crops*

## 2. How would you classify yourself?

*Farmer*

*Banker*

*Landowner*

Other: \_\_\_\_\_

*Service Provider*

*Applicator*

*Product Sales*

*Agronomist*

## 3. On a scale of 1 – 10 (1 being not at all satisfied, 10 being extremely satisfied) how would you rate your overall satisfaction with today's speakers and presentations?

<i>David Brandt</i>	1	2	3	4	5	6	7	8	9	10
<i>Tabletop Slake Test</i>	1	2	3	4	5	6	7	8	9	10
<i>Farmer-led Panel</i>	1	2	3	4	5	6	7	8	9	10
<i>Rainfall Simulator</i>	1	2	3	4	5	6	7	8	9	10

## 4. Are there any soil health practices or techniques that you plan to use in your operation moving forward?

*Yes*    *If yes, please explain which practices:*

*No*    *If no, please explain the barriers that keep you from adopting these practices/techniques:*

## 5. What restoration and protection strategies do you think would most benefit the Middle Minnesota Watershed and why?

**Thank you for your feedback and special thanks to the farmer-led panel, our speakers, and presenters!**

## Comfrey Soil Health Workshop – March 28, 2017

### Survey Results and Attendance

#### Attendee Location (106)

Cottonwood	33
Brown	17
Redwood	12
Jackson	8
Martin	6
Faribault	5
Watonwan	4
Renville	3
Carlton	3
Blue Earth	3
Olmsted	2
Scott	2
Morton (ND)	2
Sibley	2
Cass (ND)	1
Nicollet	1
Carver	1
Pipestone	1

**Female:** 17  
**Male:** 89

#### Classification

Farmer:	32
Landowner:	11
Conservationist:	7
Service Provider:	4
Applicator:	3
Product Sales:	2
Banker:	1
Student:	1

#### Motivation to attend the event

Cover Crops:	39
Soil Conservation:	36
Water Conservation:	26
Farm Sustainability:	25
Cash Crop Profitability:	24
Minimize Tillage:	20
Nutrient Management:	20
Livestock Profitability:	16
Education:	1

#### Speaker Rankings

	<b>Avg.</b>
David Brandt	9.4
Farmer-led Panel	8.9
Tabletop Slake Test	8.5
Rainfall Simulator	8.2

#### Planning to do in future?

Cover Crops (17)
No-till (7)
Strip-till (5)
Reduced tillage (2)
More diverse cover crop mixes (1)
Integrate small grains (1)
Build the soil to hold water and fertilizers (1)

## **Watershed Restoration and Protection Strategies for the Middle Minnesota Watershed**

Cover crops (14)

No-till (5)

Reduced tillage (3)

Strip-till (2)

Leaving cover on the soil (2)

Soil health – soil benefits, water infiltration (2)

How cover crops can improve economics (2)

EQIP and CSP (1)

Have more perennial and annual grasses and legumes growing on the land (1)

Less soil and nitrate loss (1)

Identify “bad actors” and focus on their problems. Recreational tillage of soybean stubble = soil blown into ditches. (1)

More educational events to promote soil health (1)

More crop diversity (1)

Incorporate livestock (1)

Slow down water movement to rivers and lakes (1)

Reduce NPK application (1)

Alternative tile intakes (1)

Perennial covers (1)

### **Comments**

“Most farmers are not interested or concerned – unfortunately forced (government) entry will probably be the only route to clean water (i.e. Chesapeake Bay).”

“Move the rainfall simulator to the street so can gather around better.”

Barrier to decreasing tillage: “Family farm unwilling to change.”



## Thank You Doug!

Thank you for attending the Soil Health Workshop in Comfrey last March. There was an amazing turn out with well over 100 people in attendance from Cottonwood County and beyond. It was a collaboration between the Soil & Water Conservation District and Natural Resources Conservation Service, but a big reason the event was so successful is that we heavily relied on the suggestions from some area producers like you. In addition, we received A TON of great feedback from attendees on the content and structure of the workshop that will be helpful in our efforts to organize more events in the future. For example:

- **David Brandt** and the **Farmer-Led Panel** were the highest ranked presentations.

*This tells us that you are interested and find value in hearing first-hand testimony and feedback from agricultural producers that are implementing practices to promote soil health.*

- **Cover Crops** and **Soil Conservation** were the greatest motivation to attend the event.

*This tells us that we should work to organize future events and develop outreach materials focused on incorporating living covers and soil conservation practices.*

- **Cover Crops** and **Minimizing Tillage** were the most often reported practices attendees are planning to implement.

*This tells us that you could benefit from additional support as you begin or continue to implement cover crops and minimum tillage on your farm.*

The enclosed publication, Midwest Cover Crops Field Guide, is a result of your feedback. We hope that this guide provides support as you begin or continue to implement living covers on your land. The Cottonwood SWCD and NRCS are committed to providing you with the tools and support that you need to make decisions on your farm. Thank you again for your feedback and attending the Soil Health Workshop. For additional resources, information about upcoming events, or to provide additional feedback, stop in, call, or visit our website.



Cottonwood County Conservation Office  
339 9<sup>th</sup> Street • Windom MN 56101  
(507) 831-1153 Ext 3  
[www.CottonwoodSWCD.org](http://www.CottonwoodSWCD.org)

## Middle Minnesota Watershed Summary:

Redwood SWCD was the lead for the portion of the Middle Minnesota Watershed that lies in Redwood County.

This is a part of the county where there has not been a lot of success in connecting with landowners, this is due in part that this is some of the highest valued land in the county. Another factor is there has not been any monitoring or assessments completed in this watershed before the WRAPS started.

Our first step in the WRAPS process was to develop a mailing list of everyone who lives in the watershed. In the end we refined the list to include individuals who actually lived in the county. In the end there was approximately 600 landowners that would receive correspondence.

Due to lack of landowner contact in the past, we felt it necessary to send them introductory materials. We developed a brochure that showed boundary of major watershed along with the boundaries of the minor watersheds. We also included information about the watershed, ex. miles of open water, county ditches, etc. With the brochure we mailed a letter asking them if they knew certain items about their watershed and listed about 12 questions we wanted them to think about as they thought about the water as it fell and left the watershed.

We spent considerable amount of time developing a questionnaire that we hoped would be straight forward and meaningful.

About 6 weeks after mailing the first mailing, we mailed 600 questionnaires to the same individuals. Postage paid envelopes were included with the hopes of have good return. We also did not require a name, which we also hoped would encourage individuals to return them. We were very disappointed as we only got 62 returned to our office. Replies were all over the board from, blaming the farmer, to blaming individuals who live in cities and cities themselves. Some said everyone is doing everything they can, to some saying not nearly enough is being done. We felt the questionnaire was a waste of time and money.

It was decided to hold a meeting and invite all citizens in the watershed. We decided we would hold one for the whole watershed rather than trying to hold two. Before we planned the meeting, we met with 6 active individuals in the watershed and asked for their input in meeting material. All individuals thought it was important that it be producer lead and our office staff would be there as resource people. It was held during an evening. Once again it was very frustrating as only 12 individuals attended. There was a great discussion among most of the individuals that attended and several positive items came out of the meeting, however for the most part we felt we were "preaching to the choir".

At the meeting we discussed many different topics including: what it meant to live in a watershed, who is responsible for water quality issues, what type of good things do you see happening where you live, what are some things that need to be done to possibility improve water quality, what can we do to get more citizens involved in water quality issues across the county, nitrates in ground and surface water.

Since we have not had funds through other programs to offer cost share or incentives to individuals in the Middle MN Watershed, we diverted some of our Water Plan Implementation funds to this watershed. WE offered incentive payments to producers for four different practices; no till/strip till, cover crops, variable rate and alternative intakes. We had a limited dollar and told the producers through a letter that it would be first come first serve and set a deadline date. Fifteen individuals were able to receive funds. The unfortunate part about the 15 applications is we had worked with over half of the applicants who participated in the program.

With this being my first WRAPS I did not know what to expect. It was a fragmented approach due to the size and shape of watershed size which in my mind made it difficult. We had too many groups doing various items within the watershed, which did not lead to continuity. It is hard when one group does one things and another group does something else. One of the problems I saw was that some groups did not remember that civic engagement was really about how to engage the public, in particular the adults, in the process.

One improvement that could have helped, would have been an umbrella organization to work with PCA to help them with the process.

We felt it gave us a reason to communicate with individuals in a part of the county that we have not worked in very much. We are unsure if the communication had an impact on the citizens, as many that responded were individuals that we had worked with in the past.

Staff feels the most positive changes in water quality will come with the practices that we offered to the citizens; no-till/strip till, nutrient management, cover crops and alternative intakes. This part of our county does not have as many needs for structural practices, as other parts of the county.

# *Your Watershed, Your Solutions*

Dear Middle Minnesota Sub-watershed Land Occupier:

Have you ever wondered about the water quality in nearby streams and ditches? Have you ever thought about where your water goes after it leaves your land? These are some questions the legislators are wondering if we are asking our producers. We want to be pro-active about water quality issues and solutions in our area. We hope you want to be pro-active as well.

The enclosed brochure shows the sub-watershed where some of the land you own or operate lies. We are asking for your input in the development of a water quality plan for your sub-watershed. First we will mail a questionnaire, and secondly we will host meetings for residents and landowners to attend. The questionnaire will help identify the needs and concerns for your land and surrounding lands within the sub-watershed shown in the brochure. All responses will be anonymous.

## **Questions to think about:**

- Who's responsible for water quality issues?
- Who should pay for water quality improvements?
- Are there surface water quality and quantity concerns in your sub-watershed?
- What are some of the issues that affect water quality and quantity?
- Are there groundwater quality and quantity issues?
- Do you know the quality and quantity of groundwater?
- If there are concerns, what type of assistance do you need?
- What changes can the local unit of governments do to improve water quality?
- What type of projects can you do to improve the water quality?
- Do you want additional regulation?
- What are some good things that are happening in this sub-watershed?

Think about these questions and others you may have about the sub-watershed. Once the questionnaire is mailed out, we will begin planning meetings in the sub-watershed. All residents and landowners will be invited to attend one of these meetings. The purpose of the meetings is so **YOU** can tell **US** what natural resource concerns you see in your watershed and develop a plan to address the concerns.

We want to make sure the decisions are made at the local level, not in St. Paul. Water quality and quantity issues will be discussed during future legislative sessions; therefore, we want to be pro-active improving water quality in this sub-watershed as well as the rest of the county.

Your input is very important and we look forward to your questions and concerns in the upcoming questionnaire. Meetings are being planned for late summer with invite to come.

**Redwood County Conservation Team**  
**(507) 637-2427 Ext. 3**

## **CONSERVATION PRACTICES AVAILABLE TO PROTECT**

### **YOUR WATERSHED**

- Grassed Waterways
- Filter Strips
- Sediment Basins
- Windbreak/Shelterbelt
- CRP
- RIM
- Wetland Restorations
- Grade Stabilization Structures
- Alternative Intakes
- Cover Cropping
- Nutrient Management Practices

## **BENEFITS OF PROTECTING AND ENHANCING YOUR WATERSHED**

- Natural Filtration (Nutrient and Sediment Retention)
- Groundwater Recharge
- Flood Protection
- Maintain the Health of Biological Communities

"Helping bring YOU clean water"  
**Redwood Soil & Water Conservation Office**

1241 East Bridge Street  
Redwood Falls, MN 56283

Phone: 507-637-2427 ext. 3  
[www.redwood.swcd.org](http://www.redwood.swcd.org)

### **Redwood Soil & Water Conservation District (SWCD)**

Marilyn Bernhardson - District Administrator

Kristy Zajak - District Technician

Kurt Mathiowetz - District Technician

Kari Clouse - Office Assistant

### **Natural Resources Conservation Service (NRCS)**

Jeff Kjørness - Resource Conservationist

Brian Pfarr - Soil Conservation Technician



### **Redwood SWCD Mission**

Working to Improve Our Resources

The mission of the Redwood Soil and Water Conservation District is to educate and assist the citizens of Redwood County to efficiently and economically manage the soil and water resources of the county, for present and future generations.

# Your

# Watershed

# Your

# Solutions

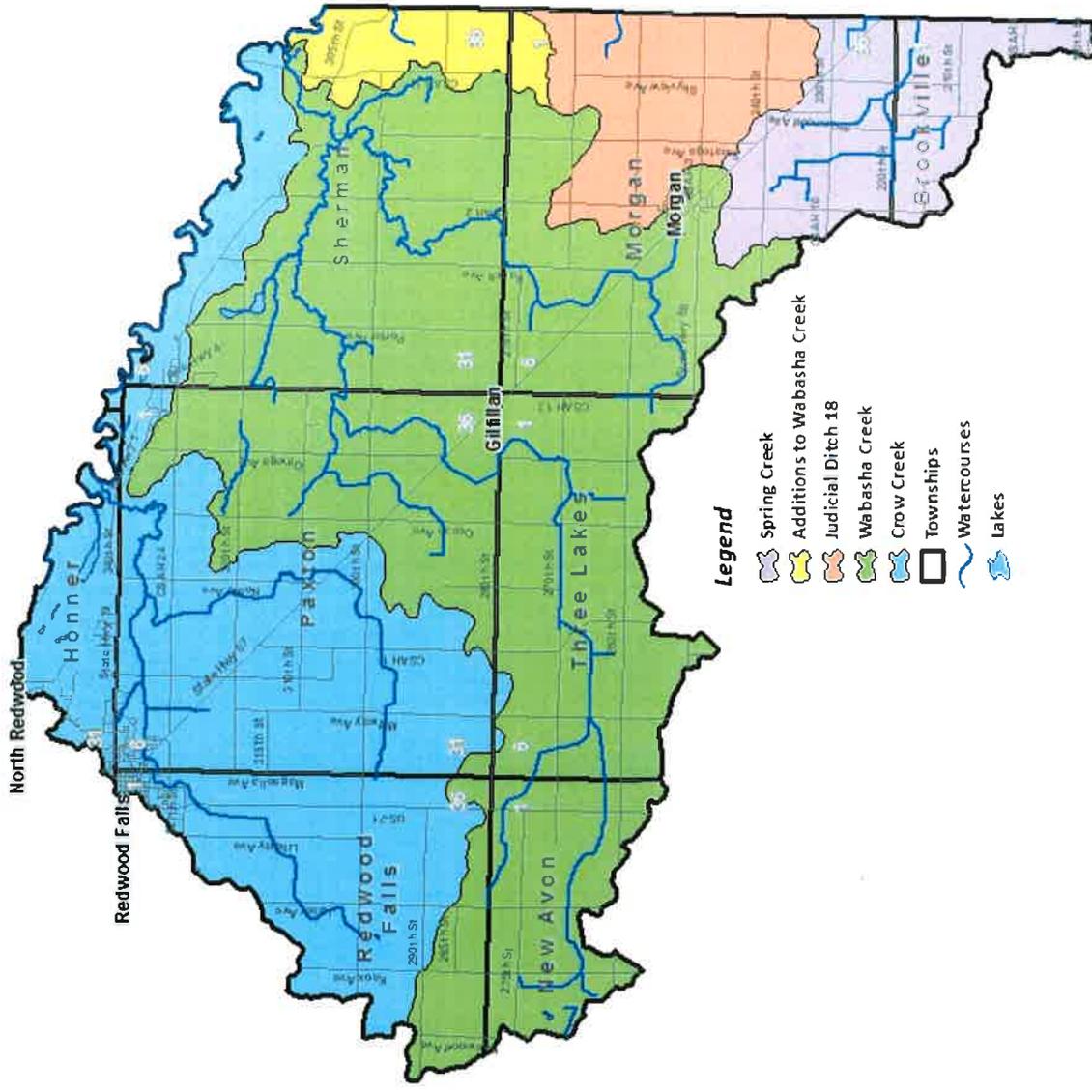


**Redwood SWCD**

# WATERSHED INFORMATION

- **Towns:** 2  
Redwood Falls  
Morgan
- **Watershed Area:** 90,527 acres
- **Miles of Rivers & Streams:**  
45.61 miles of this 19.1 miles is the MN River.
- **Miles of Ditches (Public):** 64.1 Miles
- **Wetland Restoration Projects:**  
112 acres
- **State Lands (WMA, SNA, AMA):**  
1,449 acres
- **Reinvest in Minnesota/ Conservation Reserve Enhancement Program (RIM, CREP):** 1,847 acres
- **Conservation Reserve Program (CRP):** 1,670 acres

# MIDDLE MINNESOTA WATERSHED



## Middle Minnesota Questions

1. Do you have concerns about water quality issues?

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2. Who is responsible for water quality issues?

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3. Who/How should water quality issues be paid for to correct?

---

---

4. Are there surface water quality concerns in your sub-watershed?

---

---

5. What are some of the issues that affect water quality and quantity?

---

---

6. Are there groundwater quality and quantity issues?

---

---

7. What type of projects can you do to improve water quality?

---

---

8. How important are local water resources such as streams and rivers to you and your family?

---

---

9. Do you use any conservation practices on your land? \_\_\_\_\_

- Please describe? \_\_\_\_\_

- What problems are you trying to address with them? \_\_\_\_\_

- What first motivated you to use this practice? \_\_\_\_\_

- How well is the practice working for you? \_\_\_\_\_

10. Are there other practices that you have considered implementing? What has kept you from doing more implementation? \_\_\_\_\_

11. What do you see as the primary barriers or constraints to adapting conservation best management practices? \_\_\_\_\_

12. Would you be willing to try out any of these practices if those barriers could be addressed? \_\_\_\_\_

13. Would any of the following programs or conditions increase the likelihood that you would try out a new conservation practice?

- Payments \_\_\_\_\_

- Cost-share \_\_\_\_\_

- Technical assistance \_\_\_\_\_

- Stories from a neighbor who have had success with conservation practices \_\_\_\_\_

14. Any other comments you would like to make? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# SOIL AND WATER CONSERVATION DISTRICTS

"Helping bring YOU clean water"



## Redwood SWCD

1241 E Bridge St.—Suite C  
Redwood Falls, MN 56283  
Phone: 507-637-2427 EXT 3  
Fax: 507-637-6002  
[redwoodswcd.org](http://redwoodswcd.org)

### Supervisors

Chair  
Jeff Potter  
District I  
(507) 641-3087

Vice Chair  
Ed Carter  
District V  
(507) 629-4843

Secretary  
Joseph Plaetz  
District IV  
(507) 747-2803

Treasurer  
Ralph Heiling  
District III  
(507) 249-3568

PR & I  
Brian Timm  
District II  
(507) 430-2220

### Staff

Marilyn  
Bernhardson  
District  
Administrator

Kari Clouse  
Office Assistant

Kristy Zajac  
Conservation  
Specialist

Kurt Mathiowetz  
Water Quality  
Technician

July 7, 2016

Bruce Tiffany  
John Hogan  
Bob Hanna

Thanks for agreeing to meet with Kurt and I to discuss how to have a successful meeting in the Middle Minnesota Watershed. There are two other individuals who are also interested in providing input in the process, but were unable to attend the scheduled gathering.

We will have coffee and rolls on July 14, 2016 at 9:00 a.m. in our conference room to gather your words of wisdom.

See you then!

### **Middle Minnesota Watershed Renville County WRAPS Strategy**

This project was used to increase public education and outreach within the Renville and Sibley County portion of the Middle Minnesota River Watershed. Several meetings were held and communication was increased. One-on-one landowner interviews were used to gather information on landowners perspectives on water quality and BMPs. Water quality issues, priorities, and restoration and protection strategies were discussed, which will be used to target areas to implement BMPs in a cost-effective manner. Civic engagement activities have provided awareness to watershed citizens of the issues within the watershed, their impact on water quality, and the actions that need to be taken to improve our water.



The Minnesota Pollution Control Agency (MPCA) provides grants to organizations to help fulfill the agency's mission. Each grant project is required to complete a final report. Information from this grant report will be used to illustrate progress toward meeting the MPCA's goals and missions and will be shared with interested parties, targeted audiences, and legislators.

More information about preparing a final project report for a Section 319 grant can be found in the [Section 319 Final Project Reports Workshop](#) on the U.S. Environmental Protection Agency (EPA) Polluted Runoff: Nonpoint Source Pollution website at <http://www.epa.gov/owow/nps>. This notebook describes the purpose of Section 319 final reports, the information that should be included in the report, examples of especially effective elements from 319 reports, and ways to expand the final report to be used for outreach and education, building partnerships, and many other uses.

**Instructions:** This grant report must be submitted **no later than 30 days after the end of the grant contract**. It must include results, in the form of data and information, that best demonstrate achievement of project goals and objectives.

Please follow the attached report format, referring back to the work plan and budget and any subsequent amendments to your grant agreement, contract, or work order. When completed, send an electronic copy of the completed report to your MPCA project manager for review.

## Executive summary

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### Problem

The Minnesota River at Mankato Watershed (MRMW) covers approximately 862,000 acres across parts of eight counties in south-central Minnesota. The MRMW is comprised of several small first and second order streams that drain directly into the Minnesota River. The watershed is part of the Prairie Pothole Region, an area of shallow wetland basins left by the uneven deposition of glacial till. The northern reaches of the watershed tend to be gently rolling while the southern reaches are flatter with 0 – 6% slopes. The watershed includes approximately 116 miles of the Minnesota River starting east of Redwood Falls in Redwood County and ending just north of Saint Peter in Nicollet County. Urban areas in the MRMW include parts or all of Mankato, North Mankato, Saint Peter, New Ulm, Redwood Falls, Morton, Fairfax, Courtland, Nicollet, and Cleveland. This contract covers the area within the Renville County and Sibley County portion of the MRMW.

The Watershed Approach cycle for the MRMW started in 2013. Several reaches in the Renville and Sibley County portion of the MRMW have been identified as having fish, macroinvertebrate, and *E. coli* impairments in the MRMW Monitoring and Assessment Report. Stressors of these impairments include dissolved oxygen, eutrophication, nitrates, suspended sediment, habitat, connectivity, and altered hydrology.

In accordance with the federal Clean Water Act, the MN Clean Water Legacy Act states that “public agencies and private entities involved in the implementation of this chapter shall encourage participation by the public and stakeholders, including local citizens, landowners and managers, and public and private organizations, in identifying impaired waters, in developing TMDLs, in planning, priority setting, and implementing restoration of impaired waters, in identifying degraded groundwater, and in protecting and restoring groundwater resources. ...The agency shall seek broad and early public and stakeholder participation [in]...actions...that are taken to achieve and maintain water quality...” (2013 MN Statute Section 114D.35).

As part of the Watershed Approach process, the Hawk Creek Watershed Project (HCWP) was contracted, with Renville County and the Renville County Soil and Water Conservation District (SWCD) as subcontractors, to use civic engagement to work with local stakeholders and watershed citizens, foster participation in the watershed, identify watershed issues and priorities, and participate in the WRAPS development for the MRMW.

Civic engagement activities have provided awareness to watershed citizens of watershed issues, their impact on water quality, and the actions that need to be taken to improve our water (see Attachment 1 Educational and Outreach Activities and Media Events). Many factors contribute to deterring a landowner from implementing a Best Management Practice (BMP), such as cost, peer pressure, lack of trust of government offices and programs, and confusing, cumbersome, and time-consuming cost-share programs. Support and acceptance of BMPs is needed to improve water quality and implementation of BMPs is increased when people participate in public discussion and collaborative problem solving to address public issues locally. HCWP, Renville County, and Renville County SWCD will continue the goals of improving water quality and increasing watershed citizen involvement.

## Waterbody improved

This contract was used to increase public education and outreach within the Renville and Sibley County portion of the MRMW. Several meetings were held and communication was increased (see Attachment 1 Educational and Outreach Activities and Media Events). One-on-one landowner interviews were used to gather information on what landowners think of water quality and BMPs (see Attachment 2 Landowner Interview Results). Water quality issues, priorities, and restoration and protection strategies were discussed, which will be used to target areas to implement BMPs in a cost-effective manner. Civic engagement activities have provided awareness to watershed citizens of the issues within the watershed, their impact on water quality, and the actions that need to be taken to improve our water.

## Project highlights

Staff logged several educational and outreach activities, including public meetings, field days, workshops, youth activities, local water plan meetings, several trainings, distribution of HCWP and Renville County newsletters, postcards, brochures, and online resources, such as the HCWP, Renville County SWCD, and Renville County websites and Facebook pages (see Attachment 1 Educational and Outreach Activities and Media Events, Attachment 3 Cover Crop Mtg 6.29.16 Postcard, and Attachment 4 Cover Crop Mtg 6.21.17 Postcard and Flyer). HCWP, Renville County, and Renville County SWCD led and participated in many activities through this contract. Other partners included Sibley County SWCD, Renville County Public Works (Ditch Authority), Renville County Environment and Community Development, Minnesota Department of Natural Resources, Natural Resources Conservation Service, Board of Water and Soil Resources, and United States Fish and Wildlife Service. Activities took place from June 19, 2015 through June 30, 2017. HCWP, Renville County, and Renville County SWCD will continue the goals of improving water quality and increasing watershed citizen involvement.

## Results

The educational and outreach activities through this contract have increased the awareness of the water quality problems in the watershed. The civic engagement, identification of watershed issues and priorities, and coordination with local stakeholders and watershed citizens have provided data that will be used in the development of the MRMW WRAPS report.

## Body of main report

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### *Section I – Work plan review*

One change order was approved during the contract period. \$1,060.00 from Objective 1, Task B, Subtask 1: Mileage and \$100.00 from Objective 1, Task B, Subtask 1: Facility Fees were moved to personnel hours for the HCWP Coordinator under Objective 1, Task B, Subtask 1 to fund the hours the Coordinator will spend on upcoming events and to fulfill the objectives and tasks of the workplan. \$165.00 from Objective 1, Task B, Subtask 1: Facility Fees was moved to personnel hours for the Renville Co SWCD under Objective 1, Task B, Subtask 1 to fund the hours staff will spend on upcoming events and to fulfill the objectives and tasks of the workplan.

The Renville County SWCD had several changes in staff during the contract period, but was still able to meet its obligations of the contract.

#### • Objective 1: WRAPS Development

Task A: Public Participation Engagement Team (also known as the Renville County WRAPS Team)

The Renville County WRAPS Team, consisting of HCWP, Renville County SWCD, and Renville County, used interviews, surveys, one-on-one communication, meetings, and educational and outreach activities to identify community/landowner opportunities, obstacles, and opinions on land management and water quality (see Attachment 1 Educational and Outreach Activities and Media Events, Attachment 2 Landowner Interview Results, and Attachment 5 Cover Crops Mtg 6.29.17 Evaluation Form).

Subtask 1: Involvement in the MRMW Engagement Team

The Renville County WRAPS Team attended meetings and communicated with the other WRAPS Teams that make up the MRMW Team.

Task B: Public Participation Implementation

The Renville County WRAPS Team conducted interviews, surveys, one-on-one communication, meetings, and education and outreach activities (see Attachment 1 Educational and Outreach Activities and Media Events, Attachment 2 Landowner Interview Results, and Attachment 5 Cover Crops Mtg 6.29.17 Evaluation Form).

Subtask 1: Data Collection and Documentation

The Renville County WRAPS Team used interviews, surveys, one-on-one communication, meetings, and education and outreach activities to identify community/landowner opportunities, obstacles, and opinions on land management and water quality (see Attachment 1 Educational and Outreach Activities and Media Events, Attachment 2 Landowner Interview

Results, and Attachment 5 Cover Crops Mtg 6.29.17 Evaluation Form). Education and outreach materials were developed, including brochures, fact sheets, flyers, websites, and displays (Attachment 3 Cover Crop Mtg 6.29.16 Postcard, and Attachment 4 Cover Crop Mtg 6.21.17 Postcard and Flyer). Surveys were taken at the HCWP annual meetings and two benefits of cover crop meetings (see Attachment 5 Cover Crops Mtg 6.29.17 Evaluation Form). Landowner interviews were conducted and the answers were tabulated and analyzed (see Attachment 2 Landowner Interview Results).

· Objective 2: Administration

Task A: Progress Tracking

The Renville County WRAPS Team tracked public participation activities (see Attachment 1 Educational and Outreach Activities and Media Events).

Subtask 1: Develop Outcome Indicators

The Renville County WRAPS Team collected data and used analysis strategies and methodologies to track the community's interest level in water quality.

Subtask 2: Track and Report Outcomes

The Renville County WRAPS Team tracked the results of the landowner interviews, surveys, and one-on-one communication for purposes of adaptive management, WRAPS documentation, and program accountability reporting (see Attachment 2 Landowner Interview Results and Attachment 5 Cover Crops Mtg 6.29.17 Evaluation Form).

Task B: Project Management

Subtask 1: Coordinate Financial Expenditures. Prepare and Submit Contract Progress Reports

Renville County SWCD and Renville County submitted reimbursement requests to HCWP for staff time and mileage expended on the objectives of this contract. Renville County SWCD and Renville County submitted semi-annual report updates to HCWP, who incorporated that information into the semi-annual reports, which were completely and timely submitted.

## **Section II – Grant results**

### **Measurements**

Tools and methods used to gather information included conversations and surveys at meetings, one-on-one landowner interviews, and information from watershed citizens and project partners about the issues, priorities, and restoration and protection strategies of the watershed.

At the 2016 and 2017 HCWP annual meetings and 2016 and 2017 benefits of cover crops meetings, attendees completed surveys to gather information about water quality (see Attachment 2 Landowner Interview Results and Attachment 5 Cover Crops Mtg 6.29.17 Evaluation Form).

42 one-on-one landowner interviews were conducted to gather information about issues, priorities, and restoration and protection strategies of the watershed (see Attachment 2 Landowner Interview Results).

### **Products**

Products that used funds from this contract include 2016 and 2017 benefits of cover crops meeting postcards and 2016 cover crops field day postcards (see Attachment 3 Cover Crop Mtg 6.29.16 Postcard and Attachment 4 Cover Crop Mtg 6.29.17 Postcard and Flyer).

### **Public outreach and education**

HCWP, Renville County SWCD, and Renville County use BMP implementation as a tool for public outreach and education. HCWP, Renville County SWCD, and Renville County have knowledge from face-to-face conversations with landowners, farmers, contractors, engineers, implement dealers, seed companies, agricultural businesses, and others involved in agriculture about the reasons landowners do or do not implement BMPs. We use that knowledge to tailor our approach to outreach and education to attempt to make landowners and the agricultural community more receptive to BMPs and the benefits of them.

Public outreach and education are essential to the goals of HCWP, Renville County SWCD, and Renville County and of this contract. HCWP, Renville County SWCD, and Renville County have been involved in several educational and outreach projects designed to inform the public about the availability and use of conservation practices as well as information on the water quality conditions in the watershed.

HCWP, Renville County SWCD, and Renville County had displays at the annual Renville County Fair. Estimated total attendance at the fair was upwards of 15,000 people per year. Displays were used to promote BMPs, septic loan funding programs, cost-share programs, increase knowledge of the watershed, and encourage public input into water quality issues. Staff was also available to answer questions about HCWP, Renville County SWCD, Renville County, and water quality.

HCWP, Renville County SWCD, and Renville County have been the topics of many media articles. Articles vary widely from promotion of available project funds to welcoming new employees to current activities. Past articles have been supportive of HCWP, Renville County SWCD, and Renville County's efforts and are a welcome addition to existing outreach efforts. Media are

invited to and usually attend HCWP, Renville County SWCD, and Renville County public events. Over 80 articles were published during the course of the contract.

Public meetings were held regularly to update watershed citizens, local government officials, and agency representatives on staff activities and program availability. These meetings also give the general public the opportunity to bring questions or concerns to the attention of HCWP, Renville County SWCD, and Renville County staff and their Boards. Two HCWP annual meetings were held for the same reasons, but provided much more information and thanked the community for their interest and support. HCWP, Renville County SWCD, and Renville County staff also presented information to several types of organizations, such as the Girl Scouts, county local water plan committees, county commissioners, Minnesota Association of SWCDs, Discovery Farms, townships, and lake associations, just to name a few.

HCWP, Renville County SWCD, and Renville County have also presented at several school functions to promote watershed efforts and foster water stewardship in young people, which can last a lifetime. HCWP and Renville County staff assisted the Renville County SWCD with their annual youth educational activity entitled Water Air Land Knowledge (WALK). The WALK program provides 5<sup>th</sup> and 6<sup>th</sup> grade students from local schools within the watershed with a day field trip to a wildlife management area to learn about several environmental and water quality topics. Approximately 150 students were in attendance each year. An Enviroscape model was presented at the WALK event as a hands-on technique to educate students about the sources of and solutions to non-point source pollution. Students are very receptive to this type of presentation and it is a highly successful learning tool. A stream table purchased using funds from this contract has been an incredibly useful tool to interact with grade school children and teach them about water quality and erosion.

The HCWP, Renville County SWCD, and Renville County websites are also resources for watershed residents to find watershed, WRAPS, and water quality information.

## **Long-term results:**

### Capacity Building

HCWP, Renville County SWCD, and Renville County have demonstrated an ability to implement projects of environmentally sound design and are also accepted by many farmers and landowners in this region. When we do a project with a landowner, often we see interest in these practices grow as landowners see the BMPs their neighbors have implemented and that they lessen water quality and erosion issues. Although the primary land use in the watershed continues to be row-crop agriculture, implementation of BMPs throughout the landscape is changing how sensitive areas are managed.

A strong educational and outreach component continues to provide long-term benefits to the watershed. Increasing the awareness and understanding of the effects of land use, both good and bad, promotes wise land use and long-term stewardship. The landowners of tomorrow attend school today and we are active in taking advantage of every opportunity to educate them regarding water quality issues and land use implications. This contract has been used to promote water quality to audiences ranging from elementary students to adults of all ages. Awareness of how individuals and communities affect their downstream neighbor's water is increasing.

### Project Partnerships

HCWP, Renville County SWCD, and Renville County have continued to develop and strengthen partnerships with local, state, and federal agencies. HCWP, Renville County SWCD, and Renville County have also built cooperative working relationships and trust with the local farming community. These strong relationships are essential to implementing projects that provide changes in land use management and water quality. Future implementation will rely on alliances which continue to promote conservation-oriented land use decisions. HCWP, Renville County SWCD, and Renville County will continue to work with watershed citizens and local, state, and federal agencies.

### Project Continuation

The goals of this contract will be continued through other contracts and grants HCWP, Renville County SWCD, and Renville County administers. These contracts and grants will continue BMP implementation and promotion to improve water quality and educational and outreach activities to increase public participation and input into water quality issues.

### Shared Results

HCWP, Renville County SWCD, and Renville County information has been disseminated through many outlets, including newsletters, flyers, postcards, meetings, educational and outreach events, newspapers, and radio advertisements. The HCWP, Renville County SWCD, and Renville County websites are regularly updated with water quality and BMP information, as well as presentations from meetings and semi-annual reports.

### Interested Audiences

Local conservation groups, farmers, landowners, industrial businesses, natural/aquatic tourism businesses, cities and municipalities, sportsman groups, and several other groups all have an interest in knowing the status of water quality in the watershed and what BMPs are being installed throughout the watershed. Local schools, from elementary schools to universities, are also interested in HCWP, Renville County SWCD, and Renville County data. The quality of our water affects everyone, so our

information is applicable to everyone.

#### Lessons Learned/Recommendations

Building cooperative working relationships with communities and property owners is of the utmost importance in maintaining a successful program. Without interest and active participation of landowners, implementation would be impossible.

#### Feedback/Suggestions

N/A

#### **Section III – Final Expenditures**

See attached budget.

# Grant project summary

Project title:   Middle Minnesota WRAPS Civic Engagement Renville County    
Organization (Grantee):   Hawk Creek Watershed Project    
Project start date:   06/19/2015   Project end date:   06/30/2017   Report submittal date:   07/24/2017    
Grantee contact name:   Heidi Rauenhorst   Title:   Coordinator    
Address:   500 East DePue Avenue, Suite 104    
City:   Olivia   State:   MN   Zip:   56277    
Phone number:   (320) 523-3666   Fax:   (320) 523-3668   Email:   [heidi@hawkcreekwatershed.org](mailto:heidi@hawkcreekwatershed.org)    
Basin (Red, Minnesota, St. Croix, etc.)  
/Watershed & 8 digit HUC::   Minnesota/MN River-Mankato 07020007   County:   Renville  

## Project type (check one):

- Clean Water Partnership
- Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL/WRAPS Implementation

## Grant funding

Final grant amount:   \$26,000.00   Final total project costs:   \$26,000.00    
Matching funds: Final cash:   N/A   Final in-kind:   N/A   Final Loan:   N/A    
MPCA project manager:   Bryan Spindler  

## For TMDL/WRAPS development or TMDL/WRAPS implementation projects only

Impaired reach name(s): \_\_\_\_\_  
AUID or DNR Lake ID(s): \_\_\_\_\_  
Listed pollutant(s): \_\_\_\_\_  
303(d) List scheduled start date: \_\_\_\_\_ Scheduled completion date: \_\_\_\_\_  
*AUID = Assessment Unit ID*  
*DNR = Minnesota Department of Natural Resources*

## Executive summary of project (300 words or less)

This summary will help us prepare the Watershed Achievements Report to the Environmental Protection Agency. (Include any specific project history, purpose, and timeline.)

The MRMW covers approximately 862,000 acres across parts of eight counties in south-central Minnesota. The MRMW is comprised of several small first and second order streams that drain directly into the Minnesota River. The watershed includes approximately 116 miles of the Minnesota River starting east of Redwood Falls in Redwood County and ending just north of Saint Peter in Nicollet County. Urban areas in the MRMW include parts or all of Mankato, North Mankato, Saint Peter, New Ulm, Redwood Falls, Morton, Fairfax, Courtland, Nicollet, and Cleveland. This contract covers the area within the Renville County and Sibley County portion of the MRMW.

As part of the Watershed Approach process, the HCWP was contracted, with Renville County and the Renville County SWCD as subcontractors, to use civic engagement to work with local stakeholders and watershed citizens, foster participation in the watershed, identify watershed issues and priorities, and participate in the WRAPS development for the MRMW.

Civic engagement activities have provided awareness to watershed citizens of watershed issues, their impact on water quality, and the actions that need to be taken to improve our water (see Educational Activities and Media Events attachment). Many factors contribute to deterring a landowner from implementing a Best Management Practice (BMP), such as cost, peer pressure, lack of trust of government offices and programs, and confusing, cumbersome, and time-consuming cost-share programs. Support and acceptance of BMPs is needed to improve water quality and implementation of BMPs is increased when people participate in public discussion and collaborative problem solving to address public issues locally. HCWP, Renville County, and Renville County SWCD

will continue the goals of improving water quality and increasing watershed citizen involvement.

### **Problem (one paragraph)**

The Watershed Approach cycle for the MRMW started in 2013. In accordance with the federal Clean Water Act, the MN Clean Water Legacy Act states that public agencies and private entities shall encourage participation by the public and stakeholders, including local citizens, landowners and managers, and public and private organizations, in identifying impaired waters, developing TMDLs, planning, and priority setting. As part of the Watershed Approach process, the HCWP was contracted, with Renville County and the Renville County SWCD as subcontractors, to use civic engagement to work with local stakeholders and watershed citizens, foster participation in the watershed, identify watershed issues and priorities, and participate in the WRAPS development for the MRMW.

### **Waterbody improved (one paragraph)**

Public education and outreach were increased and water quality issues, priorities, and restoration and protection strategies were discussed within the Renville and Sibley County portion of the MRMW, which will be used to target areas to implement BMPs in a cost-effective manner. Civic engagement activities have provided continued awareness to watershed citizens of the issues within the watershed, their impact on water quality, and the actions that need to be taken to improve our water.

### **Project highlights (one paragraph)**

Staff logged several educational and outreach activities, including public meetings, field days, workshops, youth activities, local water plan meetings, several trainings, distribution of HCWP and Renville County newsletters, postcards, brochures, and online resources, such as the HCWP, Renville County SWCD, and Renville County websites and Facebook pages. HCWP, Renville County, and Renville County SWCD led and participated in many activities through this contract. Other partners included Sibley County SWCD, Renville County Public Works (Ditch Authority), Renville County Environment and Community Development, Minnesota Department of Natural Resources, Natural Resources Conservation Service, Board of Water and Soil Resources, and United States Fish and Wildlife Service. Activities took place from June 19, 2015 through June 30, 2017. HCWP, Renville County, and Renville County SWCD will continue the goals of improving water quality and increasing watershed citizen involvement.

### **Results (one paragraph)**

The educational and outreach activities through this contract have increased the awareness of the water quality problems in the watershed. The civic engagement, identification of watershed issues and priorities, and coordination with local stakeholders and watershed citizens have provided data that will be used in development of the MRMW WRAPS report.

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### **Partnerships (Name all partners and indicate relationship to project)**

#### **Board of Water and Soil Resources**

BWSR attended some of the civic engagement activities put on by the Renville County WRAPS Team and provided input into the issues, priorities, and restoration and protection strategies of the watershed.

#### **Hawk Creek Watershed Project**

HCWP was part of the Renville County WRAPS Team and implemented and attended many civic engagement activities. HCWP was the contractor of the contract.

#### **Hawk Creek Watershed Project Board of Directors**

The HCWP Board of Directors is comprised of one appointed County Commissioner from each of the three counties involved with the Project. The Board of Directors met regularly with HCWP staff to discuss and make decisions regarding financial, policy, and personnel issues. The Board also provided input into the issues, priorities, and restoration and protection strategies of the watershed.

#### **Hawk Creek Watershed Project Citizen Advisory Committee**

The Citizen Advisory Committee met regularly with HCWP staff. At these public meetings, active citizens, agency personnel, industry personnel, county officials, community officials, and active and retired agricultural producers provided input into the issues, priorities, and restoration and protection strategies of the watershed.

#### **Landowners**

HCWP routinely works with landowners on BMP projects and has regular interactions with them through civic engagement activities (see Attachment 1 Educational and Outreach Activities and Media Events). Many landowners provided input into the issues, priorities, and restoration and protection strategies of the watershed.

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**Local Media**

The local media provided media and radio coverage of Renville County WRAPS Team activities. Several area news outlets actively cover Renville County WRAPS Team events and activities. This publicity is a big boost to the traditional information and education campaign that is an ongoing effort for the Renville County WRAPS Team.

**Minnesota Department of Natural Resources**

MN DNR staff attended some of the civic engagement activities put on by the Renville County WRAPS Team and provided input into the issues, priorities, and restoration and protection strategies of the watershed.

**Natural Resources Conservation Service**

The Renville County NRCS personnel attended some of the civic engagement activities put on by the Renville County WRAPS Team and provided input into the issues, priorities, and restoration and protection strategies of the watershed.

**Renville County**

Renville County (specifically the Renville County Water and Household Hazardous Waste Management office) was part of the Renville County WRAPS Team and implemented and attended many civic engagement activities. Renville County was a subcontractor of the contract. The following County departments attended some of the civic engagement activities put on by the Renville County WRAPS Team and provided input into the issues, priorities, and restoration and protection strategies of the watershed: Renville County Board of Commissioners, Renville County Public Works (Ditch Authority), and Renville County Environment and Community Development.

**Renville County Soil and Water Conservation District**

The Renville County SWCD was part of the Renville County WRAPS Team and implemented and attended many civic engagement activities. The Renville County SWCD was a subcontractor of the contract.

**Renville County Soil and Water Conservation District Board of Supervisors**

The Renville County SWCD Board of Supervisors is comprised of five supervisors, one from each of the five districts in the county. The Board of Supervisors met regularly with Renville County SWCD staff to discuss and make decisions regarding financial, policy, and personnel issues. The Board also provided input into the issues, priorities, and restoration and protection strategies of the watershed.

**Sibley County Soil and Water Conservation District**

The Sibley County SWCD staff attended some of the civic engagement activities put on by the Renville County WRAPS Team and provided input into the issues, priorities, and restoration and protection strategies of the watershed. The Sibley County SWCD was a partner of the contract.

**United States Fish and Wildlife Service**

Staff of the USFWS Wetland Management District in Litchfield, MN attended some of the civic engagement activities put on by the Renville County WRAPS Team and provided input into the issues, priorities, and restoration and protection strategies of the watershed.

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## Pictures



Cover Crop Field Day – September 23, 2016. HCWP, Renville County SWCD, and Renville County put on this field day to demonstrate cover crop test plot results, cover crop species, soil structure, soil health, tillage practices, and erosion.



HCWP 14<sup>th</sup> Annual Information and Appreciation Meeting – February 24, 2016. Presentations at this meeting included projects and activities of the HCWP, water quality, soil health, tillage, prairies, pollinators, aquatic invasive species, and WRAPS.



Youth Environmental Education – May 17 and May 18, 2016. HCWP staff did hands-on water quality experiments using the streamtable and T-tubes with kindergartners and first graders from Renville County West School. This is one of many youth activities HCWP, Renville County, and Renville County SWCD participates in to encourage water stewardship in our young people.



Benefits of Cover Crops Meeting – June 29, 2017. HCWP, Renville County SWCD, and Renville County put on this meeting to discuss the benefits of cover crop species, soil structure, soil health, tillage practices, erosion, water quality, and successes and failures of cover crops. This photo shows a rainfall simulator demonstration that was done to show the difference in water holding capacity of healthy soil (with high organic matter and microbial activity, less tillage, and more vegetative cover throughout the year) and unhealthy soil (with low organic matter and microbial activity, more tillage, and less vegetative cover throughout the year).



Women's Conservation Legacy Workshop – May 16, 2017. This workshop was held to address the growing number of women landowners and provide them with information and resources about conservation opportunities for their land. Topics at the workshop included water quality, BMPs, cover crops, erosion, soil health, cost-share programs, and effective communication. This photo shows a slake test that was done to show the difference of healthy soil (with high organic matter and microbial activity, less tillage, and more vegetative cover throughout the year) and unhealthy soil (with low organic matter and microbial activity, more tillage, and less vegetative cover throughout the year).

**Hawk Creek Watershed Project, Renville County, and Renville County Soil and Water Conservation District**  
**Educational and Outreach Activities and Media Events**  
**June 19, 2015 - June 30, 2017**

**Educational and Outreach Activities**

<b>Date</b>	<b>Project</b>	<b>Number</b>	<b>Comments</b>
6/24/2015	Hawk Creek Headlines newsletter	3,000	BMP special edition
7/1/2015	U of M Extension Soil Health Field Day	75	reduced tillage systems, impacts of long-term tillage, erosion
7/9/2015	MN Viewers Association seminar	62	drainage, determination of benefits
7/10/2015	Renville Co AIS meeting	4	developed county AIS plan
7/15/2015	HCWP Board Meeting	5	approved streambank stabilization project
7/16/2015	Renville County NRCS EQIP mtg	16	issues, priorities, programs, and practices in Renville County
7/21/2015	Mid-MN WRAPS Meeting	6	reviewed work plan and budget, planned civic engagement activities
7/22/2015	Ag Drainage Water Management Webinar	100	landscape-level nutrient reduction
7/22/2015	Redwood Co SWCD/Corn Growers Assoc buffer meeting	66	discussed new buffer legislation
7/23/2015	WPLMN conference call	10	discussed water quality monitoring
7/27/2015	WRAPS conference call	5	planned process to write WRAPS report, collaboration with LWG & citizens
7/30/2015	Yellow Medicine County buffer meeting	59	discussed new buffer legislation
8/3/2015	Renville County buffer meeting	150	discussed new buffer legislation
8/10/2015	WRAPS meeting with Renville County staff	11	discussed workshops for writing WRAPS report, county staff involvement in WRAPS process
8/11/2015	WRAPS meeting with Chippewa County staff	7	discussed workshops for writing WRAPS report, county staff involvement in WRAPS process
8/12/2015	WRAPS meeting with Kandiyohi County staff	6	discussed workshops for writing WRAPS report, county staff involvement in WRAPS process
8/13/2015	Renville County SWCD Supervisors Meeting	11	discussed Hawk Creek Watershed WRAPS and cover crop program
8/19/15 - 8/21/15	Renville Co Fair	15,000	displayed and distributed BMP, cost-share, and civic engagement information
8/26/2015	Cover Crop SWCD/NRCS Meeting	9	worked on logistics of cover crop program
9/2/2015	Kandiyohi County buffer meeting	200	discussed new buffer legislation
9/15/2015	Cover Crop Learning Tour	150	cover crop education
9/18/2015	HCWP Board Meeting	6	discussed BMPs, BWSR verification, grants, water quality
9/18/2015	HCWP Apprecation Picnic	22	meeting with watershed citizens, monitors, government officials, assisting agencies
9/23/2015	WRAPS Workshop #1	18	discussed Hawk Creek WRAPS
9/25/2015	Spanier Cover Crop Plot Day	15	discussed cover crops, seed mixes, soil health, water quality
9/30/2015	RRRSWA Tour	30	tour of new Redwood/Renville recycling facility - discussed recycling, water retention, pollution
10/6/2015	Renville County Board of Commissioners meeting	10	discussed HCWP's projects and programs and MN River basin
10/6/2015	Kandiyohi County Board of Commissioners meeting	15	discussed HCWP's projects and programs and MN River basin
10/14/2015	Paint with CROW	15	discussed water quality - color, vegetation and shorelines, <i>E. coli</i> , managing the river's flow
10/20/2015	Chippewa County Board of Commissioners meeting	10	discussed HCWP's projects and programs and MN River basin
10/21/2015	Renville County Cover Crop Tour	25	tour sponsor, toured cover crop sites and discusses soil health, infiltration, tilling practices, erosion, water quality
11/4/2015	Freshwater Society Des Moines Water Works lecture	50	Bill Stowe CEO of Des Moines Water Works on suing upstream counties to remove nitrates from drinking water
11/5/2015	Renville Co Local Water Plan Meeting	12	discussion with local representatives on local water quality issues
11/5/2015	MN Viewers Assoc Bus Tour	60	drainage, determination of benefits
11/16/2015	Mid-MN WRAPS Meeting	4	discussed watershed resident/landowner interview questions
11/18/2015	WRAPS Workshop #2	24	reviewed draft background and conditions sections and adjusted source assessment percentages
11/19/2015	Watershed Professionals Network Meeting	35	ag and water quality research from MN Corn and Soybean Growers, 1 Watershed 1 Plan
11/23/2015	Mid-MN WRAPS Meeting	19	discussed stressor identification update, zonation results, civic engagement
12/11/2015	Dovre Township Hawk Creek Meeting	7	discussed concerns with Hawk Creek water quality and potential development
12/14/2015	Chippewa County Local Water Plan Meeting	14	WRAPS, cover crops, buffers, septic system upgrade loans
12/15/15 - 12/16/15	Conservation Tillage Conference	295	conservation tillage practices and benefits
1/6/2016	WRAPS Workshop #3	50	what's working in conservation and what's not exercise, reflection on 10 year targets and timeline for WQ goals
1/19/2016	Renville Co AIS Committee meeting	3	worked on AIS education and outreach, grant program
1/20/2016	MN DNR Buffer webinar	15	update on Minnesota buffer law and local and county roles
1/21/2016	BWSR Grant Training	40	discussed CWP, CWF, grant funding
1/27/2016	WRAPS Workshop #4	75	discussed Watershed Approach, WRAPS, BMPs, pollutant reductions
1/29/2016	319/CWP Grant Training	20	discussed 319/CWP grant funding
2/16	HCWP Hawk Creek Headlines newsletters	3,150	water quality, BMPs, SSTS, WRAPS
2/16	HCWP annual meeting postcards	3,135	promoted HCWP annual meeting and presenters, BMPs, and water quality
2/1/2016	Renville County Township Offices Meeting	135	local water quality problems, drainage
2/4/2016	Environmental Committee Listening Session	100	discussed buffer law, water quality

2/4/2016	Cover crop webinar	-	cover crop practices
2/9/2016	Nutrient Management Conference	310	presentations on nutrient management, cover crops, water quality
2/11/2016	Heron Lake WD - Cover Crops Webinar	-	presentations on cover crop and soil health
2/19/2016	HCWP Board of Directors meeting	6	discussed projects
2/24/2016	HVWP 14th Annual Information & Appreciation Meeting	98	discussed water quality, soil health, tillage, prairies, pollinators, AIS, WRAPS
3/2/2016	Renville County Feedlot Informational Meeting	25	discussed cost-share availability, BMP projects, cover crops, nutrients, water quality
3/3/2016	Nutrient Smart Conference	28	discussed nutrient management in cropping systems
3/4/2016	212 Seed Winter Agronomy Day	35	discussed nutrient management and water quality
3/8/2016	Wang Township annual meeting	12	discussed nutrient management, CRP, BMPs, water quality
3/9/2016	Ag Drainage & the Future of WQ Workshop	150	gave BMP and water quality presentation
3/11/2016	Renville County AIS Committee mtg	3	reviewed AIS grant application, discussed education and outreach
3/15/2016	Renville County CD36 mtg	18	discussed options to implement water-storage/wetland project
3/16/2016	HCWP Board of Directors meeting	4	discussed SSTS upgrades and applying for loan funding
3/21/2016	Chippewa County Local Water Plan mtg	12	discussed water quality, AIS, SSTS upgrades, cover crops
4/7/2016	Renville County CD72 Meeting	14	discussed potential water quality project involving CD72
4/7/2016	MN Viewers Association meeting	85	discussed water quality and drainage
5/3/2016	Local Work Group meeting	15	reviewed draft WRAPS report and strategies table
5/10/2016	Renville Co SWCD buffer meeting	11	reviewed DNR buffer maps
5/17/2016	RCW Schools Grades K-1 Environmental Education	80	streamtable activity, water quality and erosion education at Ramsey Park
5/18/2016	RCW Schools Grades 2-3 Environmental Education	80	streamtable and T-tube activities, water quality and erosion education at Ramsey Park
5/20/2016	Chippewa Co Conservation Day - Monte, MACCRAY Schools	140	did environmental and conservation activities with 5th and 6th graders at Lac Qui Parle WMA/State Park
6/16	The Benefits of Cover Crops meeting postcards	1,500	promoted cover crops, BMPs, water quality
6/2/2016	Cover Crop meeting	8	discussed cover crop program
6/7/2016	Buffer Law meeting	40	discussed conservation programs
6/9/2016	Renville NRCS/SWCD Local Work Group meeting	14	discussed Farm Bill, conservation programs, Renville County environmental problems
6/10/2016	HCWP Public meeting	18	MN wetland banking, WRAPS/TMDL, BMPs, water quality
6/21/2016	Kandiyohi NRCS/SWCD Local Work Group meeting	12	discussed Farm Bill, conservation programs, Kandiyohi County environmental problems
6/21/2016	Renville County/SWCD Collaboration meeting	8	discussed conservation programs in Renville County and agencies working together
6/21/2016	Kandiyohi Local Water Plan meeting	11	discussed cover crop program, water quality
6/29/2016	benefits of cover crops meeting	65	economics, soil and crop benefits, and obstacles to succeed with cover crops
7/6/2016	Renville County Local Water Plan	15	HCWP projects, buffers, SSTS
7/8/2016	MAPSS Renville County Tour	50	MN Assoc of Professional Soil Scientists tour of Renville County and MN soil, drainage, and water quality
7/12/2016	U of MN Ext/Kandiyohi Co hail damaged crops/cover crops	70	discussed hail damaged crops and using cover crops
7/13/2016	BWSR Roundtable	40	discussed programs, BMPs, buffers
7/14/2016	MN Viewers Association meeting	60	drainage design, hydrology and capacities, why proximity rates very within a system
7/20/2016	HCWP Board of Directors meeting	7	2015 audit, newly awarded grants, SSTS loans, BMPs, educational and outreach activities, water quality
7/28/2016	BWSR/Renville County meeting	10	discussed issues in Renville County, WRAPS, 1W1P
8/10/16-8/12/16	Renville County Fair	15,000	worked at booth - engaged watershed citizens and distributed water quality, BMP, and cost-share information
8/15/2016	Chippewa County Local Water Plan mtg	15	discussed water quality, AIS, SSTS upgrades, cover crops, BMPs
8/16/2016	Sustainable Farming Association cover crop field day	70	Dirt Rich - Building Soil Health Experts - soil health, cover crops, erosion, tillage
8/18/2016	Renville Co Ditch mtg	15	discussed water retention, water quality and quantity, CRP, perennial cover, buffers
8/22/2016	Prairie Seed Cover Crop Test Plot Field Day	60	discussed cover crops, soil health, erosion, tillage, impacts to water quality and quantity
8/22/2016	Renville Co Girl Scouts Day Camp	35	water quality & stream table activities with K-6 Girl Scouts
8/23/2016	Hawk Creek Headlines newsletter	3,000	water quality, BMPs, citizen monitors, AIS
8/24/2016	Cover Crop Field Day postcards	1,400	promoted cover crops, BMPs, water quality
8/29/2016	Local Government Buffer Meeting	110	discussed buffer law
9/9/2016	HCWP appreciation picnic	31	meeting with watershed citizens, monitors, government officials, assisting agencies
9/11/2016	Renville County Tours	100	tours and information on water quality, BMPs, citizen involvement
9/23/2016	Cover Crop Field Day	60	cover crop test plot results, benefits of cover crop species, soil structure, soil health, tillage practices, erosion
9/27/2016	MN River Valley Master Plan meeting	40	discussed recreation and conservation in Renville & Redwood Co area of the MN River Valley
10/27/2016	Kandiyohi County Soil Health Meeting	7	discussed soil health, BMPs, water quality, education and outreach activities
10/31/2016	MN River Professional Judgement webex mtg	20	discussed MN River impairments
10/31/2016	Citizen Monitoring Newsletters	29	Hawk Creek citizen newsletter recapping water quality monitoring data and results
11/3/2016	Redwood County NRCS/SWCD Cover Crop Field Day	35	cover crops, soil health, water quality, BMPs
11/10/2016	Watershed Professionals Network mtg	25	water quality, civic engagement
11/29/2016	319/CWP webex	20	information on 319 and CWP funding
11/30/2016	SAM training	30	HSPF Scenario Application Manager (SAM) software training
12/2/2016	HCWP Board of Directors meeting	6	grant timelines and budgets, BMPs, educational and outreach activities, water quality

12/2/2016	HCWP Public meeting	25	cover crops, water quality monitoring, BMPs
12/16/2016	Renville Co SWCD/U of MN Extension meeting	35	information on buffer law, CRP, invasive species, cover crops, soil health, erosion, water quality
1/13/2017	Renville Co AIS Meeting	4	AIS education/outreach, water quality
1/19/2017	MN Viewers Association Meeting	65	impact of excess moisture on soil moisture and crop production
1/25/2017	Renville Co Local Water Plan Meeting	10	BMPs, monitoring, education/outreach
1/27/2017	Governor Dayton's Water Summit	500	water quality in Minnesota
1/31/2017	MN River Master Plan Meeting	25	drainage, water quality, rare species, conservation
2/17	HCWP annual meeting postcards	3,000	promoted HCWP annual meeting and presenters, BMPs, and water quality
2/6/2017	Renville County Township Offices Meeting	90	conservation programs, drainage, buffers
2/6/2017	PWELC Earth Day Planning Meeting	8	planning for annual Earth day event at Prairie Woods Environmental Learning Center in Spicer
2/7/2017	WPLMN Training	55	water quality, data, trends, sampling techniques, civic engagement with public
2/7/2017	MCIT Training	40	MN laws
2/8/2017	Faribault Co Soil Health Workshop	85	soil health, water quality, Gabe Brown, nitrogen,
2/15/2017	MN River Master Plan Meeting	40	conservation and recreation in the MN River Valley, water quality, erosion
2/16/2017	Renville Co GIS Training	20	training on GIS
2/22/2017	HCWP Annual Meeting	85	water quality, BMPs, cover crops, weeds, & herbicide carryover, groundwater, nitrogen in drainage waters
2/27/2017	Renville County Buffer Meeting	60	buffer law, buffer programs, drainage systems
3/1/2017	Chippewa Co LWP Meeting	12	buffers, cover crops, WRAPS, 1W1P
3/3/2017	Discovery Farms Meeting	4	water quality, soil loss, N, P, TSS, drainage
3/9/2017	EPA Model My Watershed Webcast	700	EPA webcast: Watershed Academy Webcast on Model My Watershed: A Tool for Water Resource Management
3/23/2017	Kandiyohi County Soil Health Day	250	soil health, cover crops, water quality, erosion
3/27/2017	Agricultural Drainage and Future of Water Quality	120	drainage, buffers, water quality, erosion
3/28/2017	Willmar Chain of Lakes Planning Meeting	8	water quality, TMDL
3/29/2017	Redwood County Soil Health Workshop	80	soil health, cover crops, water quality, erosion
3/30/2017	Legacy and Cover Crop Planning Meeting	4	civic engagement, cover crops, soil health
3/30/2017	Kandiyohi Co SWCD Buffer Task Force Meeting	10	soil health, cover crops, water quality, erosion
4/17	Citizen Monitoring Newsletters	29	Hawk Creek citizen newsletter recapping water quality monitoring data and results
4/17	Women's Conservation Legacy Workshop Mailings	250	water quality, BMPs, cover crops, erosion, soil health
4/5/2017	Hawk Creek Watershed 1W1P Meeting	11	local water plans, WRAPS, 1W1P
4/6/2017	Advanced Excel Training	25	advanced Excel training
4/6/2017	MN Viewers Association Meeting	65	determining road benefits and potential of changes to the procedure
4/13/2017	Advanced Word Training	25	advanced Word training
4/19/2017	Willmar Chain of Lakes Meeting	60	Willmar Chain of Lakes, water quality, TMDL
4/20/2017	Watershed Network Meeting	15	MN River Master Plan, lake restoration and BMPs
4/20/2017	Advanced Outlook Training	25	advanced Outlook training
5/1/2017	Chippewa Co LWP Meeting	14	Other Waters and buffers, 1W1P, WRAPS, cover crops, BMPs
5/12/2017	MACCRAY Schools water quality presentation (Maynard, Clara City, Raymond)	50	fifth graders presentation on water quality, stream table, conservation
5/16/2017	Women's Conservation Legacy Workshop	20	water quality, BMPs, cover crops, erosion, soil health
5/19/2017	Chippewa County Conservation Day	190	fifth graders MACCRAY and Montevideo Schools - animal tracks, wetlands, soils, water quality, natural history
5/22/2017	Renville County West School water quality presentation	85	kindergarten and first graders presentation on water quality, stream table, conservation
5/23/2017	Renville County SWCD WALK (Water Air Land Knowledge)	55	sixth graders BOLD Schools - water quality, soils, wetlands, land use
5/25/2017	Renville County SWCD WALK (Water Air Land Knowledge)	50	fifth graders Buffalo Lake Hector Schools - water quality, soils, wetlands, land use
6/17	The Benefits of Cover Crops meeting postcards	1,500	promoted cover crops, BMPs, water quality
6/16/2017	HCWP Board of Directors meeting	5	grant timelines and budgets, BMPs, educational and outreach activities, water quality
6/23/2017	HCWP Public Meeting - Clara City	19	Willmar chain of lakes, water quality, WRAPS/TMDL, BMPs
6/28/2017	Soil Health Field Day - U of MN Ext & NDSU	175	soil health, cover crops, water quality, erosion
6/29/2017	Benefits of Cover Crops Meeting	80	soil health, cover crops, water quality, erosion, successes and failures of cover crops

#### Media Events

Date	Media Source	Circulation Number	Comments
1/28/2015	MPCA Watershed Network News	1,014	Hawk Creek Watershed Project annual meeting Feb. 25
2/1/2015	Chippewa SWCD Annual Report	2700	Hawk Creek Update
2/27/2015	MPCA Watershed Network News	1,014	Good turnout at Hawk Creek annual meeting Feb. 25
3/4/2015	Clara City Herald	1,500	Hawk Creek Watershed Project updates reported at annual meeting
3/5/2015	Renville County Register	2,404	Hawk creek works on erosion and water quality
3/7/2015	West Central Tribune	16,498	Carrying a heavy load
3/7/2015	West Central Tribune	16,498	Seeley: Climate change in 'staring us in the face'
3/31/2015	Watershed Connections - MPCA	1,014	Watersheds co-sponsor 'soil health day' for ag students

4/1/15 - 4/30/15	Big Country 100.1 FM	215,000	month-long radio ads promoting HCWP BMPs and outreach
6/6/2015	West Central Tribune	16,498	Buffer legislation likely to emerge from special session
8/20/2015	Renville County Register	2,404	promote cost-share for cover crops in Hawk Creek Watershed
8/22/2015	West Central Tribune	16,498	promote cost-share for cover crops in Hawk Creek Watershed
8/22/2015	Big Country KOLV 100.1 FM	215,000	radio announcement for cover crop program
9/7/15 - 9/12/15	Big Country KOLV 100.1 FM/ KWLM 1340 AM	215,000	BMP/cover crop promotional radio ads
9/30/2015	Watershed Connections - MPCA	1,014	Hawk creek staff at cover crop event
10/27/2015	Watershed Connections - MPCA	1,014	Cover crop test plots take root in Renville County
10/27/2015	Watershed Connections - MPCA	1,014	Crow River group paints pictures of water quality
10/27/2015	Watershed Connections - MPCA	1,014	Hawk Creek WRAPS meeting Nov. 18
12/30/2015	Watershed Connections - MPCA	1,014	Hawk Creek WRAPS workshops Jan 6 and 27
12/30/2015	Watershed Connections - MPCA	1,014	Hawk Creek Annual Meeting
1/29/2016	MPCA Watershed Network News	1,014	Hawk Creek Watershed WRAPS workshop draws a big crowd
2/9/2016	MPCA Waterfront Bulletin	1014	Hawk Creek Watershed WRAPS workshop draws a big crowd
2/10/2016	MN River Weekly Update	404	Hawk Creek Watershed WRAPS workshop draws a big crowd
2/23/2016	MN River Weekly Update	404	Hawk Creek Watershed WRAPS workshop draws a big crowd
2/26/2016	MPCA Watershed Connections	1,014	Hawk Creek crowd learns about soil health, carbon, honey bees
2/26/2016	Outdoors Tom Cherveney	-	Encouraging cover crops is part of Hawk Creek Watershed initiative to improve water quality
3/10/2016	Renville County Register	2,404	Conservation agriculture: tillage management
3/17/2016	Renville County Register	2,404	HCWP works to improve water quality and quantity
6/16/2016	Renville County Register	2,404	Cover crop cost-share assistance available in Renville County
6/23/16-6/24/16	Big Country KOLV 100.1 FM/ KWLM 1340 AM	215,000	BMP/cover crop, cover crop meeting promotional radio ads
7/14/2016	Renville County Register	2,404	Cover crops discussed at Max's Grill
7/26/2016	MPCA Waterfront Bulletin	1,014	Clean Water Partnership loan program awards \$1.9 million for sewer upgrades
7/27/2016	MPCA Watershed Connections	1,014	Soil scientists host drainage and water quality tour
7/27/2016	MPCA Watershed Connections	1,014	\$1.9 million awarded through Clean Water Partnership loan program
8/24/2016	MPCA Watershed Connections	1,014	Cover crop field day Sept. 23 in Renville County
10/6/2016	MPCA Watershed Connections	1,014	Hawk Creek field day shows growing interest in cover crops
12/14/2016	West Central Tribune	16,498	Breaking ground for cover crops
1/4/2017	Watershed Connections - MPCA	1,014	Renville SWCD snares 1,100 acres in cover crop testing
2/2/2017	Renville County Register	2,404	Annual Hawk Creek Watershed Meeting
2/3/2017	Watershed Connections - MPCA	1,014	Hawk Creek Watershed Project annual meeting Feb. 22
2/8/2017	Clara City Herald	1,500	Hawk Creek Watershed Project Annual Meeting
2/9/2017	Renville County Register	2,404	Annual Hawk Creek Watershed Meeting
2/15/2017	Clara City Herald	1,500	Hawk Creek Watershed Project Annual Meeting
2/16/2017	Renville County Register	2,404	Annual Hawk Creek Watershed Meeting
2/24/2017	West Central Tribune	16,498	Slowing Hawk Creek remains a challenge for watershed project
3/2/2017	Minnesota River Weekly Update	404	Slowing the water remains the Hawk Creek challenge
3/3/2017	Watershed Connections - MPCA	1,014	Hawk Creek annual meeting highlights cover crops, groundwater, nitrates
4/19/2017	West Central Tribune	16,498	Willmar chain of lakes focus of Wednesday's public meeting
4/19/2017	Clara City Herald	1,500	Cover crop cost-share assistance available to Renville County, Hawk Creek Watershed producers
4/19/2017	Clara City Herald	1,500	Willmar chain of lakes and water quality public information meeting
4/27/2017	Renville County Register	2,404	Cover crop assistance available to Renville County producers
4/29/2017	West Central Tribune	16,498	Improving Willmar's Chain of Lakes
5/2/2017	Minnesota River Weekly Update	404	With big project on tap at Robbins Island, time to focus on water quality in Willmar's chain of lakes
5/3/2017	Clara City Herald	1,500	Science Museum to visit MACCRAY during Drinking Water Week
5/10/2017	Bird Island Union/News Mirror	2,490	Workshop for women who own or manage farmland Tuesday in Franklin
5/10/2017	Standard-Gazette & Messenger	1,493	Workshop for women who own or manage farmland
5/11/2017	Renville County Register	2,404	Ag Meetings & Events - Women's Workshop
5/11/2017	Q102	215,000 (potential audience)	Community Calendar - Women's Conservation Legacy Workshop
5/25/2017	Renville County Register	2,404	Hawk Creek Watershed Project meeting
5/25/2017	Waterfront	900	Reports: Pollutants in Pioneer-Sarah Creek watershed, good and bad news for Rum River, remedies for Hawk Creek
5/28/2017	100.1 Big Country - Farm Program (Holly Hatlewick, Renville SWCD)	215,000 (potential audience)	promote cover crop cost-share program and benefits of cover crops meeting
5/30/2017	Minnesota River Weekly Update	404	Prescription for healthier Hawk Creek: Buffers, stormwater controls, changes in ag practices
5/31/2017	Clara City Herald	1,500	Prescription for healthier Hawk Creek: Buffers, stormwater controls, changes in ag practices
6/1/2017	Renville County Register	2,404	Prescription for a healthy Hawk Creek: Buffers, stormwater controls, changes in ag practices
6/2/2017	West Central Tribune	16,498	Draft reports available on Hawk Creek pollution issues
6/11/2017	100.1 Big Country - Farm Program (Holly Hatlewick, Renville SWCD)	215,000 (potential audience)	promote cover crop cost-share program and benefits of cover crops meeting

6/7/2017	Watershed Connections - MPCA	1,014	Ag-conservation field day events: Benefits of cover crops
6/7/2017	Watershed Connections - MPCA	1,014	Calendar: Benefits of cover crops
6/7/2017	Watershed Connections - MPCA	1,014	In the news: Prescription for healthier Hawk Creek: Buffers, stormwater controls, changes in ag practices
6/8/2017	Renville County Register	2,404	Benefits of cover crops meeting
6/14/2017	Clara City Herald	1,500	Hawk Creek Watershed Project meeting
6/14/2017	Clara City Herald	1,500	Farm Calendar: Benefits of Cover Crops Meeting
6/15/2017	Renville County Register	2,404	Ag Meetings & Events - cover crop meeting
6/15/2017	Renville County Register	2,404	Meetings & Events - Benefits of cover crops meeting
6/15/2017	Renville County Register	2,404	Meetings & Events - Hawk Creek Watershed Project
6/18/17-6/26/17	Big Country 100.1	215,000 (potential audience)	cover crop meeting promotional radio ads
6/18/2017	100.1 Big Country - Farm Program (Holly Hatlewick, Renville SWCD)	215,000 (potential audience)	promote cover crop cost-share program and benefits of cover crops meeting
6/21/2017	Clara City Herald	1,500	Benefits of Cover Crop Meeting rescheduled to June 29
6/22/2017	Renville County Register	2,404	Ag Meetings & Events - Cover crop meeting rescheduled
6/22/2017	Renville County Register	2,404	Meetings & Events - Hawk Creek Watershed Project
6/22/2017	Renville County Register	2,404	Meetings & Events - Cover Crop Meeting Rescheduled
6/29/2017	Renville County Register	2,404	Meetings & Events - Cover Crop Meeting Rescheduled

### Circulation Information

Media Source	Circulation
Agri-News	18,900
Big Country 100.1 FM	215,000 (potential audience)
Clara City Herald	1,500
Fairfax Standard-Gazette	1,500
Granite Falls Advocate Tribune	2,370
Kerkhoven Banner	1,450
MN River Weekly Update	404
MPCA River Connections e-newsletter	1,014
MPCA Waterfront Bulletin	1,014
MPCA Watershed Network News	1,014
Renville County Register	2,404
Renville County Shopper	5,476
River Watcher Newsletter	500
Star Tribune	606,698
WaterFront	900
Watershed Connections - MPCA	1,014
West Central Tribune	16,498
Western Peach	22,000
Bird Island Union/News Mirror	2,490
Standard-Gazette & Messenger	1,493

Interview #	Watershed Resident /Landowner Background:	How would you describe water resources in the Renville County portion of the Middle MN Watershed? Do you have any concerns about water quality or access to clean water in this area?	What are the most beneficial things that can be done for water quality in the Renville County portion of the Middle MN Watershed?	When you want information or resources related to conservation practices/Best Management Practices (BMPs), where do you go for help?	Have you implemented any conservation practices/BMPs on your property? If so, what?	Why did you decide to implement this conservation practice/BMP? What were the important factors when deciding to implement this conservation practice/BMP?	What would deter you from implementing a conservation practice/BMP?
1	retired farmer, landowner, past SWCD Board supervisor		fix obvious erosion problems, reduce tillage, buffer ditches	SWCD, NRCS, watershed projects	in the process of constructing a WASCOB	have gully in field and washout in ditch bank. Cost was an important factor. The cost-share available through the watershed project made it feasible	complicated, time-consuming cost-share programs
2	dairy farmer		reduced tillage, buffered ditches	SWCD, watershed projects	yes, infiltration area	farm site is close to creek, there was cost-share affordability, compliance	cost, cumbersome cost-share programs (EQIP), too long from application to construction
3	farmer, operator	cow-calf, corn/soybean/small grain, landowner is concerned soil erosion is impacting water quality	keep the soil on the land	ponds to hold water back	no	NA	cost
4	landowner, farmer, row crop soybeans and corn	there is room to improve water quality. No concern about access to clean water	hold water on the landscape. Less invasive farming practices. Smaller diverse farms	SWCD, HCWP	WASCOB, CREP, cover crops	hold soil on the landscape, prevent erosion. Economic benefit to enrolling land in CREP	removing good farmland from production
5	resident of Franklin	better water quality than there used to be. Most definitely a water quantity concern. MN River Valley very flashy and it didn't use to be that way	store water on the landscape. Restore historical wetlands	SWCD	food plots, diversion to prevent bluff erosion	protect the house	money, slow timelines with government programs
6	rents land (landowner)	did not have concerns about water quality or access to clean water	discussed putting land around ditches into CRP	renter, FSA, SWCD	was not sure	wanted to put in CRP to meet the buffer law standards. Looked at 33' or 50' buffer	there were interested in the financial return of the buffer
7	senior female landowner, rents farmland	did not have overt concerns or opinions about water quality	was interested in putting CRP buffers around ditch and putting land (cropland) into CRP	heard about conservation programs through neighbors, came to the Renville SWCD for more info/help	beyond CRP, did not discuss any other practices	buffer law, amount of money from CRP vs rent	heard from a landowner in Brown County about a bad CRP experience
8	landowner, rents land	no	is considering putting land into CRP	usually lets her renter handle decisions regarding farmland	no	decided to look into CRP at the suggestion of her renter and to meet the buffer requirement	not receiving enough compensation for CRP
9	landowner	concerned about water ponding. No	wants to put land along ditches into CRP	renter or conservation office	CRP maybe	considering putting their land into CRP in order to be compliant with the law	not working with farming
10		no, not yet	implementing BMPs, doing filter strips when they can do the most good	SWCD	yes, put in filter strips along ditches that are adjacent to his land	CRP was a good option, plus the money was good	high cost
11		no concern yet	implementing BMPS	SWCD	no, but looking into CRP to put in whole fields that flood and don't produce well. There would be restored basins	field doesn't produce well and CRP rates are good	high cost
12		there is lots of drainage. County doesn't have much for holding water on the landscape	filter strips could help. Creating wetlands in strategic areas	SWCD	wants to look into CRP for a field that floods every year. This would restore a basin	good option for a field that doesn't produce well. CRP rates are good	high cost

Interview #	Watershed Resident /Landowner Background:	How would you describe water resources in the Renville County portion of the Middle MN Watershed? Do you have any concerns about water quality or access to clean water in this area?	What are the most beneficial things that can be done for water quality in the Renville County portion of the Middle MN Watershed?	When you want information or resources related to conservation practices/Best Management Practices (BMPs), where do you go for help?	Have you implemented any conservation practices/BMPs on your property? If so, what?	Why did you decide to implement this conservation practice/BMP? What were the important factors when deciding to implement this conservation practice/BMP?	What would deter you from implementing a conservation practice/BMP?
13		field runoff is a concern in HEL areas	implementing BMPs	SWCD	put in filter strips through CRP	help with runoff into ditches	high cost
14		recognizes the amount of drainage in the county	implementing BMPs	SWCD	looking into putting a whole field into CRP that has ponding issues. Land doesn't produce well	help with ponding issues	high cost
15		has concern with field runoff into ditches and waterways. Not much concern with access to clean water yet	implementing BMPs	SWCD	yes, a buffer strip through CRP	good for water quality and was made easy with help of CRP	high cost
16	landowner, small cattle operation	nitrogen and soil loss are concerns	perennial vegetation, diverse farming operations	SWCD, family	no, but in the process of establishing stacking slab and filter strip	100% cost-share. Pressure from feedlot officer	government programs
17	beef producer, corn/soybeans, enrolled in CRP	more can be done to clean up water, split applications of nitrogen, vertical tillage	buffer strips where needed, more cover crops, conservation tillage	NRCS	WASCOBs, grade stabilizations, cover crops, conservation tillage	reduce erosion, less harmful to topsoil	cost
18	dairy producer	keeping nutrients out of ditch waters	keep manure applications away from tile intakes, ditches, public waters	Renville Co Ag Service Center	WASCOBs	amount of runoff, erosion made it unfarmable after heavy rains	cost, adapting to change
19	farmer	did not discuss	concerned with making land he farms in compliance with the buffer law	SWCD (wanted information on buffer law and options)	CRP	to be in compliance with the buffer law	farming feasibility or insufficient compensation
20	farmer	concerned about runoff into the waterways	better nutrient management and the use of BMPs where necessary	SWCD most of the time	not yet, but looking into the options	looking into putting a filter strip along ditch	if the cost was too high
21	landowner, interested in CRP for buffer strips	water quality has been improving, no concerns	covering sugar beet fields so they don't erode by wind	NRCS	WASCOBs	renter couldn't farm over gullies, feasibility	complicated programs
22	farmer, RIM landowner, long time CRP participant	water resources have improved with increased awareness and conservation practices installed	cover crops, CRP, wetland restorations, grass waterways, WASCOBs	SWCD, HCWP, NRCS	RIM, CRP, buffers, grass waterways, WASCOBs, cover crops, reduced tillage	improve soil health, reduce erosion, cost - payment rates	lack of CRP practices available, lack of RIM sign-ups, cost of practice
23	farmer (corn/soybeans), RIM landowner, has new CRP	work needs to be done, buffer initiative is a good start	more conservation cover (restored wetlands, CRP, buffers)	SWCD	RIM, CRP, WASCOBs	reduce erosion, increase wildlife habitat on farm, cost - price of payments (CRP), current commodity prices	landowner cost, lack of programs/practices with CRP and RIM
24	farmer, on family farm	water is better than it used to be, no concerns about water quality	pattern tile, store water in the ground with it like a sponge	HCWP, NRCS	buffer	protect water quality, square up field	loss of good cropland
25	hobby farmer	water resources are poor, tile drainage exports water off the landscape instead of storing it	restore wetlands	SCS, NRCS, DNR, SWCD		well sealing was required	money, future maintenance

Interview #	Watershed Resident /Landowner Background:	How would you describe water resources in the Renville County portion of the Middle MN Watershed? Do you have any concerns about water quality or access to clean water in this area?	What are the most beneficial things that can be done for water quality in the Renville County portion of the Middle MN Watershed?	When you want information or resources related to conservation practices/Best Management Practices (BMPs), where do you go for help?	Have you implemented any conservation practices/BMPs on your property? If so, what?	Why did you decide to implement this conservation practice/BMP? What were the important factors when deciding to implement this conservation practice/BMP?	What would deter you from implementing a conservation practice/BMP?
26	beef cattle feedlot operator, some row crop mostly hay and pasture	NA, never gave a clear answer	cover crops and cattle rotations to keep perennial veg on the ground. Pasture.	co-op, agronomist	no, in the process of implementing stacking slab and vegetative treatment area	feedlot officer saw an issue	government programs and timelines, cost
27	absentee landowner, owns CREP and ag land	okay overall, maybe better than they used to be. Personally has no worries about access to clean water	update septic systems, hold water on the landscape so the river doesn't flood as often	SCS, NRCS, SWCD, site visit took place this day to look at erosion concerns in field	CREP, WRP	parents enrolled the land in the conservation programs	losing good cropland, enjoy hunting the CREP, but it was good cropland, losing rentable cropland would deter him from BMP programs
28	owner/operator corn-soybean farm, rents out fields for sweet corn/peas every 7 years	they could be better, overall he is not concerned with the water resources, note: need tile to farm this area	proper application of fertilizers, cover crops after canning crops, remove land prone to flooding from ag use	NRCS, SWCD, agronomist	cover crops, CRP, CREP, 410's, WASCORB, variable rate application, CSP	made economical sense, made farming easier as well as being a good steward	cost, if it didn't make sense for my operation
29	corn soybean farmer, rent most of the land that they operate	good, mentions that MN River was always a "muddy river", they use better water management tools - septic systems, city WW treatment, less runoff from feedlots	pattern tile to store water and slow it down, less soil runoff on the surface	generally will build my own practices if I have a problem. But trust the co-op/agronomist	2 WASCORBs, may do a waterway and WASCORB project	it was implemented prior to him farming that tract	cost, increasing the value of "rented" land
30	landowner, farmer, corn soybeans, some small grain, enrolled in RIM, CRP, CSP, EQIP	increased tile drainage has caused more flooding and bank erosion	smart use of N application, enroll HEL or flooded lands into conservation cover, use of cover crops, buffers	SWCD, NRCS, Hawk Creek Watershed, FSA	RIM, CRP, grade stabilization, WASCORBs, cover crops, buffers, reduced tillage, split N usage	to be a better steward of the land, to take advantage of cost-share, programs were able to pay more than what was expected from cropping	cost, availability of government programs
31	landowner, RIM acres, wooded acres, pasture (horses), rents out farmland	water quantity is an increasing issue, Birch Cooley Creek has more eroded banks, increased flooding due to increased upstream drainage, need to hold back water upstream	restore more large wetlands upstream	SWCD	grade stabilization structures, cover crops (reenter), enrolled land into RIM and WRP	to help hold back water, decrease erosion in ravines	cost
32	row-crop farmer, swine producer	water resources are fine, only have problems with heavy rainfall, no concerns about water quality, more issues in increased and more intense weather patterns	leaving ample room between the crops and ditch, not kill ditch bank grass with Round Up	SWCD, NRCS	yes, WASCORBs, no longer apply fall nitrogen	had to improve erosion issue, made it easier to farm area without it being washed out	not being cost effective
33	row crop, strip-till, beef feedlot owner	water resources have improved over the past 30 years, no concerns about clean water	eliminating open intakes, split N applications	NRCS, SWCD, agronomist	no	cost	timeline, cost
34	Birch Cooley Township resident	understands need to protect water quality	filter strips, BMPs	SWCD, NRCS	going to put filter strips along ditches	erosion, CRP program	money to implement and/or compensate for land out of production

Interview #	Watershed Resident /Landowner Background:	How would you describe water resources in the Renville County portion of the Middle MN Watershed? Do you have any concerns about water quality or access to clean water in this area?	What are the most beneficial things that can be done for water quality in the Renville County portion of the Middle MN Watershed?	When you want information or resources related to conservation practices/Best Management Practices (BMPs), where do you go for help?	Have you implemented any conservation practices/BMPs on your property? If so, what?	Why did you decide to implement this conservation practice/BMP? What were the important factors when deciding to implement this conservation practice/BMP?	What would deter you from implementing a conservation practice/BMP?
35	Birch Cooley Township resident	concerned about excessive erosion, ruins crops and not good for water quality	BMPs that help with erosion issues	SWCD	working with SWCD to put some HEL ground into a program	erosion on land is producing large gullies and runs into waterway	money to help implement practice
36	Cairo Township resident	not concerned about access right now, aware of need to protect water resources	implement BMPs where necessary	SWCD	working with SWCD now to possibly do wetland restorations through CRP	ground did not produce well	no money to help with costs, no compensation for taking land out of production
37	Birch Cooley Township resident	no concerns about access to clean water	filter strips could help some	SWCD	no, but working with SWCD on potential CRP filter strips	don't need to farm right up to ditch bank, help with runoff	money to help pay for practice
38	Bandon Township resident	concerned about water quality in future if nothing is done now	nutrient management, conservation practices	SWCD	working with SWCD to put filter strips out along ditch	soil erosion, excess nutrients and soil running into ditch	no cost-share or financial incentive
39	farmer	did not discuss either of these issues	discussed benefits of buffers on public ditches and the issue of drainage tile	visited both the FSA office and SWCD office	has not	wants to meet the buffer law requirement while receiving compensation	low CRP rates
40		did not mention any	seemed to be pro-buffers, wants to put in a 50' on a public ditch	called SWCD office, didn't have much experience working with agencies	no, has not	neighbor was planning on putting in a CRP buffer	did not bring up anything that would prevent him from putting his land into CRP
41	landowner	did not discuss any concerns or comment on water resources	did not discuss this but is interested in CRP	talked to Brian Pfarr (Redwood County NRCS/SWCD)	interested in putting her ditch buffers into CRP	to be in compliance with the buffer law while receiving compensation	if she didn't approve of the plan
42	Palmyra 23	did not discuss this	did not discuss, but he is putting in CRP	came to SWCD in order to put in buffers	has implemented CRP on several other parcels of land	to come into compliance with buffer law	not high enough payment

Hawk Creek Watershed Project  
Renville County Courthouse, Lower Level  
500 E DePue Ave  
Olivia, MN 56277

**The Benefits of  
Cover Crops  
Meeting  
June 29, 2016**

*Get your cover crop  
questions answered  
by local reps!*

*Please join us to learn about*

## **The Benefits of Cover Crops**

*Working through the economics, soil & crop benefits, & obstacles to succeed with cover crops*

**Wednesday, June 29, 2016 Max's Grill - Olivia, MN 9:00 am - 12:00 pm**

(with registration from 8:30 - 9:00 am, free lunch at noon for those who RSVP)

Call the Hawk Creek Watershed Project at **(320) 523-3666**  
by **4 pm, Friday, June 24, 2016** to **reserve your seat and meal.**

- Cover crop presentations by local representatives
- Panel discussion of local producers and representatives to answer your cover crop questions
- Representatives and information from local cover crop seed suppliers and applicators
- Information on cover crop cost-share programs
- Agenda posted on [hawkcreekwatershed.org](http://hawkcreekwatershed.org) and [renvilleswcd.com](http://renvilleswcd.com)

**Brought to you by:**



Hawk Creek Watershed Project  
Renville County Courthouse, Lower Level  
500 E DePue Ave, Ste 104  
Olivia, MN 56277

## **Benefits of Cover Crops Meeting**

**June 21, 2017**

**Renville Community Center**

**RSVP by June 19 if you are attending**

Please join us for the 2<sup>nd</sup> Annual

# Benefits of Cover Crops Meeting

*Make Cover Crops a Practical and Affordable Part of Your Crop Rotation  
and*

*Build Your Local Cover Crop Network*

**Wednesday, June 21, 2017**

**Renville Community Center - 221 N Main St, Renville, MN**

**8:00 am - 12:30 pm**

(registration, coffee, and rolls from 8:00-8:30 am, free lunch at 12:30 pm for those who RSVP'd)

## **RSVP REQUIRED if you are attending**

**Reserve your seat and meal by 4 pm, Monday, June 19, 2017** by contacting  
the Hawk Creek Watershed Project at  
(320) 523-3666 or [heidi@hawkcreekwatershed.org](mailto:heidi@hawkcreekwatershed.org)

- Local producers from Renville, Redwood, and Yellow Medicine Counties will have presentations and be on a panel to share how they make cover crops work with their corn, soybean, sugar beet, small grain, and livestock production
- Learn from local producers/each other with real-world experience with cover crops, including how to develop a diverse species mix that works with your current crop rotation, control weeds, terminate cover crops, adjust your fertilizer application rates, convert and adapt your equipment for seed application, and use strip-till/reduced tillage/no-till
- Local representatives from cover crop seed suppliers, consultants, applicators, and equipment suppliers will have displays and be available to answer your questions
- Large-scale self-contained rain simulator trailer will be on site to demonstrate how cover crops and soil health affect rain infiltration rates
- Information on funding sources to help with your cover crop costs and cover crop cost-share programs will be available
- Detailed agenda posted on [hawkcreekwatershed.org](http://hawkcreekwatershed.org) and [renvilleswcd.com](http://renvilleswcd.com)

**Soil and Water  
Continuing Education  
Credits Pending!**



# Benefits of Cover Crops Meeting

## Evaluation Form

June 29, 2017

*We value your comments. Please take a few minutes to complete this evaluation form.*

### 1. Please mark your position (check all that apply):

Active Producer	_____	County Government	_____
Retired Producer	_____	Municipal Government	_____
Landowner	_____	Federal/State Agency	_____
Certified Crop Adviser	_____	City/Town Resident	_____
Elected Official	_____	Citizen Monitor	_____
Watershed Organization	_____	Lake Association	_____
Other (please specify)	_____		_____

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### 2. How did you hear about this meeting? (check all that apply)

Postcard mailed to you \_\_\_\_\_

Website \_\_\_\_\_

Word of mouth \_\_\_\_\_

Email \_\_\_\_\_

Radio \_\_\_\_\_

Other (please specify) \_\_\_\_\_

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### 3. How would you rate the level of knowledge you gained about cover crops and strip-till/ no-till/reduced tillage as a result of this meeting?

- 1 Did not learn anything
- 2 Learned a little
- 3 Learned some
- 4 Learned a great deal

Comments \_\_\_\_\_

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**Continued on other side ➔**

**4. If you learned anything, please provide at least one example of something useful or interesting that you learned today.**

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**5. How do you see yourself using information from today's meeting (check all that apply)?**

- Will apply it to my farm
- Will help me answer questions about cover crops
- Will improve cover crop programs
- Will apply it to cover crop research and outreach
- Not sure yet
- I don't expect to use it
- Other (please describe) \_\_\_\_\_

**6. What cover crop and tillage topics would you like to see at future meetings?**

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**7. Please provide any additional comments about today's meeting:**

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*Thank you for your feedback and for attending today's meeting.*

### **Middle Minnesota Watershed Lakes WRAPS Strategy**

The purpose of this project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in some of the Minnesota River-Mankato Watershed lakes. The findings from this project will inform the development of the WRAPS report regarding lakes in Blue Earth and Le Sueur counties in the Middle Minnesota River Watershed. There were three education and information meetings in the watershed and one presentation at a lake association annual meeting. The meetings were attended by more than 200 watershed citizens, local officials and technical staff. Written surveys and face-to-face interviews were used to collect citizens', landowners', land managers' and local government officials' opinions about problems, solutions and obstacles for protecting and restoring water quality in lake watersheds in the Middle Minnesota River Watershed. Lists of strategies were developed for each lake. The list of strategies include project development, stormwater management, shoreland management, soil health, nutrient management, wetland restoration and enhancement, education and technical assistance.

# ATTACHMENTS

## Middle Minnesota Watershed Civic Engagement Lakes Final Report

Work products and documents produced during the reporting period.

### **Blue Earth County Shoreland and Zoning Seminar for Local Officials, May 9, 2017**

- Meeting Invitation
- Agenda
- Speaker Biographies
- Presentation (also presented later at Lake Washington informational meeting)
- Presentation Clicker Slides and Results
- Survey and Survey Results Report

### **Lakes Open House for Duck Lake and Lake Ballantyne Watersheds, May 18, 2017**

- Meeting Invitation
- Open House Survey and Report
- Report on Face-to-Face Conversations, Problems, Solutions and Strategies

### **Le Sueur County Final Report**

- Description of civic engagement activities
  - Lake Washington Annual Meeting, August 2016
  - Lake Washington and Lake Emily Survey Results
  - Information Meeting for Lake Washington, June 7, 2017
- List of strategies and BMPs for Lake Emily and Lake Washington

# ATTACHMENTS

## Middle Minnesota Watershed Civic Engagement Lakes Final Report

The final report contains strategies for targeting strategies in Blue Earth County. The following show priority areas identified in the *Blue Earth County Water Management Plan 2017-2027* and are related to the list of recommended strategies in this Middle Minnesota Watershed Civic Engagement Lakes final report.

### **Blue Earth County Water Management Plan Priority Areas**

- Soils sensitive for nutrient management
- Greenprint priority areas
- Potentially restorable basins for nutrient treatment functions
- Potentially restorable basins for water storage functions

# LAKES AND ZONING SEMINAR

City of Lake Crystal, City of Madison Lake and Blue Earth County  
Elected and Appointed Officials

6:00 pm, Tuesday, May 9, 2017  
Country Inn and Suites, 1900 Premier Drive, Mankato

Complimentary Light Supper at 6:00 pm  
Program at 6:30 pm

No Cost. PLEASE REGISTER OR RSVP  
Email: [julie.conrad@blueearthcountymn.gov](mailto:julie.conrad@blueearthcountymn.gov)

## Topics

### Water Quality



The Minnesota Pollution Control Agency (MPCA) conducted water quality monitoring in the Middle Minnesota River Watershed which includes Ballantyne, Crystal, Duck, Loon and Mills lakes in Blue Earth County.

The MPCA project manager will present a brief summary of the monitoring program and the water quality results for these lakes and the ten-year *Watershed Restoration and Protection Strategies* (WRAPS) report the MPCA will prepare for the watershed.

### Shoreland Ordinances



How do our city and county shoreland ordinances protect water quality, fisheries and wildlife habitat?  
How important is stormwater runoff?

Minnesota Department of Natural Resources (DNR) hydrology staff will talk about important elements of shoreland ordinances for near shore areas and fisheries.

### Fisheries and Wildlife



Fishing is more than just a recreational past-time. The type and quantity of fish and other aquatic life in lakes are indicators of water quality.

Minnesota Department of Natural Resources (DNR) fisheries staff will present a summary of fisheries in these lakes and the importance of near-shore areas for fish and wildlife.

### Strategies



What strategies can protect or restore water quality, fisheries and wildlife habitat in Ballantyne, Duck, Crystal and Loon lakes?

Participants will be invited to make suggestions for the MPCA to include in the ten-year plan.

**PLEASE REGISTER OR RSVP THE COUNTY ENVIRONMENTAL SERVICES DEPARTMENT:**  
EMAIL: [julie.conrad@blueearthcountymn.gov](mailto:julie.conrad@blueearthcountymn.gov) OR PHONE: 304-4381

*The costs of this seminar are paid with a grant from the MPCA.*

# LAKES AND ZONING SEMINAR

City of Lake Crystal, City of Madison Lake and Blue Earth County

## AGENDA

Tuesday, May 9, 2017

### Welcome

*Mark Piepho*, Chairperson, Blue Earth County Board of Commissioners

### Overview

*Julie Conrad*, Land Use and Natural Resources Planner, Blue Earth County

### Presentations

#### **Near Shore Habitat and Fisheries**

*Craig Soupir*, Waterville Area Fisheries Supervisor, Minnesota Department of Natural Resources

#### **Water Quality Monitoring**

*Bryan Spindler*, Minnesota Pollution Control Agency

#### **Shoreland Zoning**

*Garry Bennett*, Area Hydrologist, Minnesota Department of Natural Resources

### Break

### Questions and Strategies

#### **Questions and discussion in groups of jurisdictions/lakes**

City of Madison Lake - City of Lake Crystal - Blue Earth County

Funding for this event is from a Minnesota Pollution Control Agency grant.

# LAKES AND ZONING SEMINAR

City of Lake Crystal, City of Madison Lake and Blue Earth County  
Tuesday, May 9, 2017

## SPEAKERS

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### **Craig Soupir**

*Waterville Area  
Fisheries Supervisor,  
Minnesota Department  
of Natural Resources*

**Craig Soupir** was born and raised on a farm in southwest Minnesota near Marshall, and he still helps his Dad on the farm each year. He graduated with a Bachelor of Science degree in Wildlife and Fisheries Management from South Dakota State University and a Master of Science in Fisheries Management from South Dakota State University. Craig has worked various fisheries jobs with the South Dakota Department of Game, Fish and Parks and with the Minnesota DNR since 2001. He is currently DNR Area Fisheries Supervisor at Waterville Area Fisheries Office where they manage all the fisheries resources in nine south-central Minnesota counties. Waterville Area Fisheries operates the largest cool water fish hatchery in the state where they raise northern pike, walleye, muskellunge, and channel catfish. Craig is married and lives in Mankato with his wife and four kids ranging in age from twin 9-year-old boys to a senior in college at MSU that keeps him mostly busy in his spare time.

Email: [craig.soupir@state.mn.us](mailto:craig.soupir@state.mn.us)

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### **Bryan Spindler**

*Project Manager,  
Minnesota Pollution  
Control Agency*

**Bryan Spindler** has ten years' experience working with the Minnesota Pollution Control Agency with six years' experience working as a stream fish biologist and is now a Project Manager for the Middle Minnesota River watershed project. Bryan graduated from MSU-Mankato with a biology degree and South Dakota State University with a Masters in Fisheries Sciences. He enjoys recreating on the lakes in Mankato area.

Email: [bryan.spindler@state.mn.us](mailto:bryan.spindler@state.mn.us)

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### **Garry Bennett**

*Area Hydrologist,  
Minnesota Department  
of Natural Resources*

**Garry Bennett** has been an Area Hydrologist with the Department of Natural Resources for ten years where his work has focused primarily on public waters and water appropriation permitting, as well as providing assistance to local units of government with the administration of their shoreland and floodplain management ordinances. Garry works out of the Hutchinson office, and he serves those areas located in the Middle Minnesota (Mankato) watershed.

Email: [garry.bennett@state.mn.us](mailto:garry.bennett@state.mn.us)

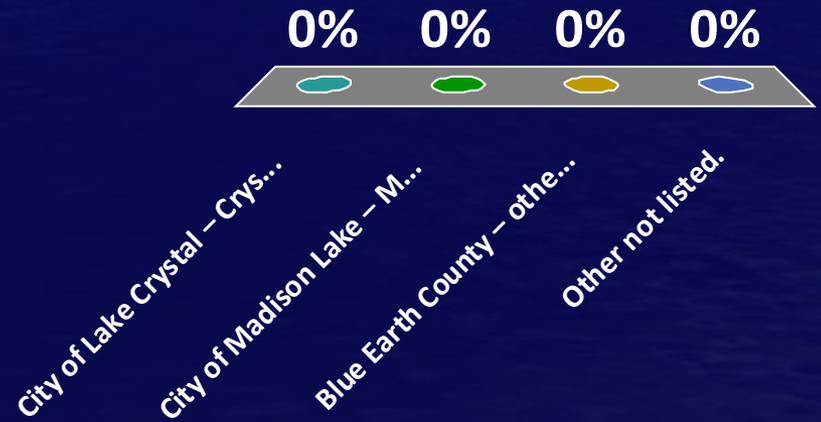
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# Watersheds, Shoreline Habitat, Development, Fisheries, and the Choices We Make

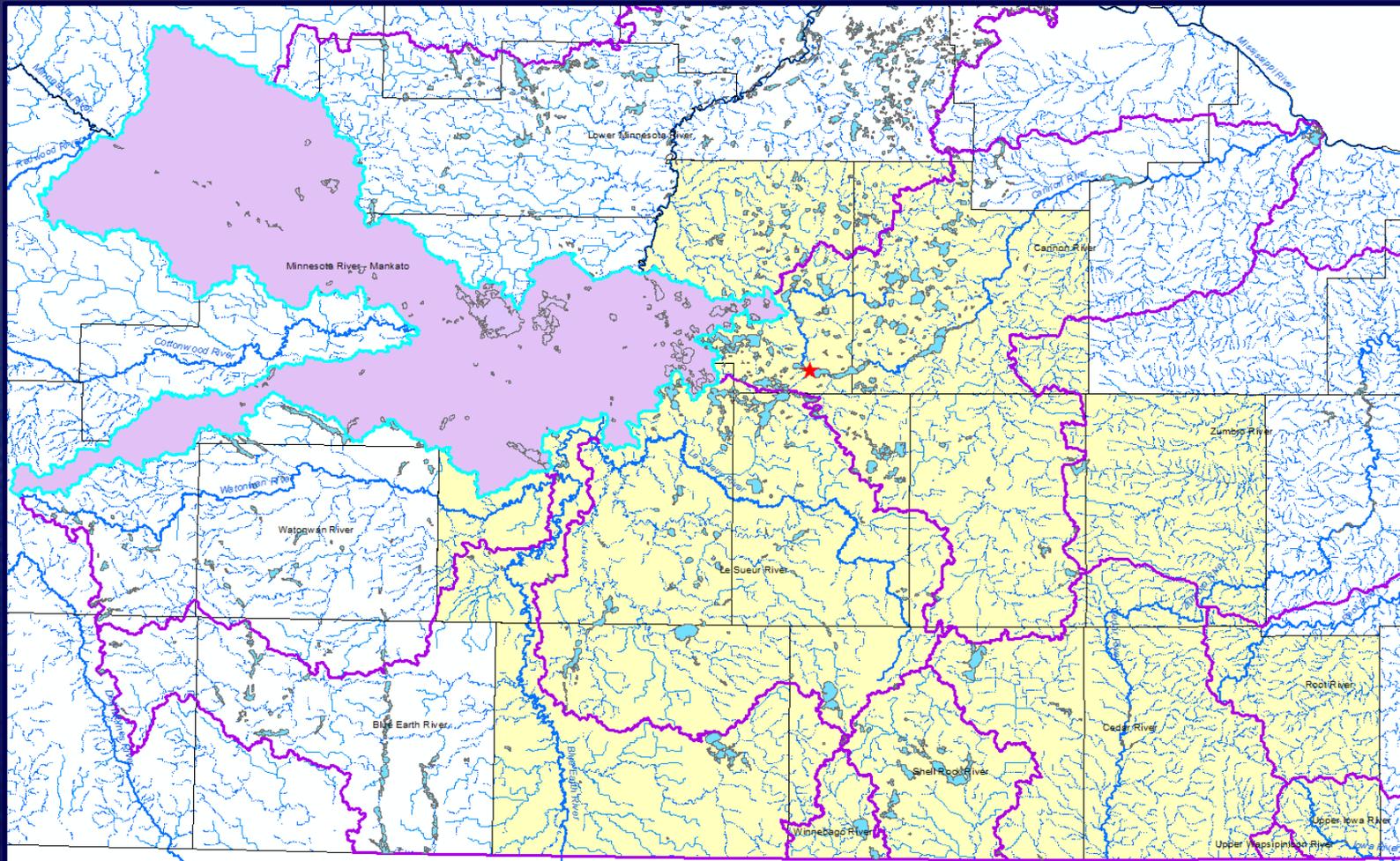


# Q1: Which Lake or Jurisdiction do you Represent

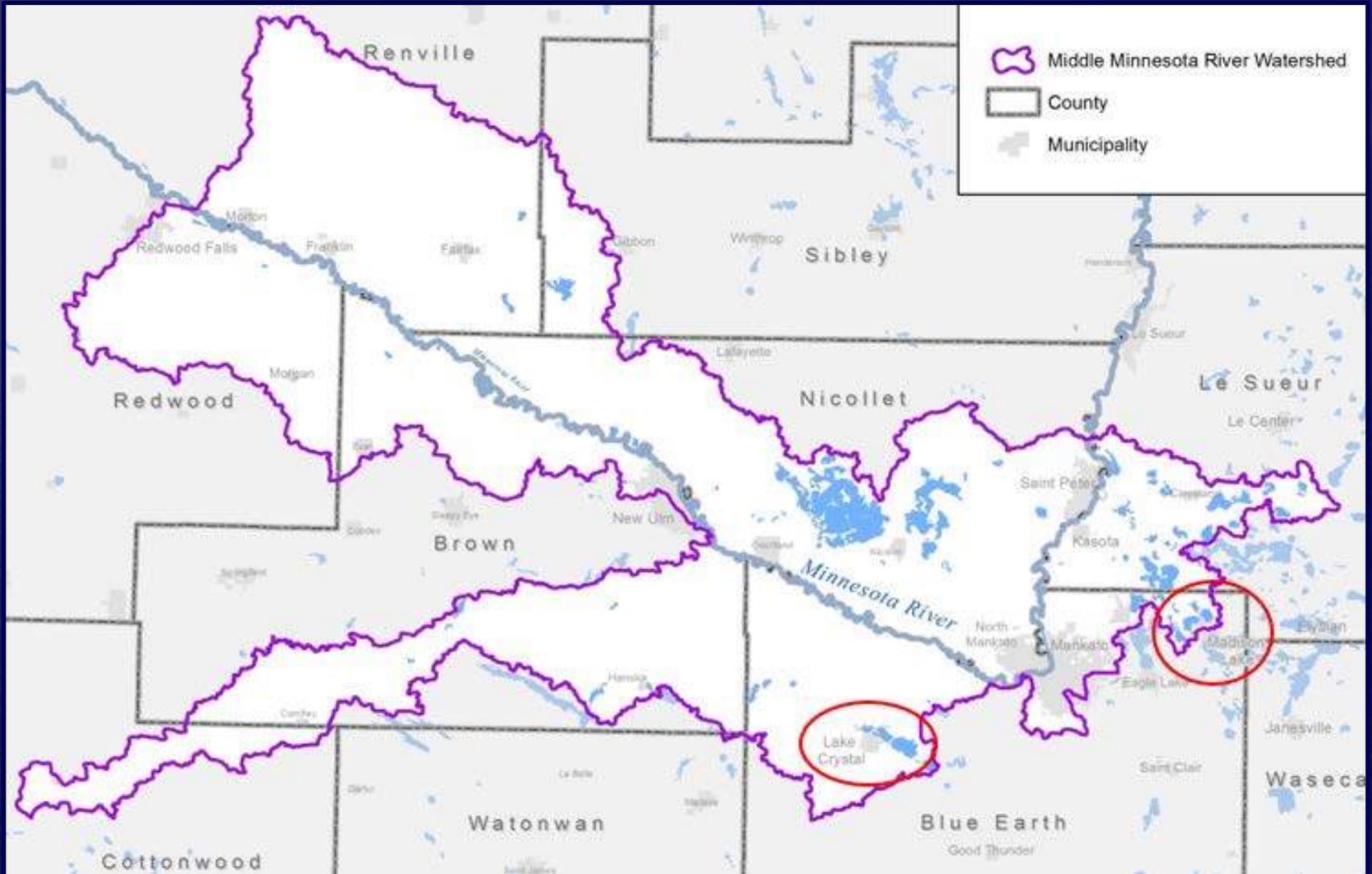
- A. City of Lake Crystal – Crystal, Loon Mills.
- B. City of Madison Lake – Madison, Duck or Ballantyne.
- C. Blue Earth County – other lakes.
- D. Other not listed.



# Waterville Area Fisheries

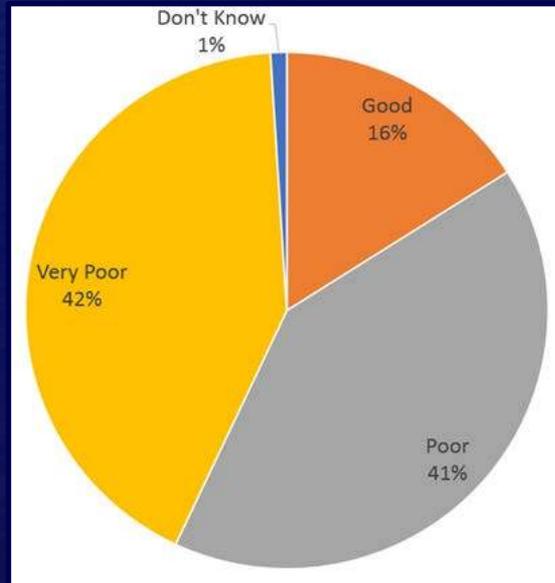


# Minnesota River-Mankato Watershed



# Q2: How would you describe the QUALITY of lakes in Blue Earth County?

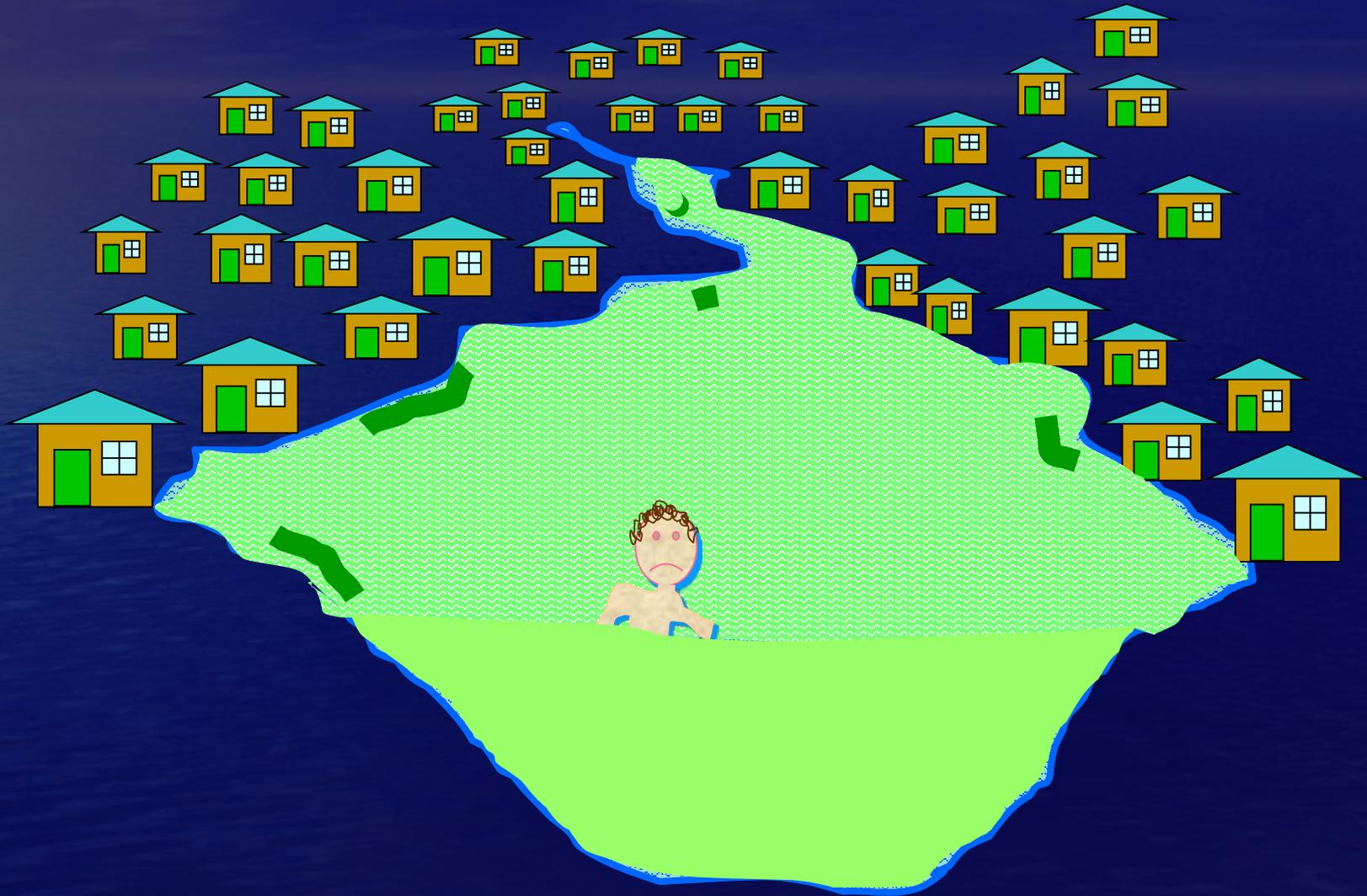
- A. Good
- B. Poor
- C. Very Poor.
- D. I Don't Know.



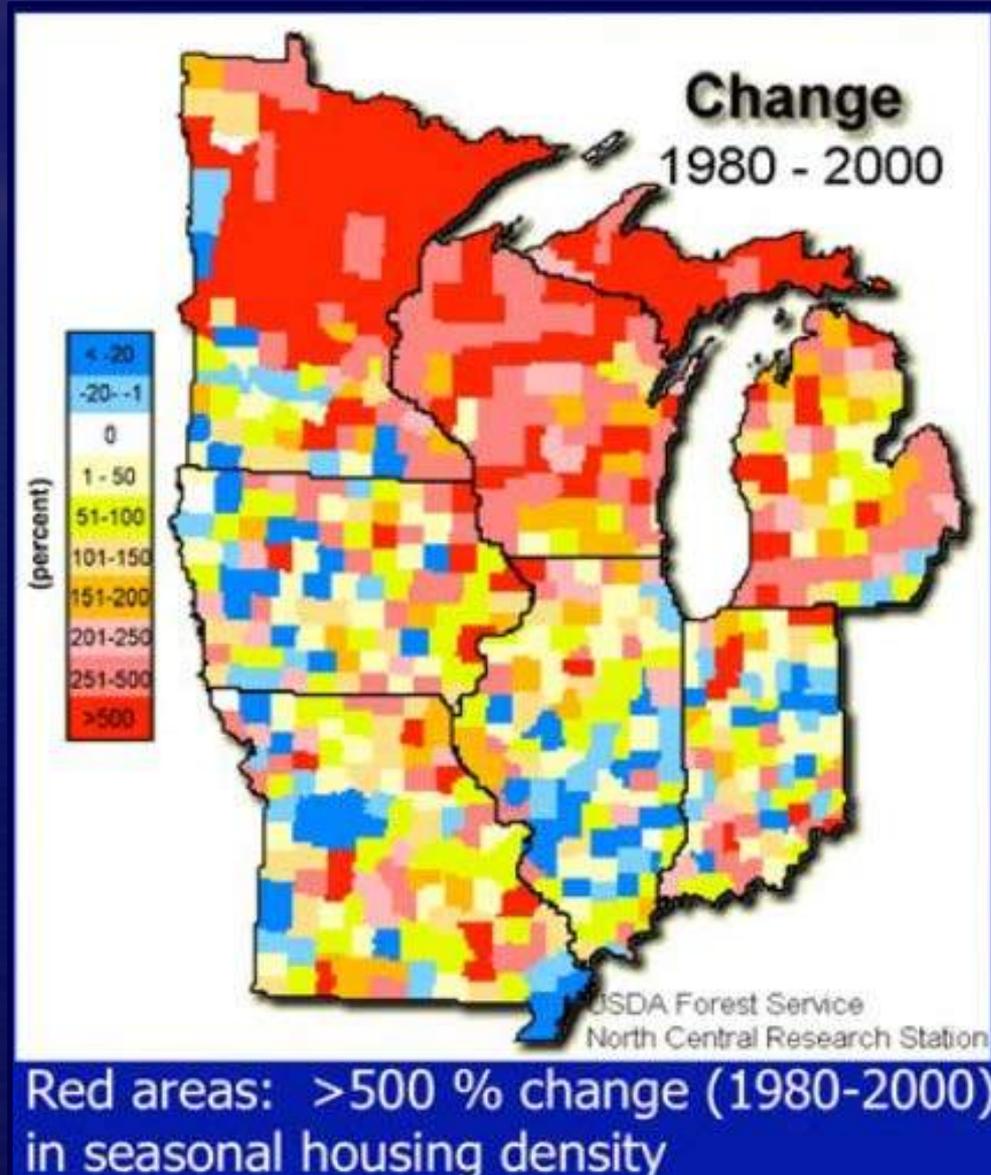
# What is the issue?

- Watershed development and changes have resulted in impairments to surface waters.
  - Modification of hydrology
  - Increased shoreline development on shallow lakes
  - Nutrient loading from land use practices
  - Multiple use pressure for a limited resource
  - Presence of undesirable fish populations

# Development Impacts are cumulative

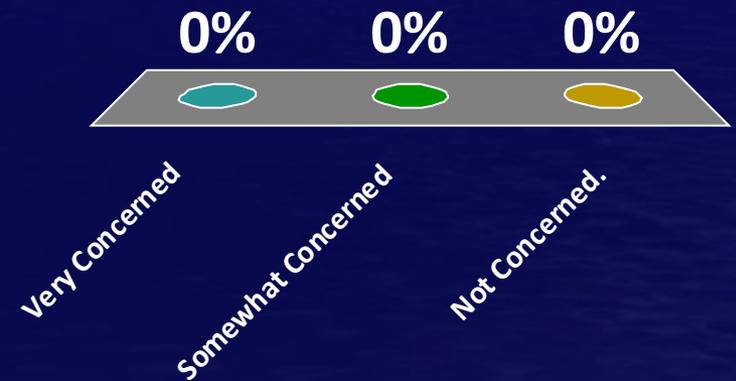
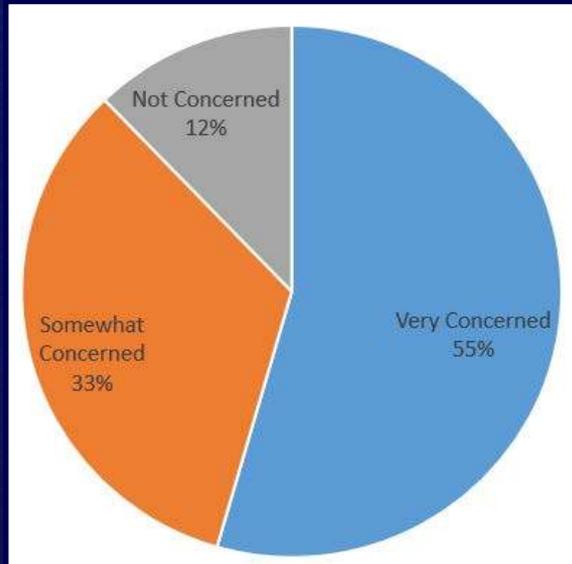


# Lakeshore Development



# Q3: Rate your level of concern with residential development near lakes and rivers?

- A. Very Concerned
- B. Somewhat Concerned
- C. Not Concerned.



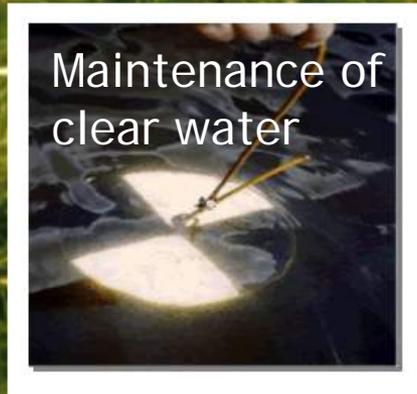
# Development Impacts: Aquatic Vegetation



- Developed shoreline has less aquatic vegetation than undeveloped.
- 66% reduction in aquatic vegetation cover with development.
- Statewide, MN has lost nearly 30% of its emergent and floating vegetation in lakes.

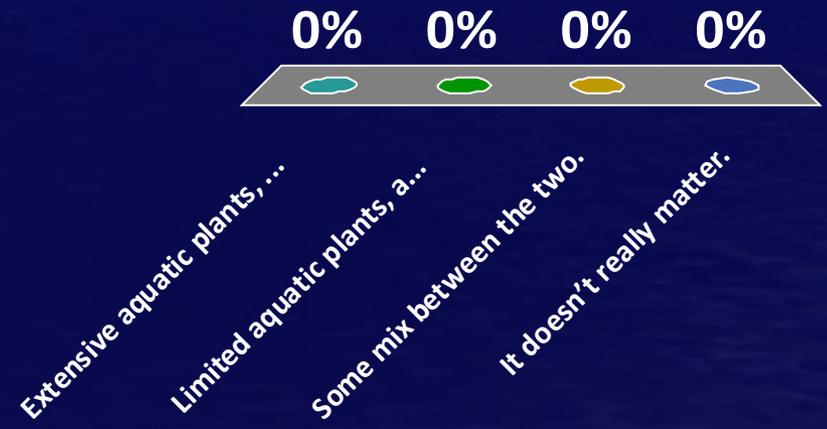
- Losses have resulted in lower fish production.





Q4: What would you consider a better lake to visit: a lake with extensive aquatic plants but clear water, OR a lake without aquatic plants that is algae dominated?

- A. Extensive aquatic plants, clear water.
- B. Limited aquatic plants, algae dominated.
- C. Some mix between the two.
- D. It doesn't really matter.



# Total Phosphorus concentration ppb

Forest lakes

Prairie

25

50

Transition

100

200

Controlled by  
low nutrient  
availability

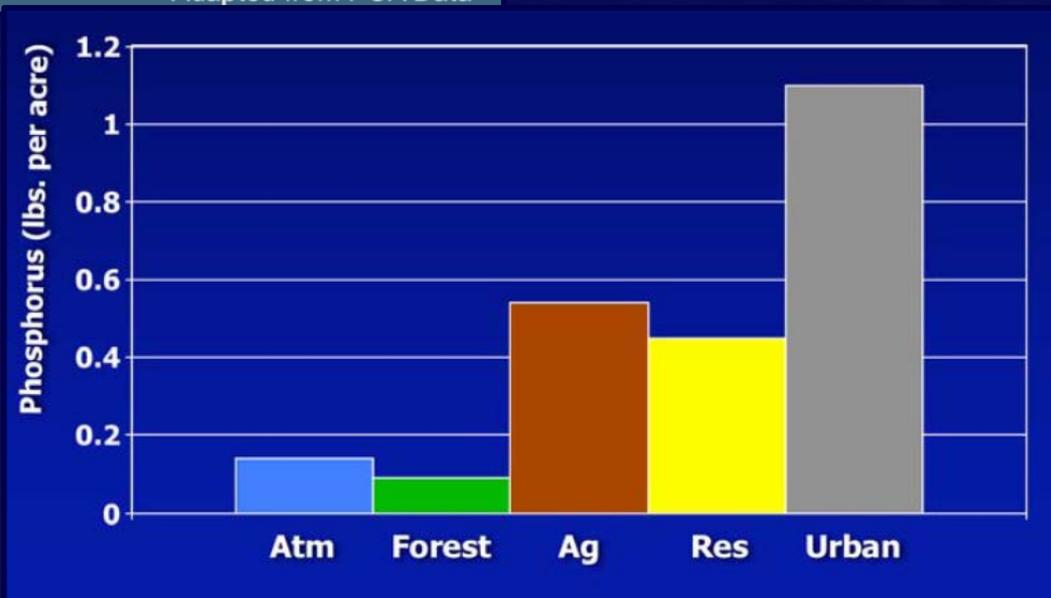
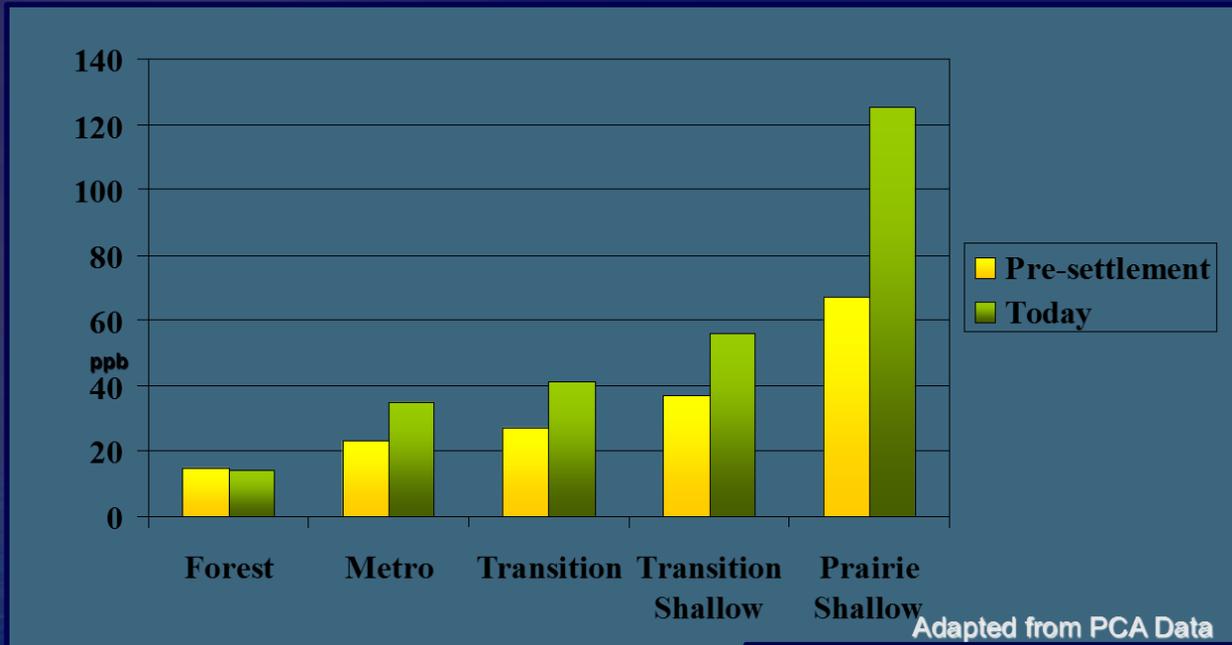
Plant dominance, clear water

Sparse plants  
present by clear-  
water maintained by  
cladoceran grazing

Phytoplankton dominance,  
turbid water

Difficulty of maintaining clear water

# Development Impacts: Phosphorus



# Development Impacts: Coarse Woody Habitat!

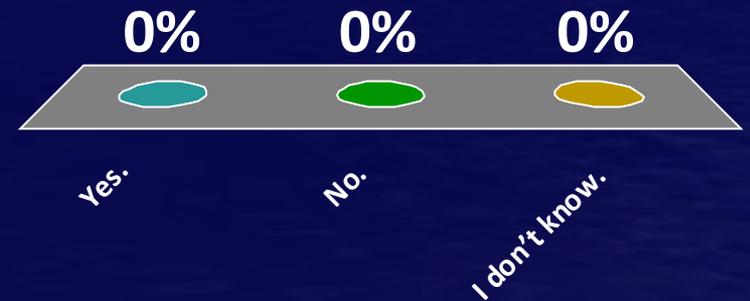
- Significantly less trees in water along developed compared to undeveloped shorelines



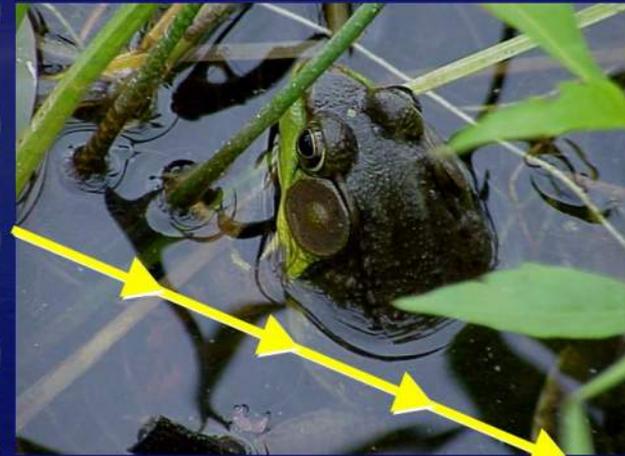
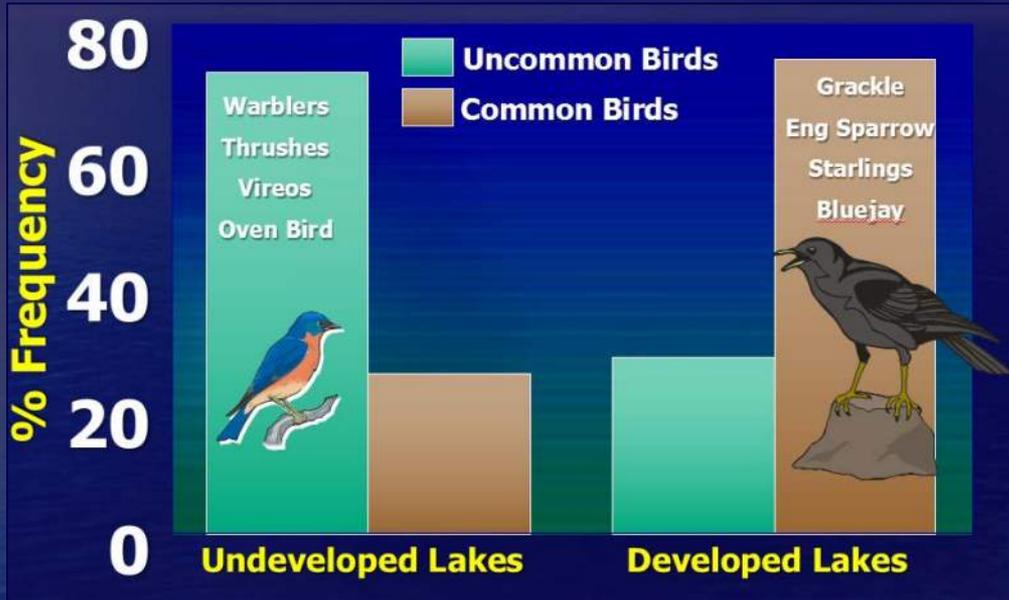
- Losses have resulted in lower fish production.

Q5: Do you feel that a healthy population of fish, turtles, frogs and other wildlife are important to people that live on or are visiting a lake?

- A. Yes.
- B. No.
- C. I don't know.



# Development Impacts: The Birds and the Bees...



# Development Impacts: Disturbance

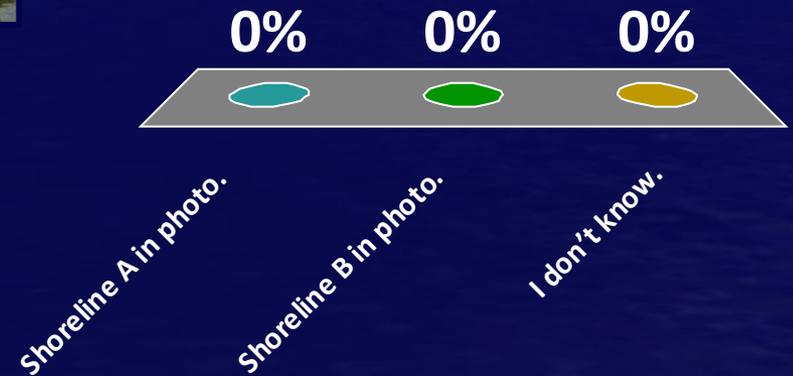


- Natural shoreline habitat, or stripped down boat parking lots?

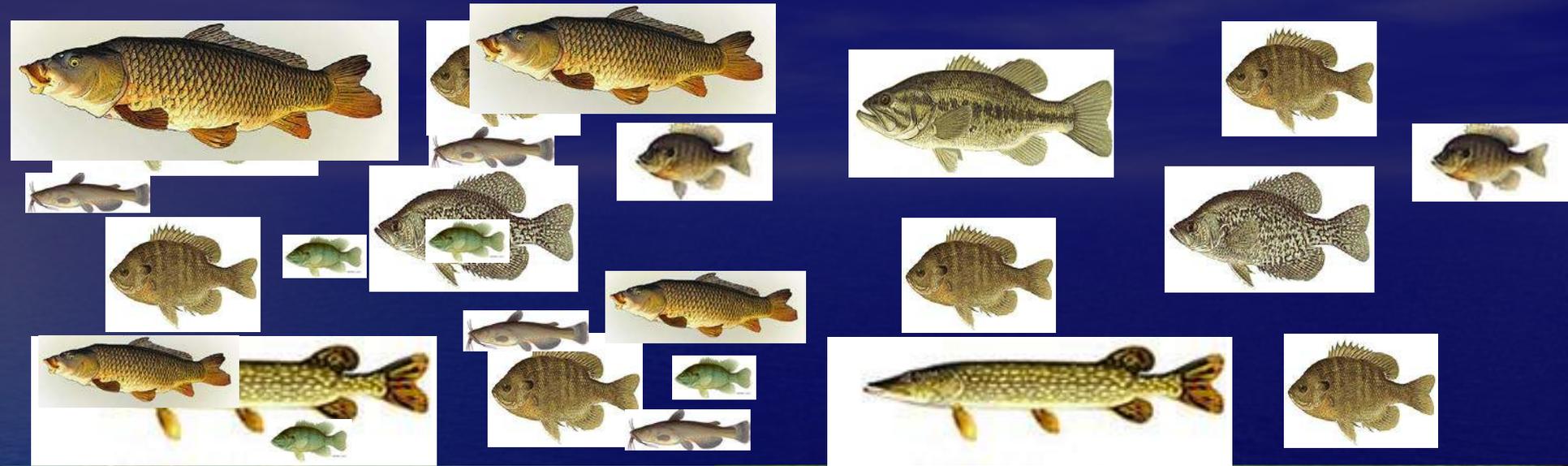
- **Losses have resulted in lower fish production.**

# Q6: Which shoreline would you consider to be most indicative of lake impairment?

- A. Shoreline A in photo.
- B. Shoreline B in photo.
- C. I don't know.



# Development Impacts: Fish Populations



# Waterville Area Fisheries

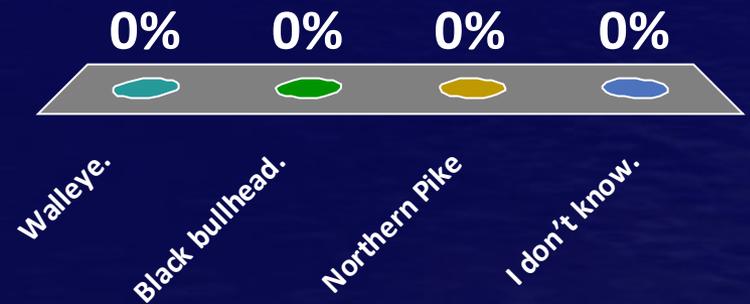
- Primary Sport Fish Management Species

- Walleye
- Northern pike
- Largemouth bass
- Bluegill
- Yellow perch
- Black crappie
- Muskellunge
- Smallmouth bass
- Channel catfish
- Flathead catfish

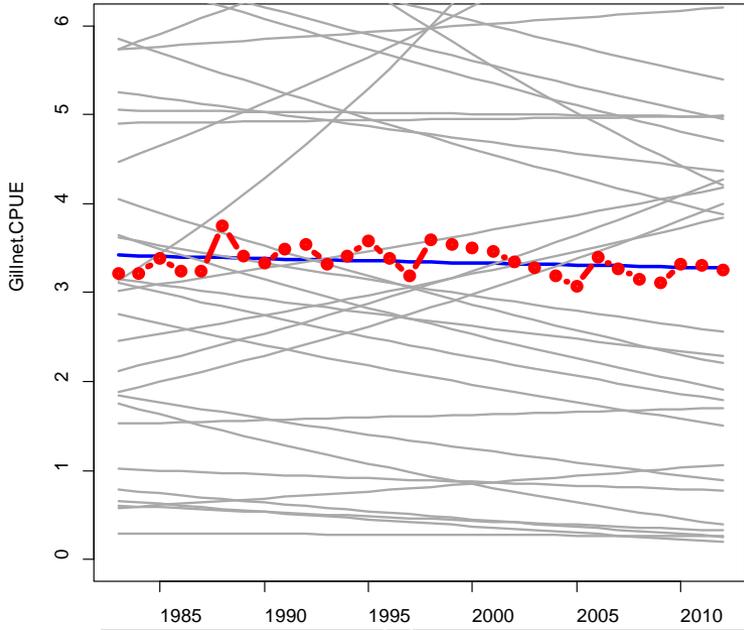


Q7: Which species is least tolerant to low winter oxygen?

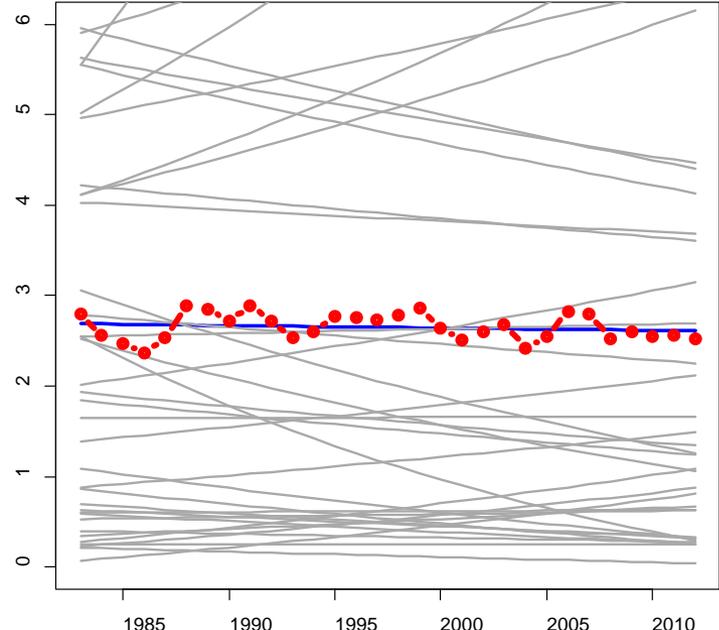
- A. Walleye.
- B. Black bullhead.
- C. Northern Pike
- D. I don't know.



NW

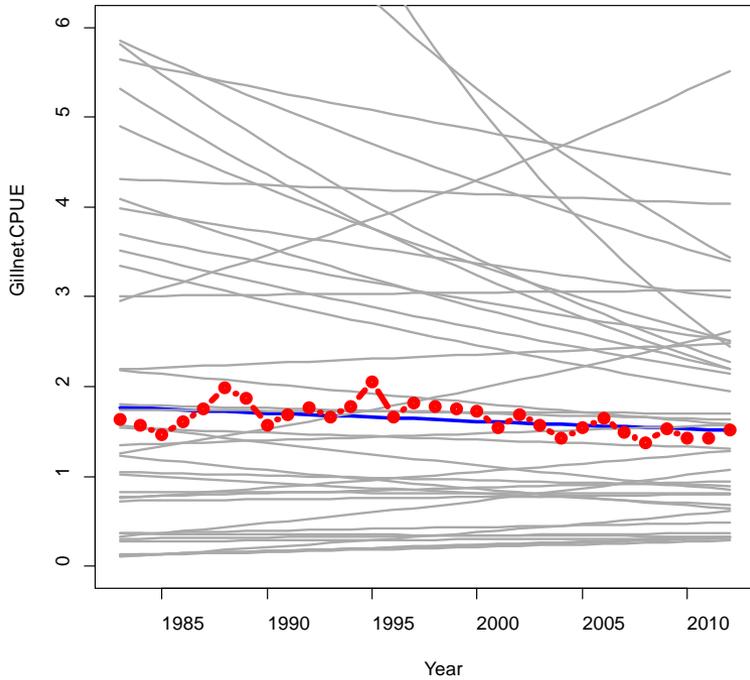


NE

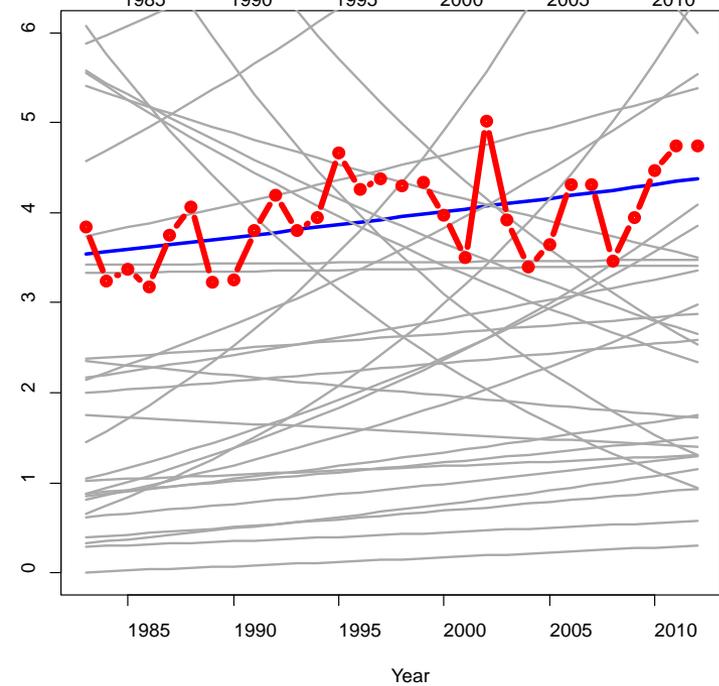


Walleye

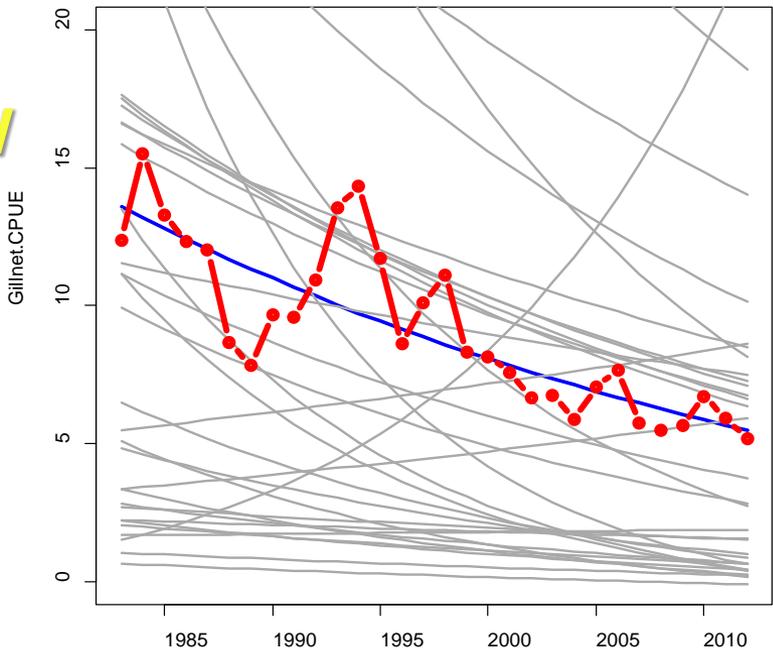
SW



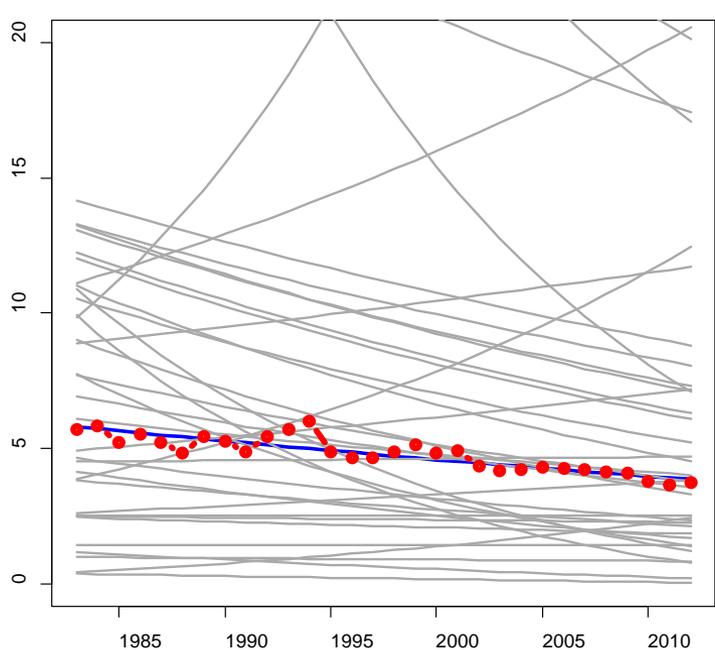
SE



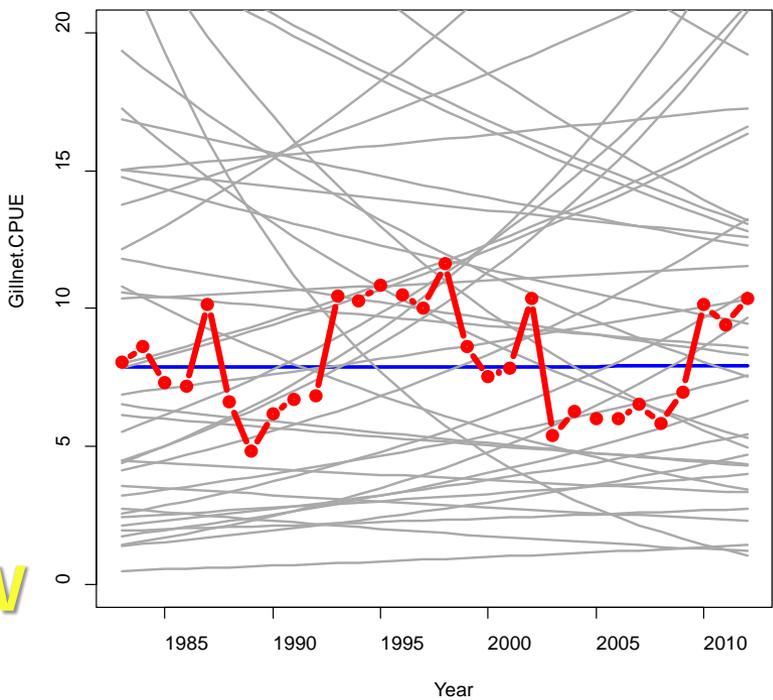
NW



NE

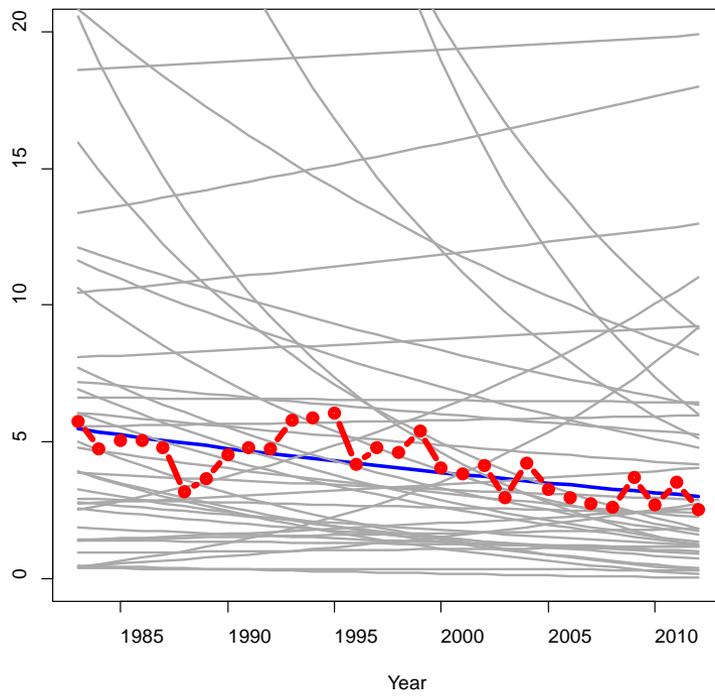


SW

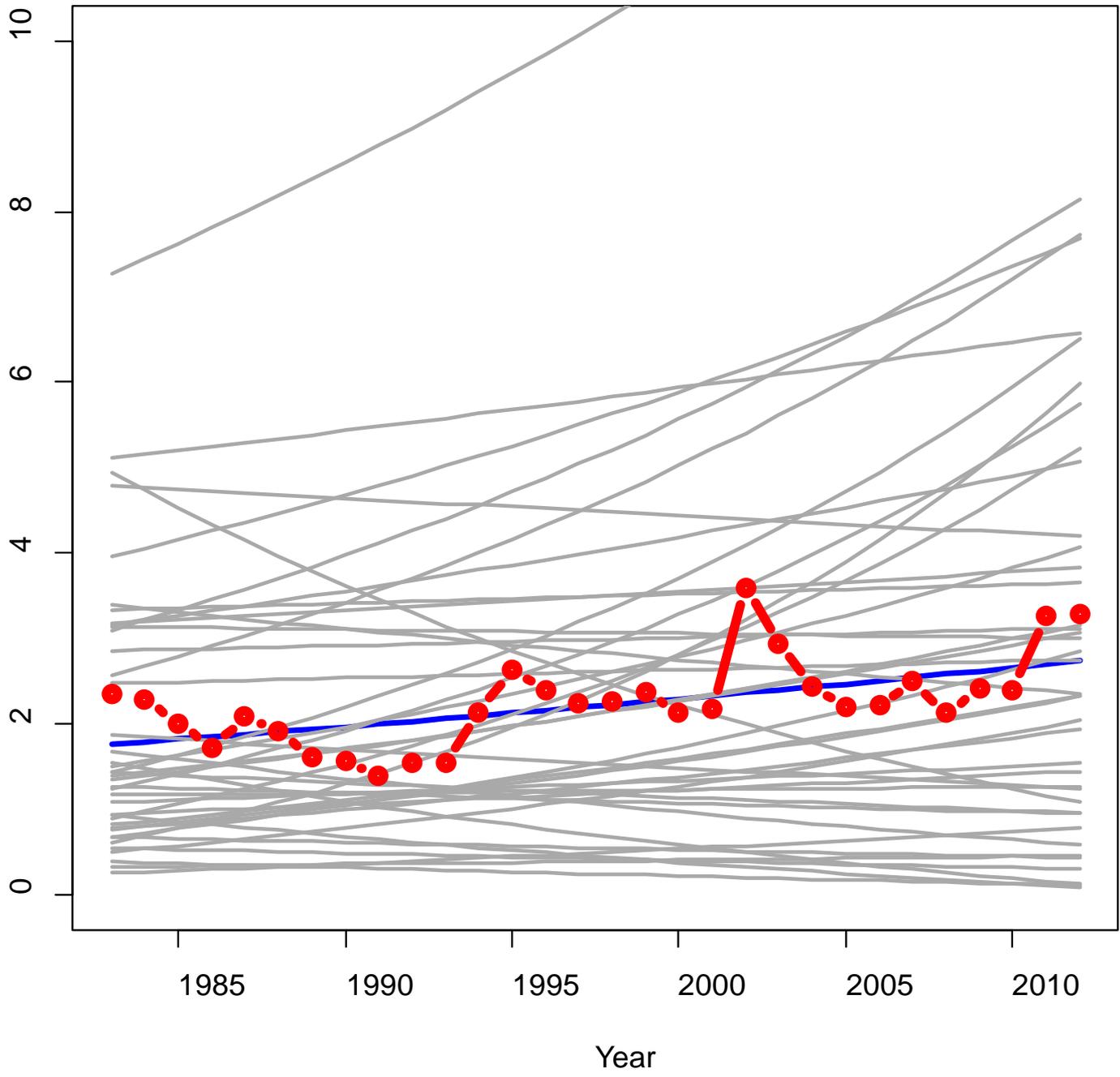


Yellow Perch

SE



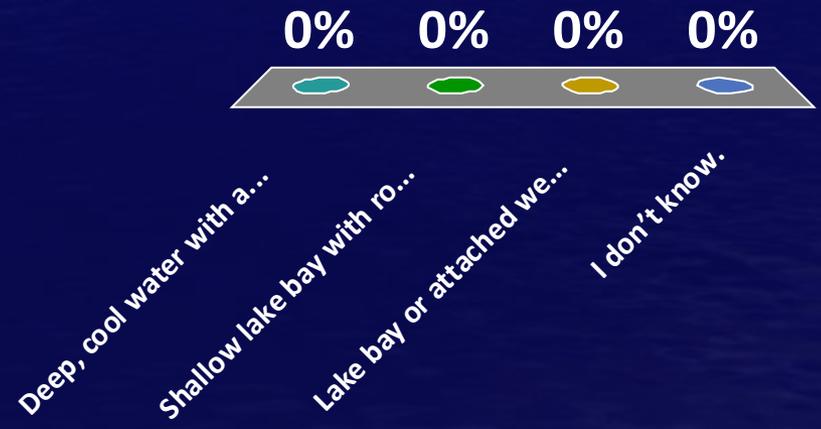
# Northern Pike



SE

Q8: Northern pike are native locally and until the last half century thrived in Blue Earth County. What type of habitat do pike require to successfully reproduce?

- A. Deep, cool water with ample food for newly hatched fish.
- B. Shallow lake bay with rock/gravel shoreline.
- C. Lake bay or attached wetland containing spring flooded vegetation.
- D. I don't know.



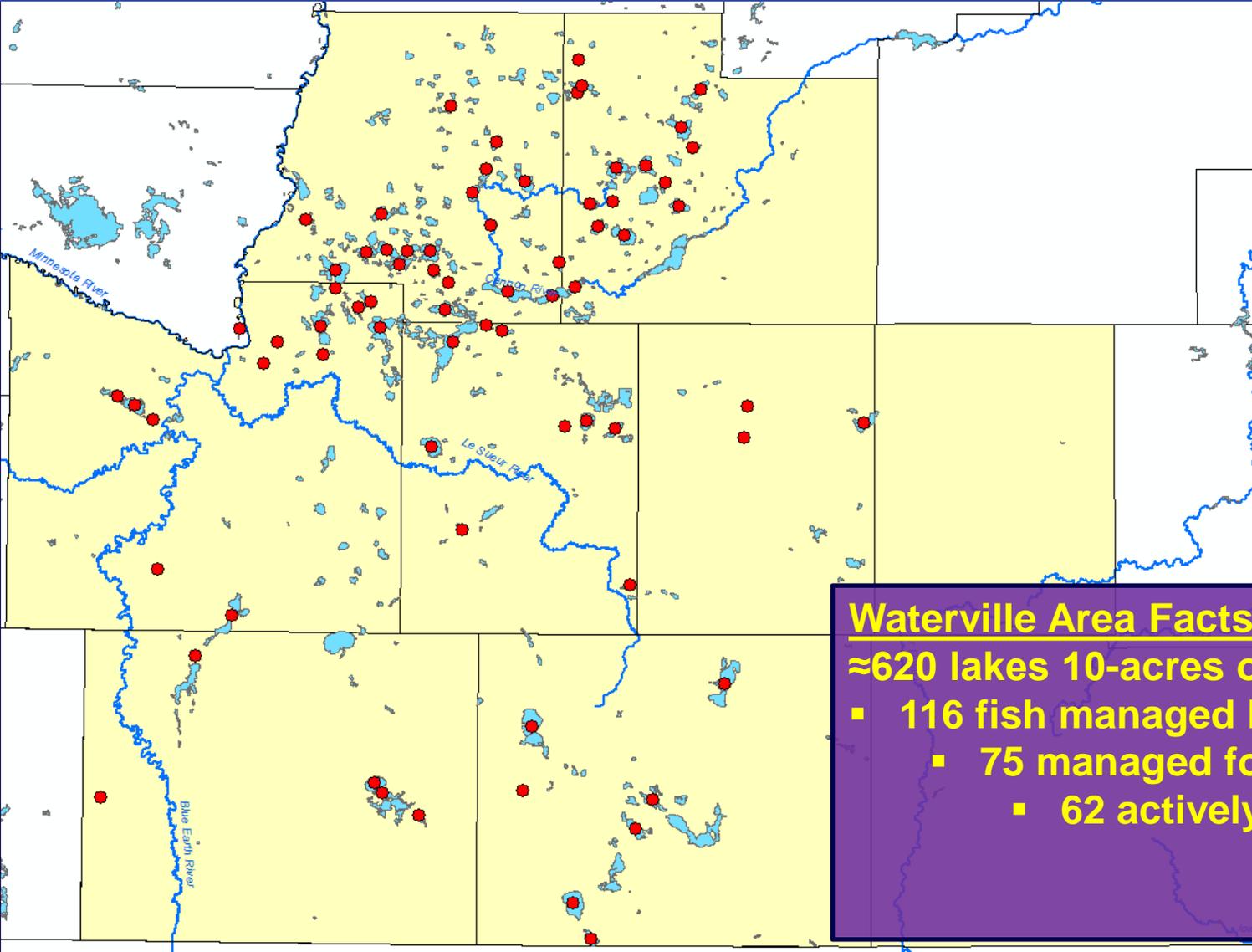




# Northern Pike Hatchery Production



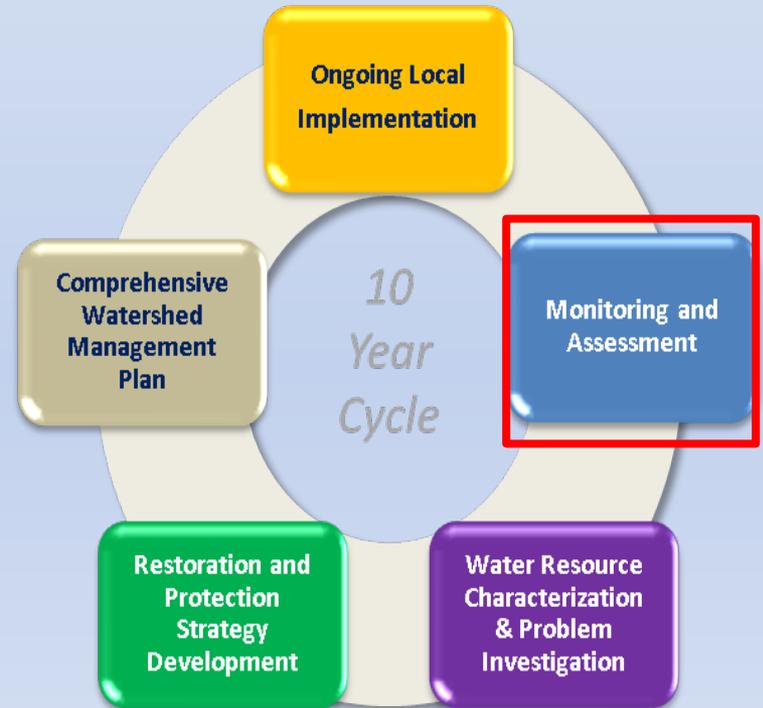
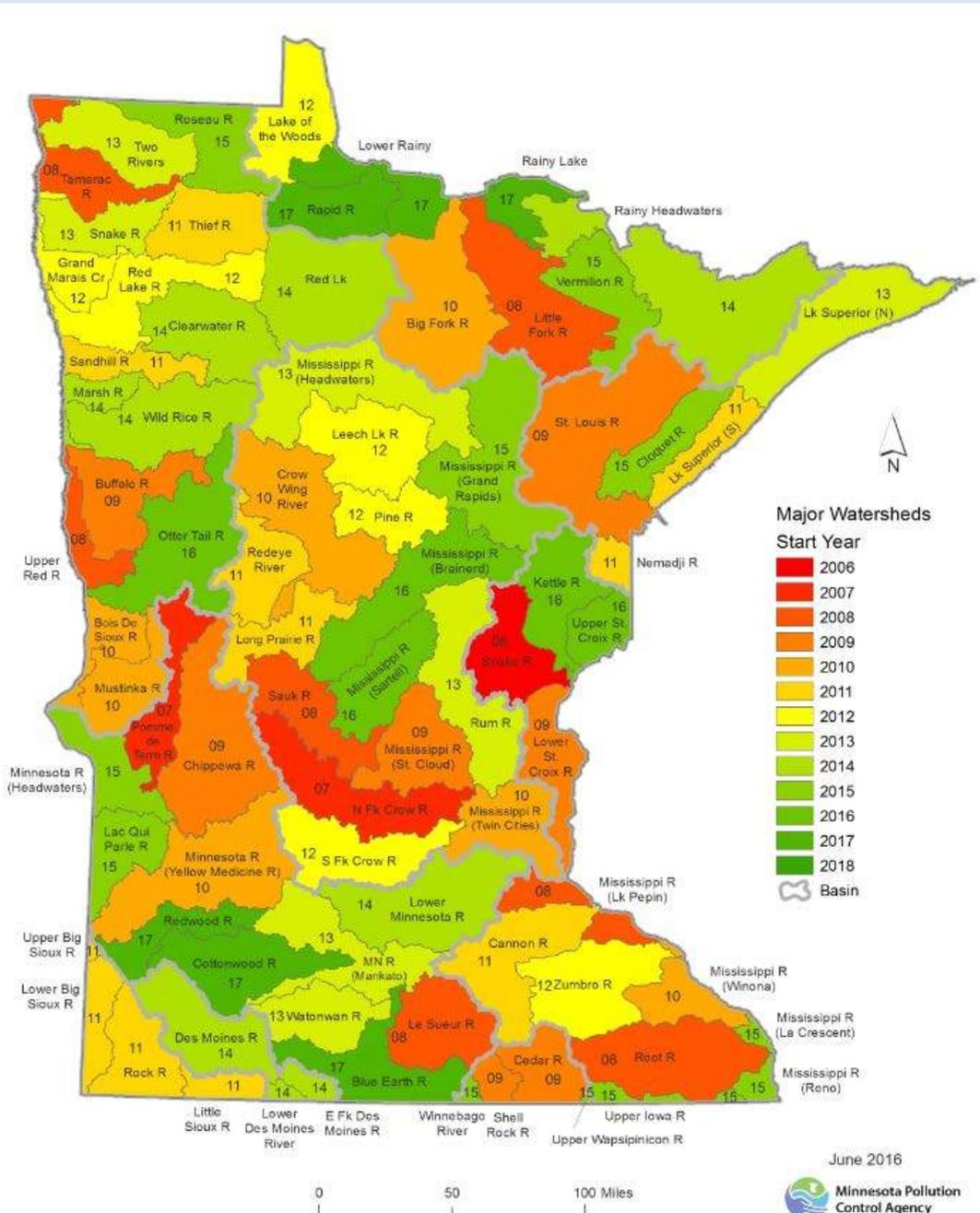
# Waterville Area Fisheries: Northern Pike Management



**Waterville Area Facts**

- ≈620 lakes 10-acres or larger
  - 116 fish managed lakes
    - 75 managed for pike (65%)
      - 62 actively stocked (83%)

# Watershed Monitoring Approach



# Minnesota Clean Water Act Indicators

Beneficial Use		Lakes
<p>Aquatic Life Use</p>  <p>Photo: Bill Lindner</p>		<p><b>Fish IBI</b> <b>Chloride</b> <b>Plant IBI-provisional</b></p>  
<p>Aquatic Recreation Use</p> 		<p>Eutrophication</p> 
<p>Aquatic Consumption Use</p> 		<p>Fish Mercury, PCBs, and PFOS</p>  

# Lake Aquatic Recreation Assessments

LAKE	Mean Phosphorus	Phosphorus Samples	Mean Chlorophyll-A	Chlorophyll-A Samples	Secchi	Secchi Samples	Assessment
Duck	80.9	5	52.58	5	0.78	98	NS
Ballantyne	30.6	13	24.59	13	0.89	13	FS
Crystal	251	17	87	17	0.32	82	NS
Washington	67.11	30	51.68	28	1.45	288	NS
Emily	24.75	8	24.3	8	0.91	147	FS

# Minnesota Clean Water Act Indicators

Beneficial Use		Lakes
Aquatic Life Use  <small>Photo: Bill Lindner</small>		<b>Fish IBI</b> <b>Chloride</b> <b>Plant IBI-provisional</b>  
Aquatic Recreation Use 		Eutrophication 
Aquatic Consumption Use 		Fish Mercury, PCBs, and PFOS  



# FIBI Metrics Selected based on correlations to shoreline and watershed disturbance

## Physical Structure

### Properties

- vegetation
- woody habitat
- substrate



## Water Quality

### Properties

- sedimentation
- epiphytic algae
- hypolimnetic oxygen
- regime shifts



## Primary Disturbance Drivers

Shoreline disturbance from development



Watershed disturbance from urbanization and agriculture

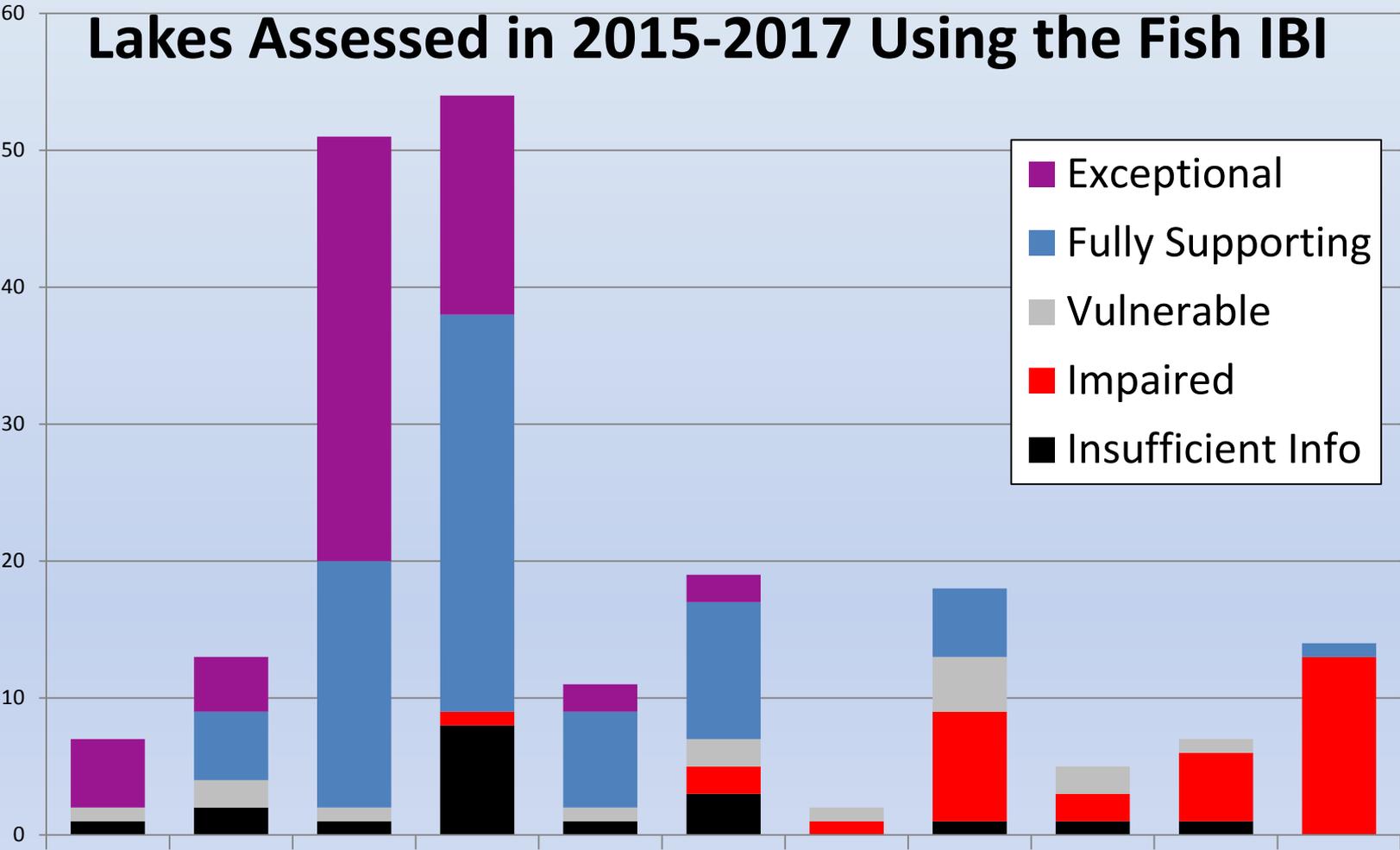


# Lakes Assessed in 2015-2017 Using the Fish IBI

Number of Lakes Assessed

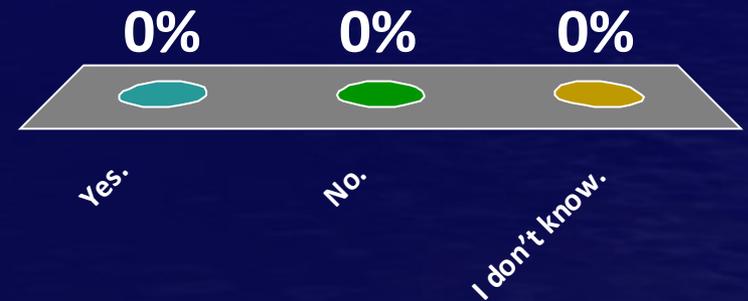


Upper & Lower Red  
Clearwater  
Miss. Headwaters  
Miss. Grand Rapids  
Wild Rice  
Rum  
Lower Minnesota & LQP  
Lower Minnesota  
Minn. R. Mankato  
Watonwan  
Des Moines



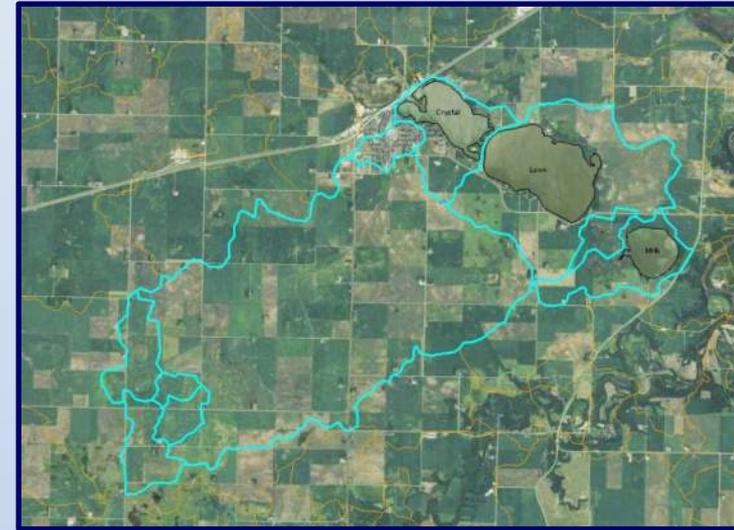
Q9: Based on what you know, do you suspect Lake Crystal is impaired based on the most recent IBI survey?

- A. Yes.
- B. No.
- C. I don't know.



# Crystal Lake

- Fish IBI Score
  - General Use Threshold = 36
  - IBI Score = 10
  - **Well Below General Use threshold**
  - Comments on Metrics:
    - All metrics scored poorly
    - 5 tolerant spp (BLB, CAP, FHM, BIB, GSF), 0 intolerant spp.
    - nearshore dominated by FHM & BLB
    - TN dominated by BLB
    - Gillnets dominated by BLB, CAP, and WAE
- Stressors:
  - Large watershed: 76% Ag, 8% Urban, >1% Forest & Grassland, 15% Water
  - Moderately developed shoreline; Score the Shore Score = 71
  - TP ~1790 ppb; Hypereutrophic, Nutrient Impaired



Q10: Based on what you know, do you suspect Duck Lake is impaired based on the most recent IBI survey?

- A. Yes.
- B. No.
- C. I don't know.



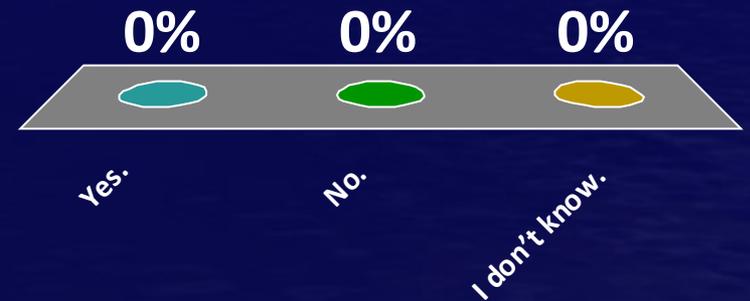
# Duck Lake



- Fish IBI Score
  - General Use Threshold = 36
  - **IBI Score = 36**
  - Right at the General Use threshold
  - Comments on Metrics:
    - 3 tolerant spp (BLB, CAP, FHM), 1 intolerant (2 IOD);
    - good scores on veg-dwellers and insectivore species
    - nearshore & TN dominated by bluegills
    - Gillnets dominated by FRD & NOP
- Vulnerable to Future Impairment
- Stressors:
  - Small contributing watershed: 59% Ag, 7% Urban, 4% Forest, 30% Water
  - Highly developed shoreline (~24 docks/km), Score the Shore Score = 59 indicating poor habitat value
  - TP ~81ppb; Nutrient Impaired

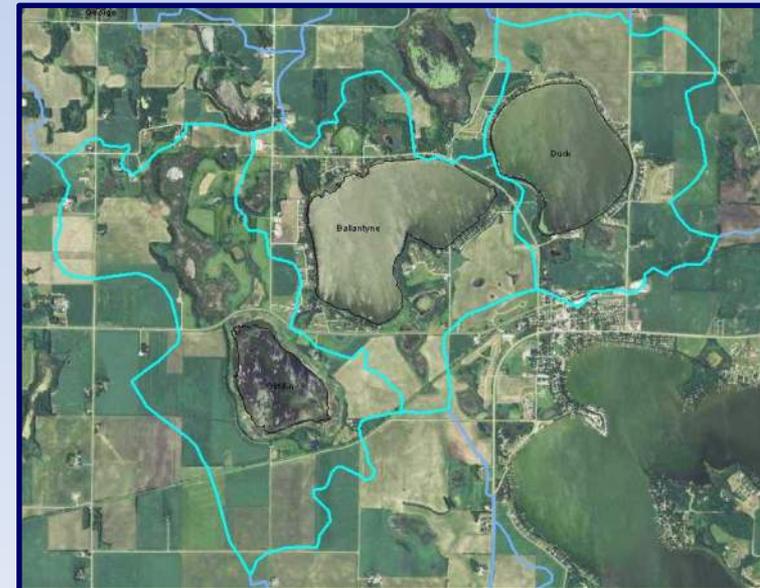
Q11: Based on what you know, do you suspect Lake Ballantyne is impaired based on the most recent IBI survey?

- A. Yes.
- B. No.
- C. I don't know.



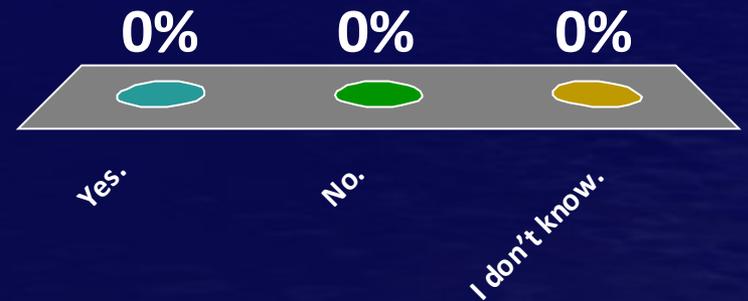
# Ballantyne Lake

- Fish IBI Score
  - General Use Threshold for Group 7 = 36
  - 2 nearshore surveys in 2014: IBI Scores = 38 & 40 (just above threshold)
  - Comments on Metrics:
    - 3 tolerant spp (BLB, CAP, BIB), 1 intolerant (IOD);
    - good scores on veg-dwellers and insectivores, good GN score (NOP)
    - Nearshore dominated by BNM, YEP, LMB, BLG (9/9 only), emerald shiners (6/30 only)
    - TN dominated by carp, bowfin, and bluegills
    - Gillnets dominated by NOP & CAP
- Vulnerable to Future Impairment
- Stressors:
  - 59% Ag, 6% Urban, 5% Forest, 29% Water
  - Moderate shoreline development (~10 docks /km) – some areas of very nice bulrush stands
  - TP ~39ppb
  - Identified as a high risk based on phosphorus sensitivity



Q12: Based on what you know, do you suspect Lake Washington is impaired based on the most recent IBI survey?

- A. Yes.
- B. No.
- C. I don't know.



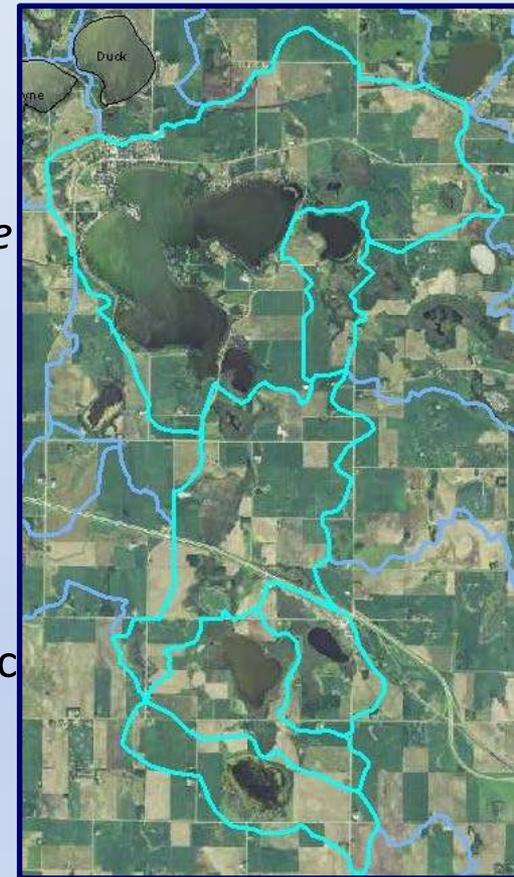
# Lake Washington

- Fish IBI Score

- IBI Tool 2 General Use Threshold = 45 – *note this one of the furthest south lake in this Group*
- IBI Score = 29
- Well below general Use threshold
- Comments on Metrics:
  - 2 tolerant spp (BLB, CAP), 1 intolerant spp. (IOD)
  - Low metric scores for # of intolerant, insectivore, veg-dwelling, and small benthic spp., ratios of small benthic and intolerants also low; GN metric low
  - Nearshore dominated by BLG, BNM, BLC, YEP, SPO, LMB, EMS
  - TN dominated by FRD, WAE, YEB (very low CAP)
  - Gillnets dominated by FRD, NOP, WAE (very low CAP)

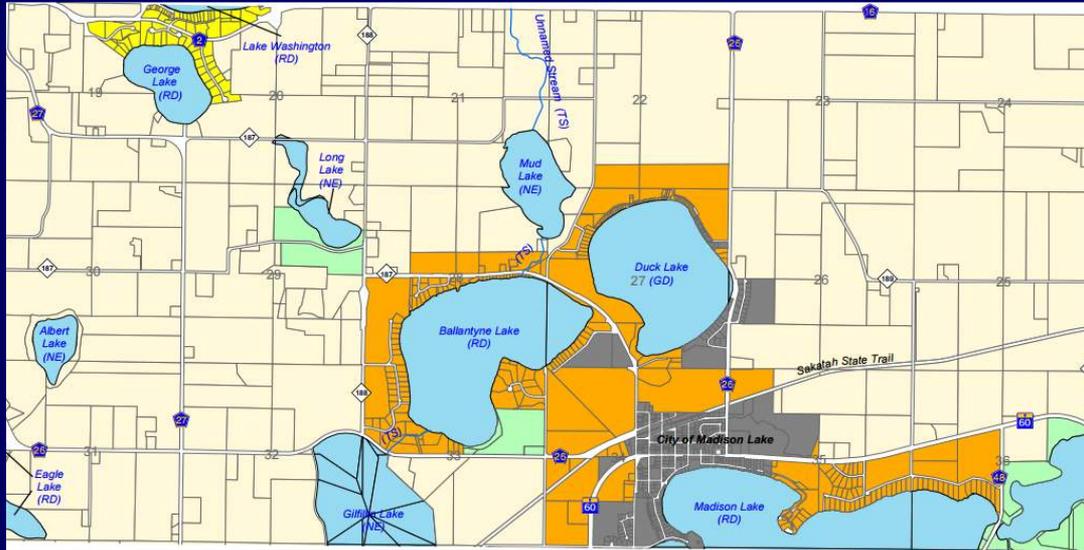
- Stressors:

- 65% Ag, 5% Urban, 6% Forest, 22% Water
- Moderate – High shoreline development (~14 docks/km); , Score the Shore Score = 59 indicating poor habitat value
- TP ~71ppb; Nutrient impaired



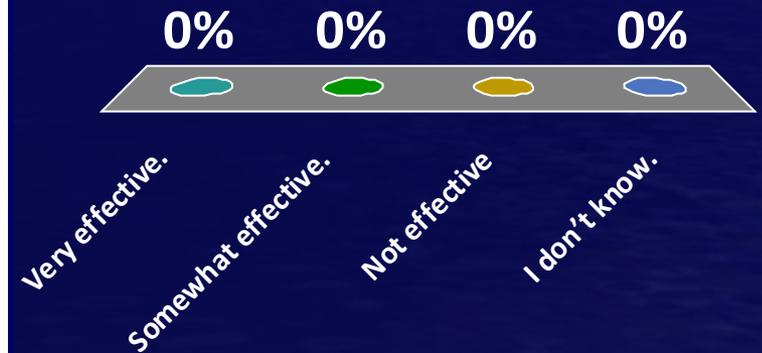
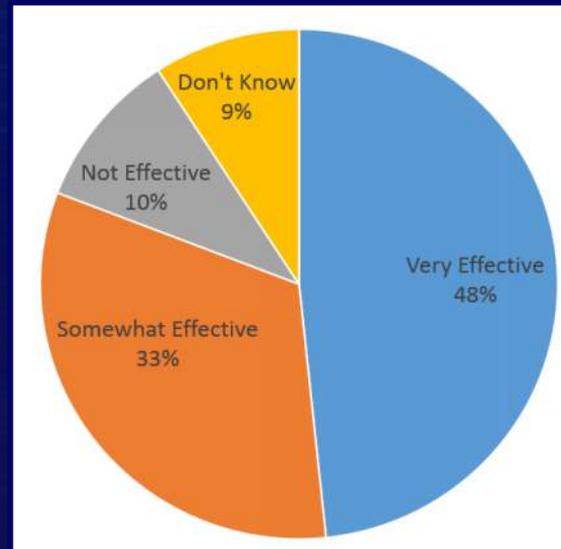
# What is YOUR role?

- Regulatory Framework Relies on efforts at the local level

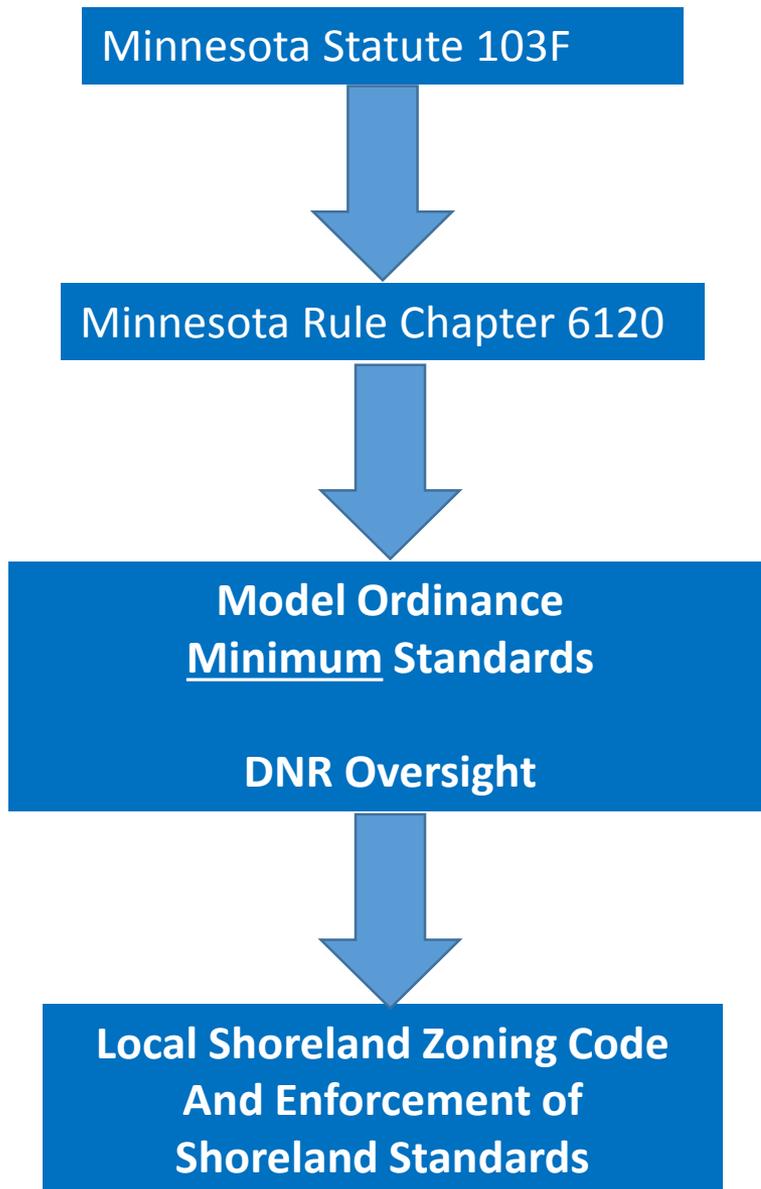


# Q13: How effective do you think enforcement of ordinances are at protecting sensitive areas near lakes, rivers, and streams?

- A. Very effective.
- B. Somewhat effective.
- C. Not effective
- D. I don't know.



# Shoreland Regulatory Framework

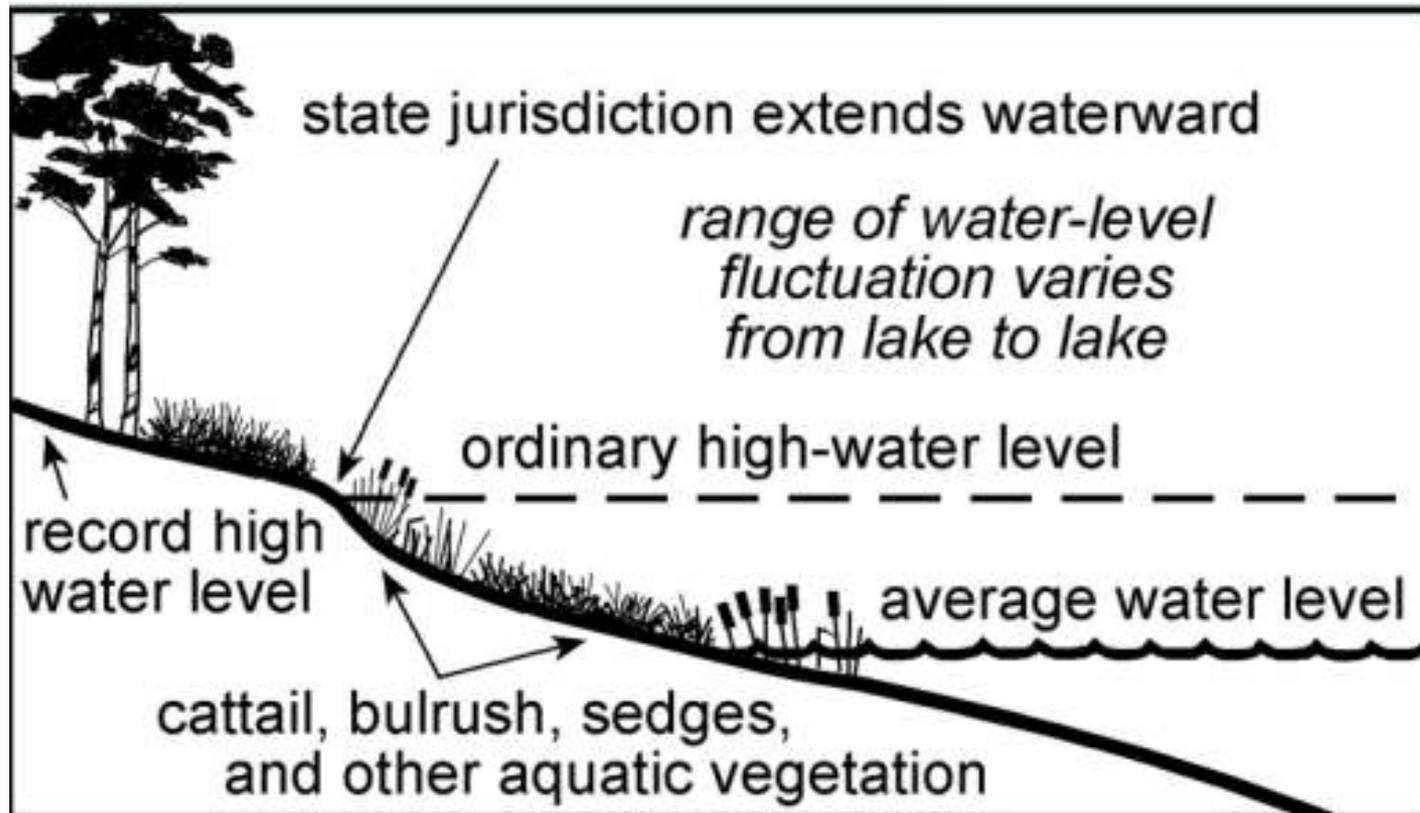


## Purpose

Provide minimum guidance for the wise development of shorelands of public waters and thus preserve and enhance the quality of surface waters

**Shoreland Rules Don't Adequately Protect Water Quality and Fish and Wildlife Habitat**

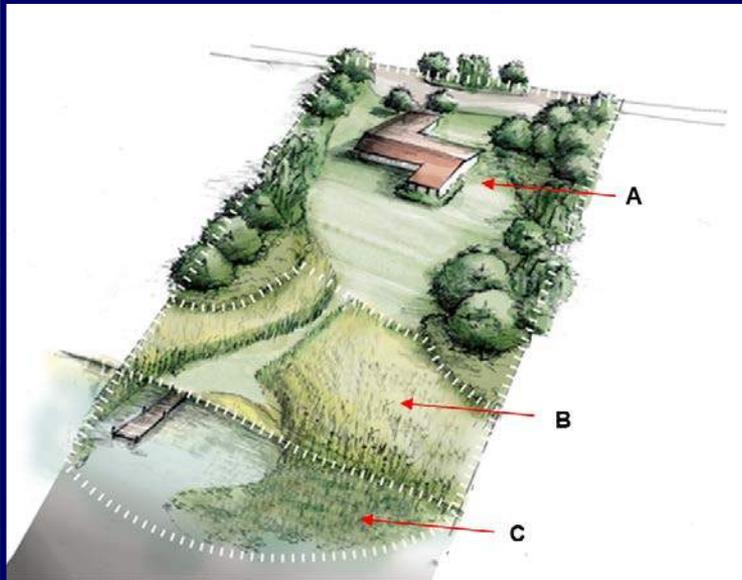
# Ordinary High Water Level



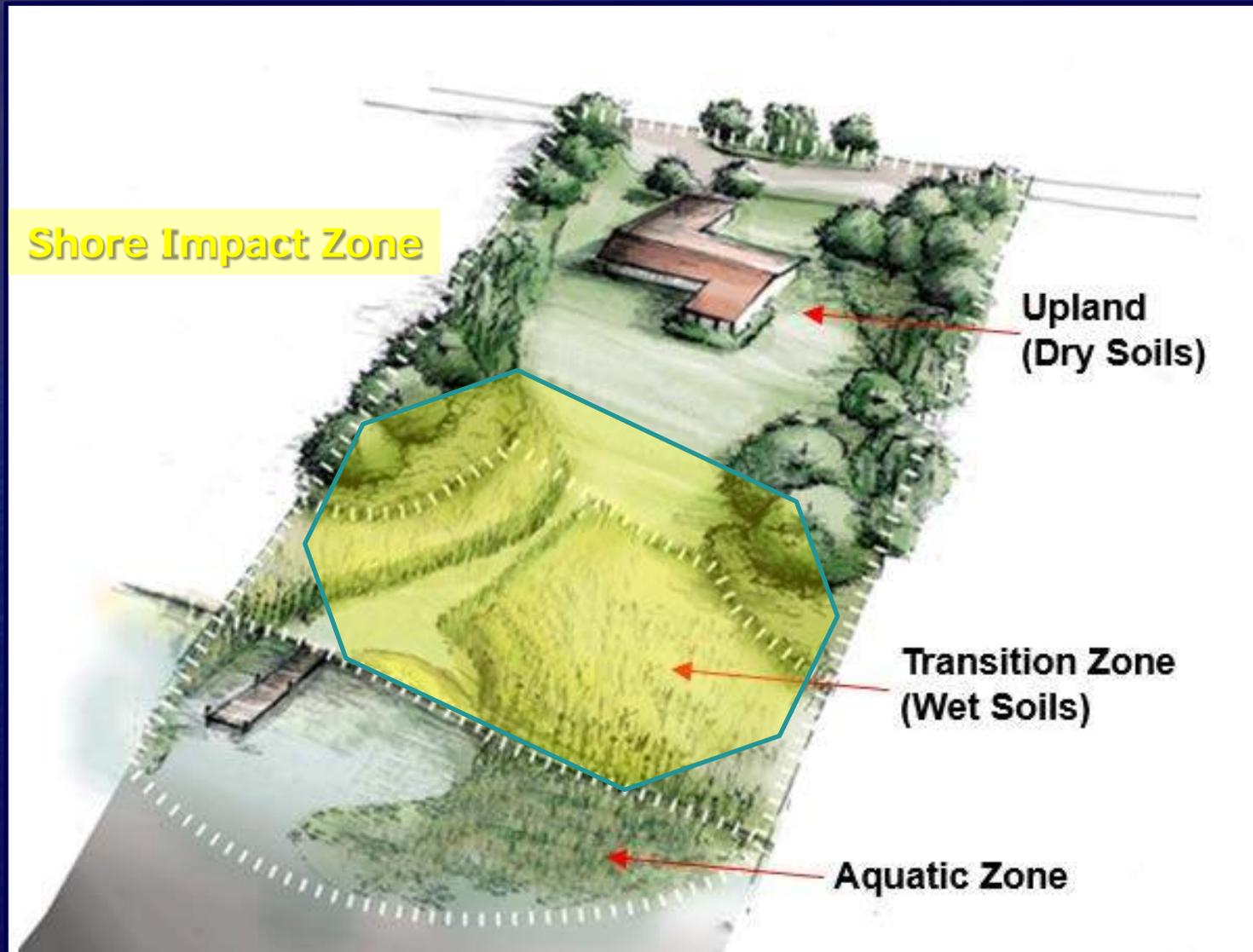
- State has Jurisdiction Below OHWL
- County/City has Jurisdiction above OHWL

# Q14: Which is the 'transition' zone?

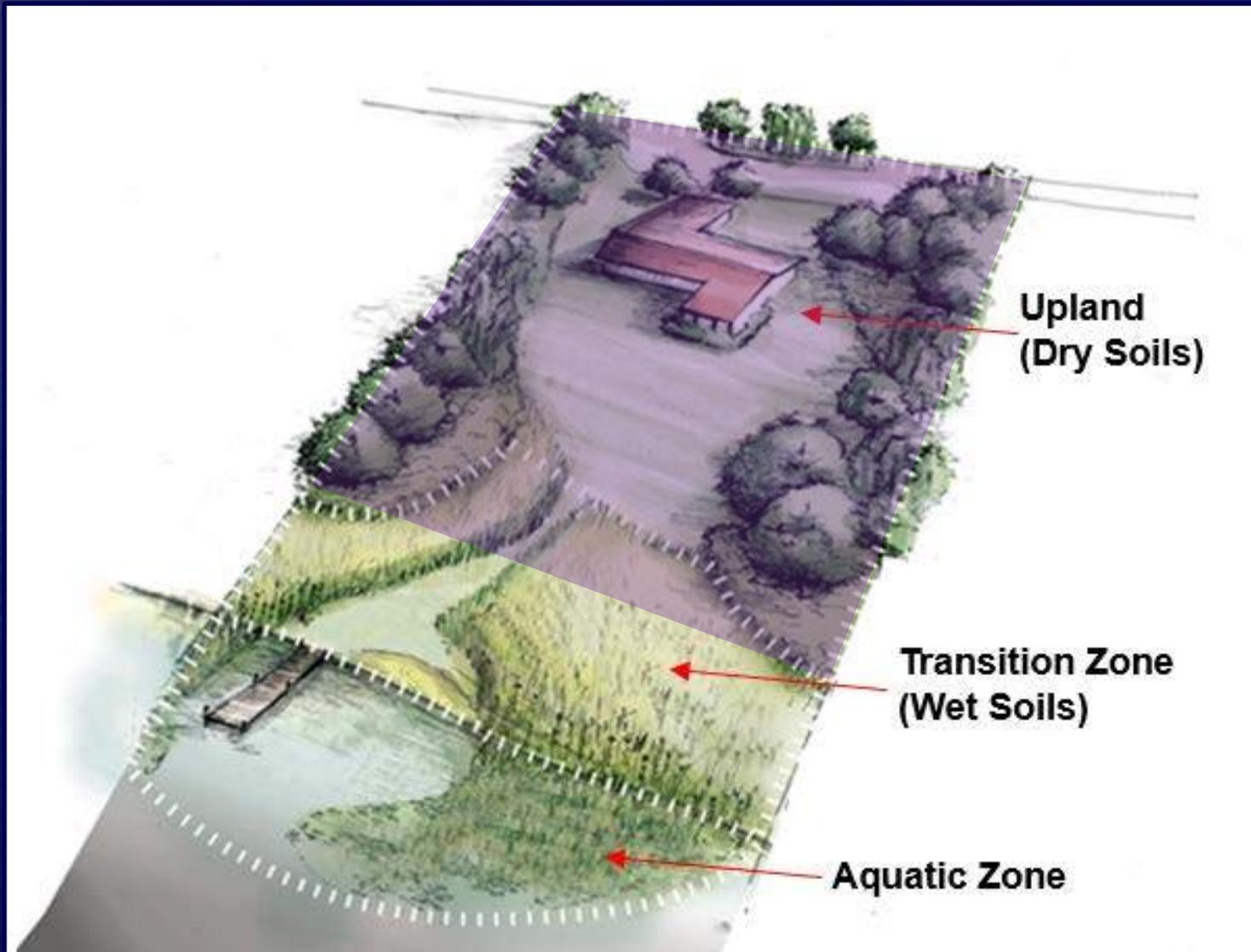
- A. 'A' in diagram.
- B. 'B' in diagram.
- C. 'C' in diagram.
- D. I don't know.



# The Buffer Zone

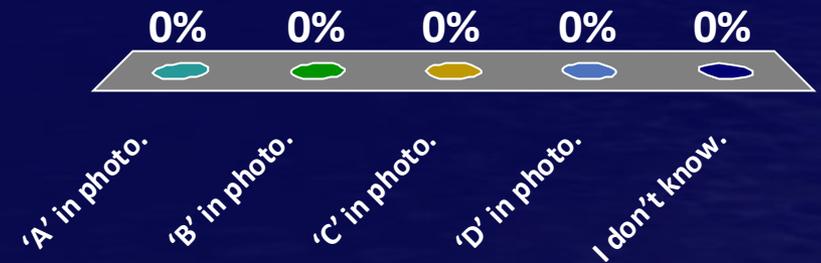


# The Upland Zone

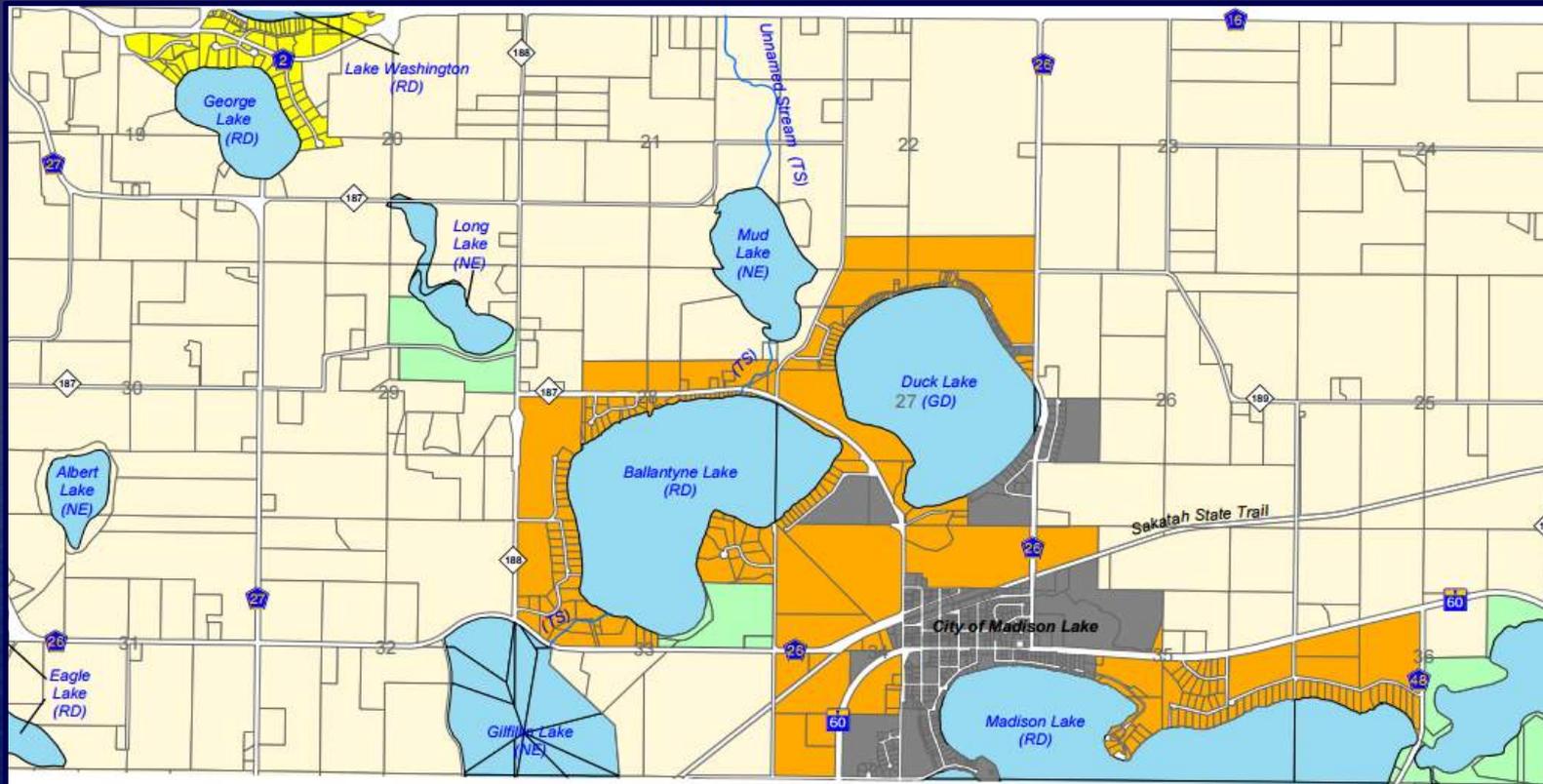


Q15: Which of these developed lots has the most impact on the lake?

- A. 'A' in photo.
- B. 'B' in photo.
- C. 'C' in photo.
- D. 'D' in photo.
- E. I don't know.



# Proper Development: The basics, good planning!



## Minnesota Rule, Chapter 6120.3400, Subpart 11

- LGU must consider proper storm water management in all reviews, approvals, and permit issuance under their shoreland management ordinances.

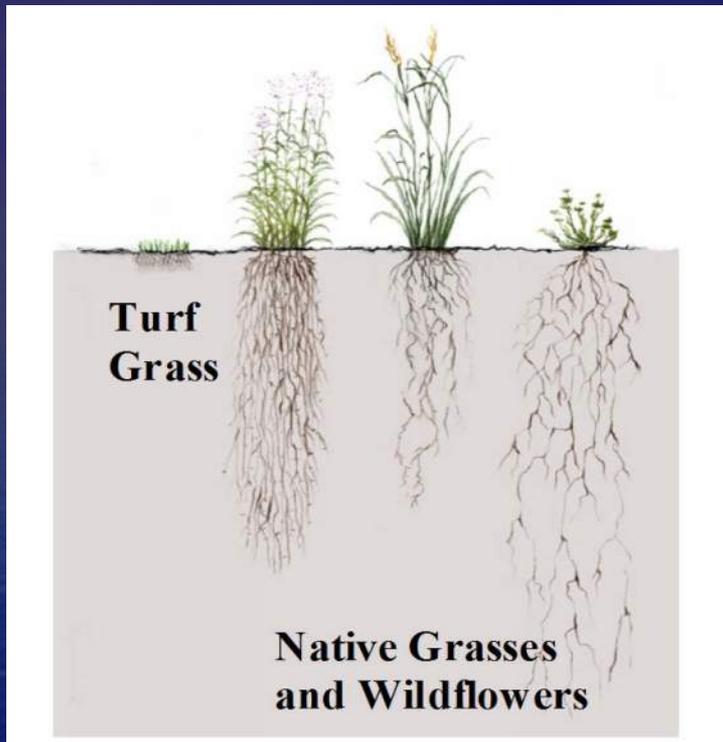
# Storm Water Management



## **Minnesota Rule, Chapter 6120.3400, Subpart 11**

- Impervious surface coverage of lots must not exceed 25% of the lot area.

# Storm Water Management



**Native Turf Grass**



**No-mow Turf Grass**

## **Minnesota Rule, Chapter 6120.3400, Subpart 11**

- When possible, existing natural drainageways, wetlands, and vegetated soil surfaces must be used to convey, store, filter, and retain storm water runoff before discharge to public waters.

# Storm Water Management

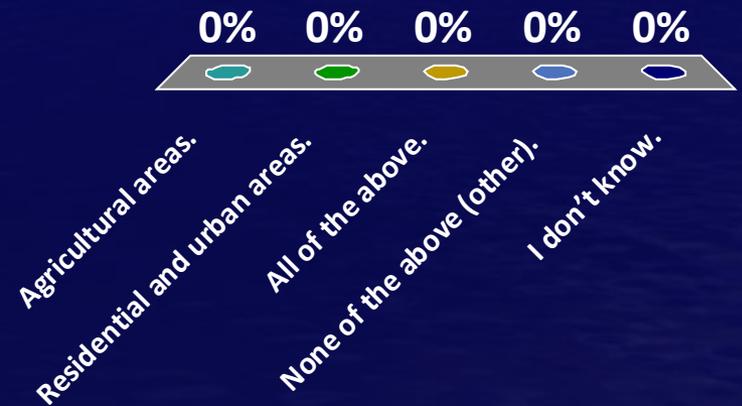
## Rain Gardens



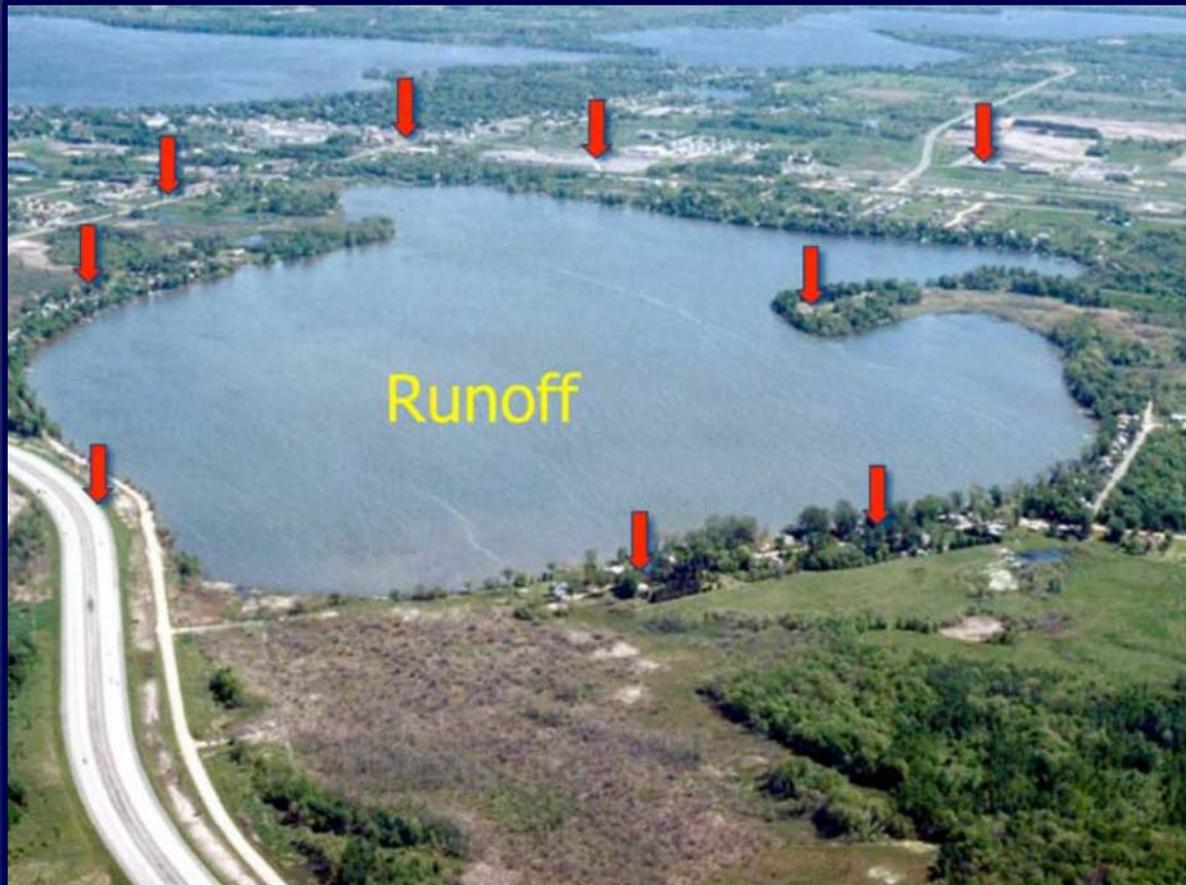
## Rain Barrels

# Q16: Where do YOU think efforts should be focused to protect or improve your lake?

- A. Agricultural areas.
- B. Residential and urban areas.
- C. All of the above.
- D. None of the above (other).
- E. I don't know.



# Storm Water Management: Proper Planning



## **Minnesota Rule, Chapter 6120.3400, Subpart 11**

- Development must be planned and conducted in a manner that will minimize disturbed areas, runoff velocities, erosion potential, and reduce and delay runoff volumes.

# Storm Water Management

## Grass Clippings



**Break up  
Compaction**

# Erosion Control

## Minnesota Rule, Chapter 6120.3300, Subpart 4, Item B...

- Altered areas must be stabilized to acceptable erosion control standards (consistent with field office technical guides of the local SWCD and the NRCS).



# Storm Water Management

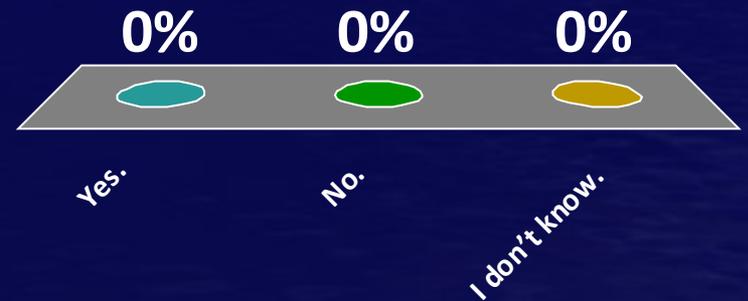
## Minnesota Rule, Chapter 6120.3300, Subpart 4, Item B...

- When natural features are not adequate constructed facilities such as diversions, settling basins, dikes, waterways, and ponds may be used. Preference must be given to designs using surface drainage, vegetation, and infiltration rather than buried pipes and human-made materials and facilities.

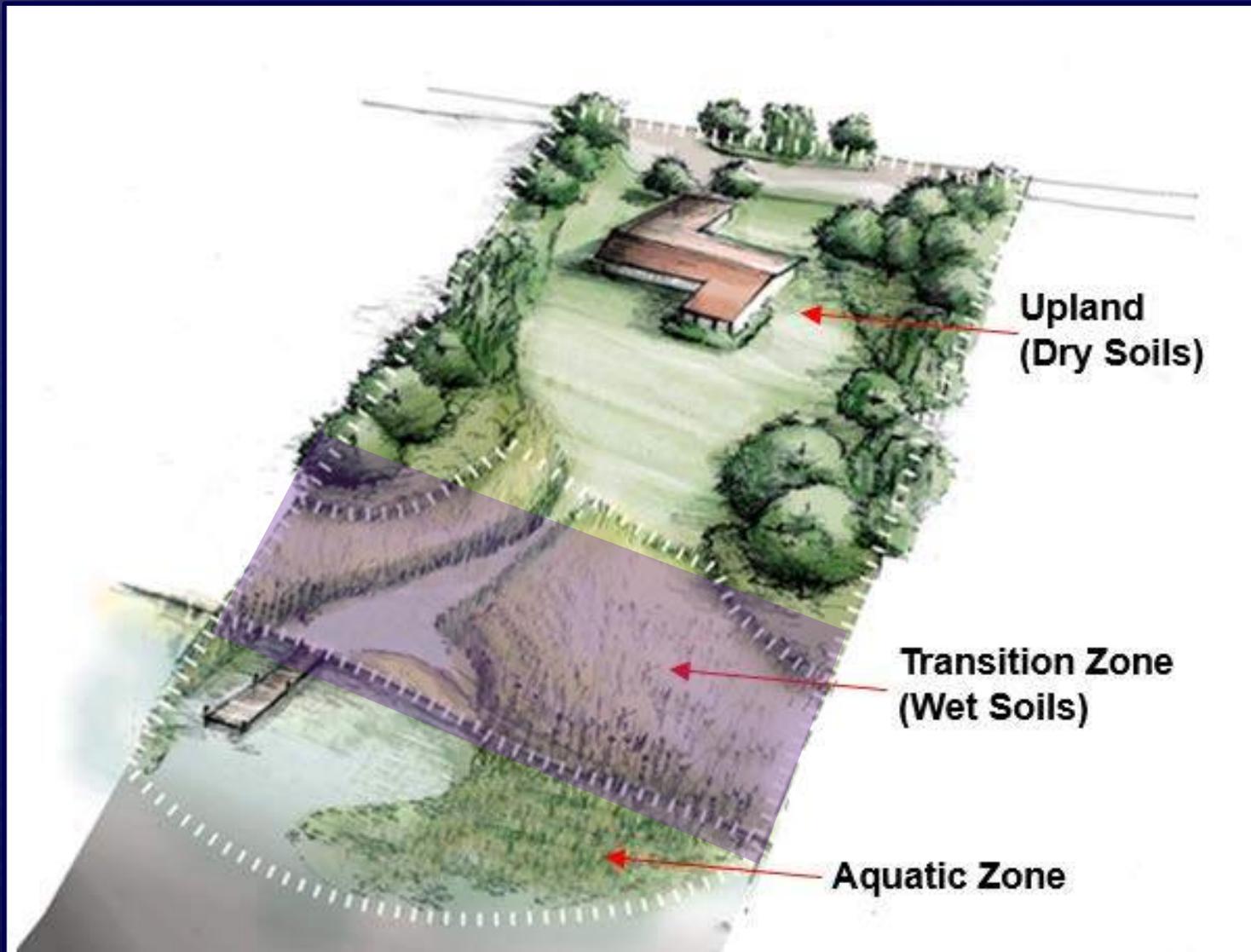


Q17: Do YOU think stormwater management could be improved in your city or lake watershed?

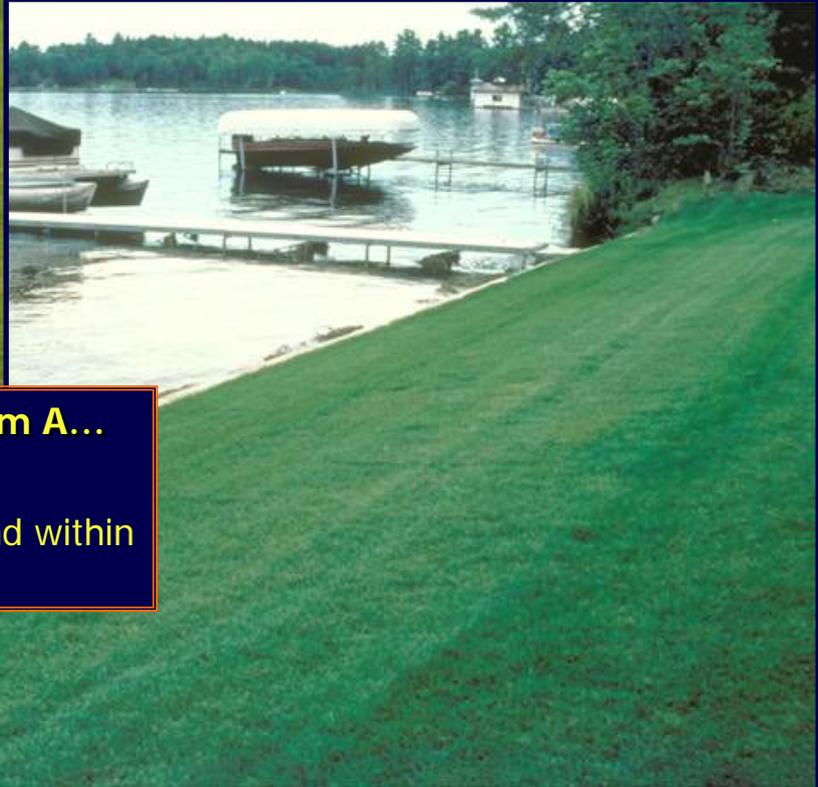
- A. Yes.
- B. No.
- C. I don't know.



# The Transition Zone



# Turf Grasses– Common Shoreline, Perception?



## **Minnesota Rule, Chapter 6120.3300, Subpart 4, Item A...**

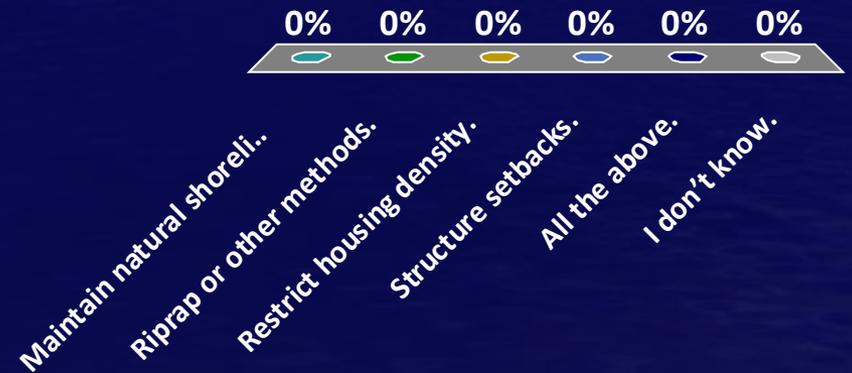
- Intensive vegetative clearing (complete removal of trees/shrubs) within the shore impact zone (usually land within 50-75 feet of the lake) is NOT allowed.

# Erosion Problems

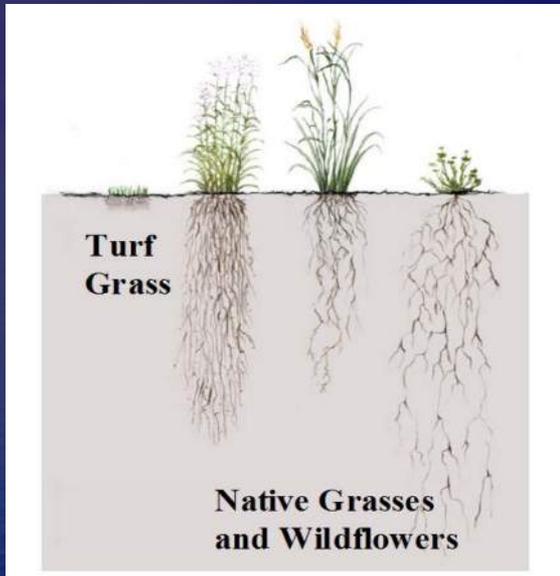


# Q18: What works best to reduce shoreland erosion?

- A. Maintain natural shoreline vegetation.
- B. Riprap or other methods.
- C. Restrict housing density.
- D. Structure setbacks.
- E. All the above.
- F. I don't know.



# Soil Stabilization: Root Depth



# Typical Shoreline Landscaping



- Property owners must contact a DNR Area Hyrdologist to determine if a permit is needed.

# Q19: Which of these lots would you prefer to live across the lake from?

- A. Lot 'A' on image.
- B. Lot 'B' on image.
- C. I don't care, either is fine by me.



Lot 'A' on image.

Lot 'B' on image.

I don't care, either is fine ..

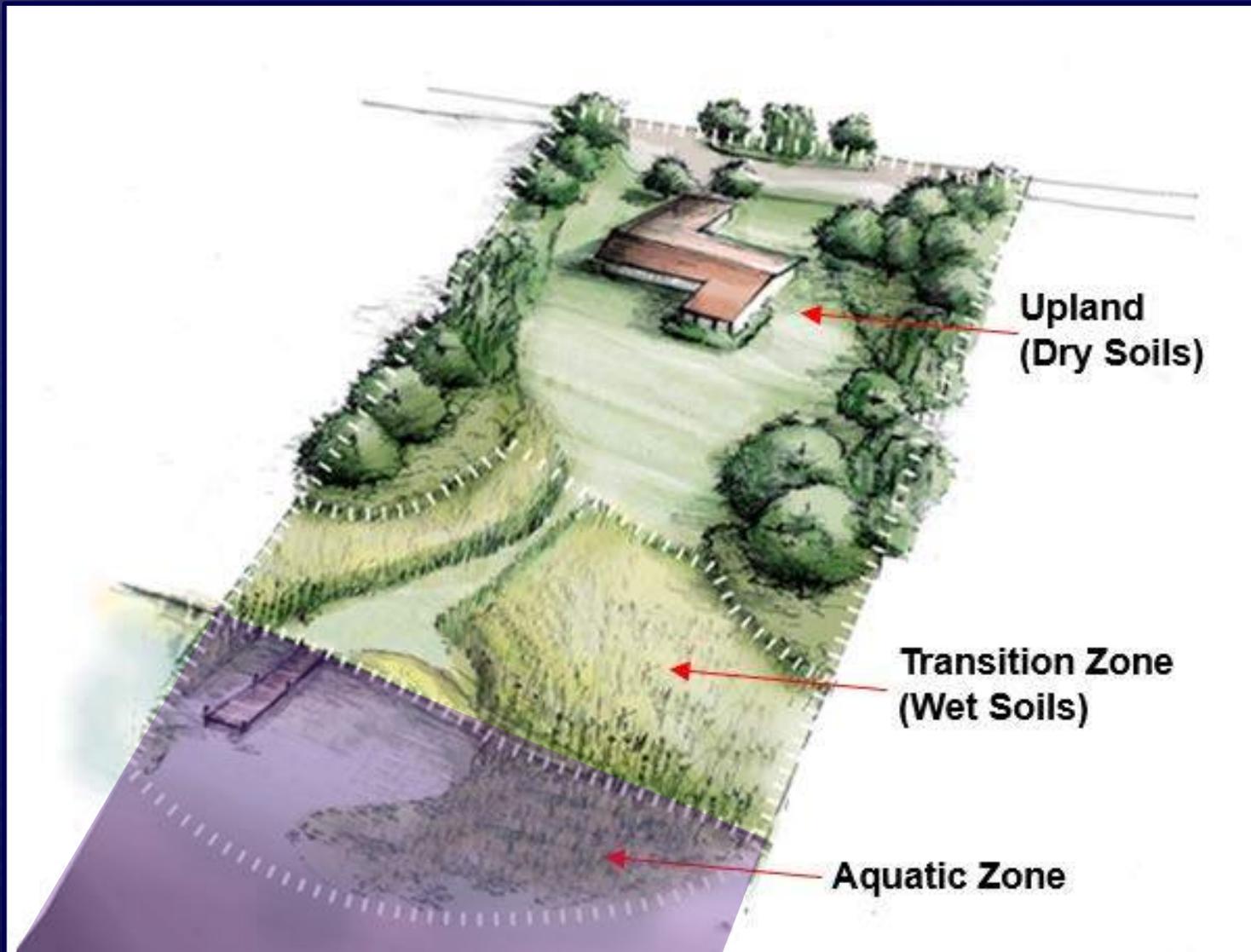
Which of the following is a healthier and more naturally appealing shoreline?



# Use of Natural Materials in Restoration!!!

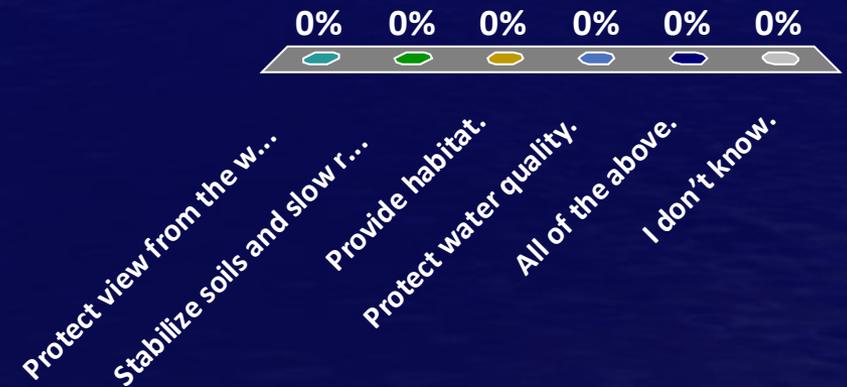


# The Aquatic Zone

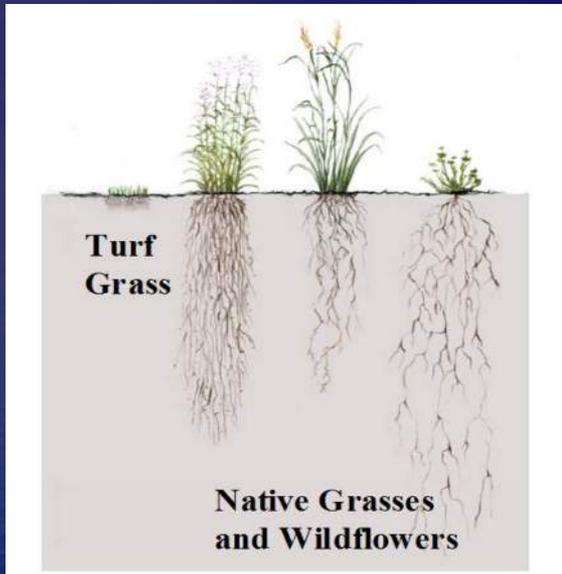


# Q20: What is the best reason to preserve natural aquatic plants?

- A. Protect view from the water or across the lake.
- B. Stabilize soils and slow runoff.
- C. Provide habitat.
- D. Protect water quality.
- E. All of the above.
- F. I don't know.



# Protect Aquatic Vegetation



## Minnesota Rule, Chapter 6280...

- Aquatic plant management rules dictate type, location, quantity, and methods used to control aquatic vegetation within public waters in order to provide reasonable recreational access.

# Protect Aquatic Vegetation



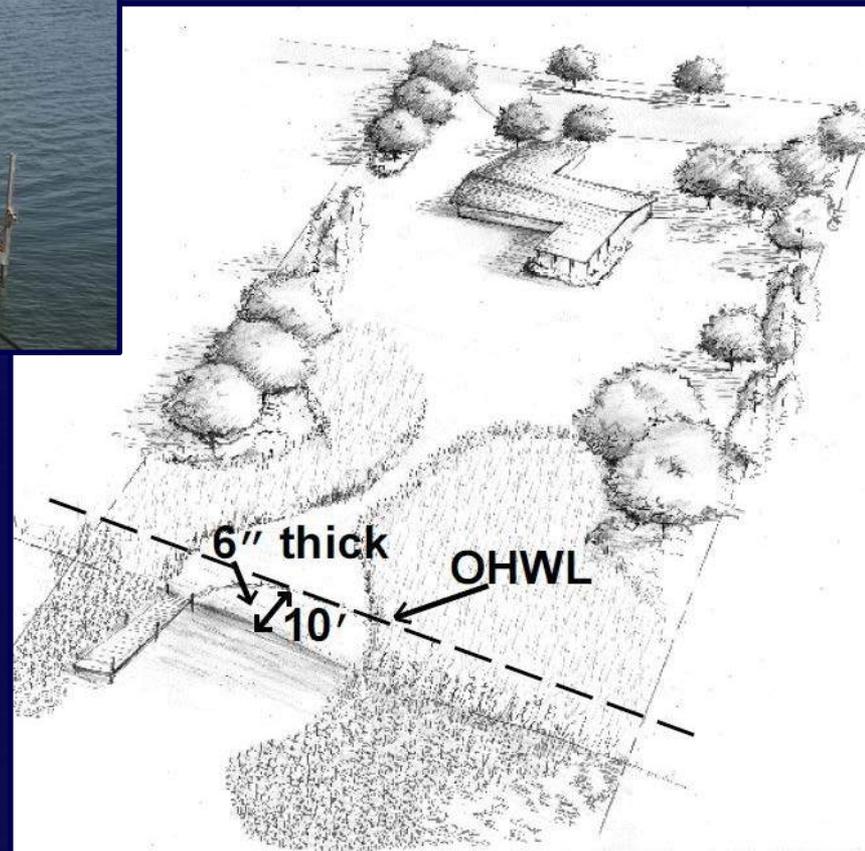
# Protect Aquatic Vegetation



50 feet owned 50 feet owned 250 feet owned 50 feet owned

# Beach Blanket and Dock Considerations

- Property owners must contact a DNR Area Hydrologist to determine if a permit is needed.



# Preserve Coarse Woody Habitat!

- **Preserve downed trees and other near shore woody habitat, this prevents shoreline erosion and provides critical habitat!**



*A lake is the landscape's most beautiful and expressive feature!*

## The Options:



**Preserve It!**



**Let it Recover Naturally!**



**Restore It!**

# Restore It: Ashley Park (Jackson County)



**Before**



**After**

# Restore It: Lake Henderson (Kandiyohi County)



**Before**



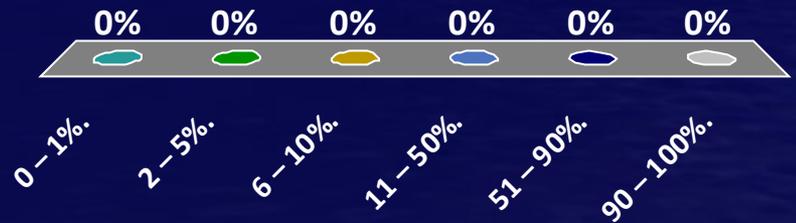
2008/07/14  
**After**

# Restore It: Lake Marion (Dakota County)



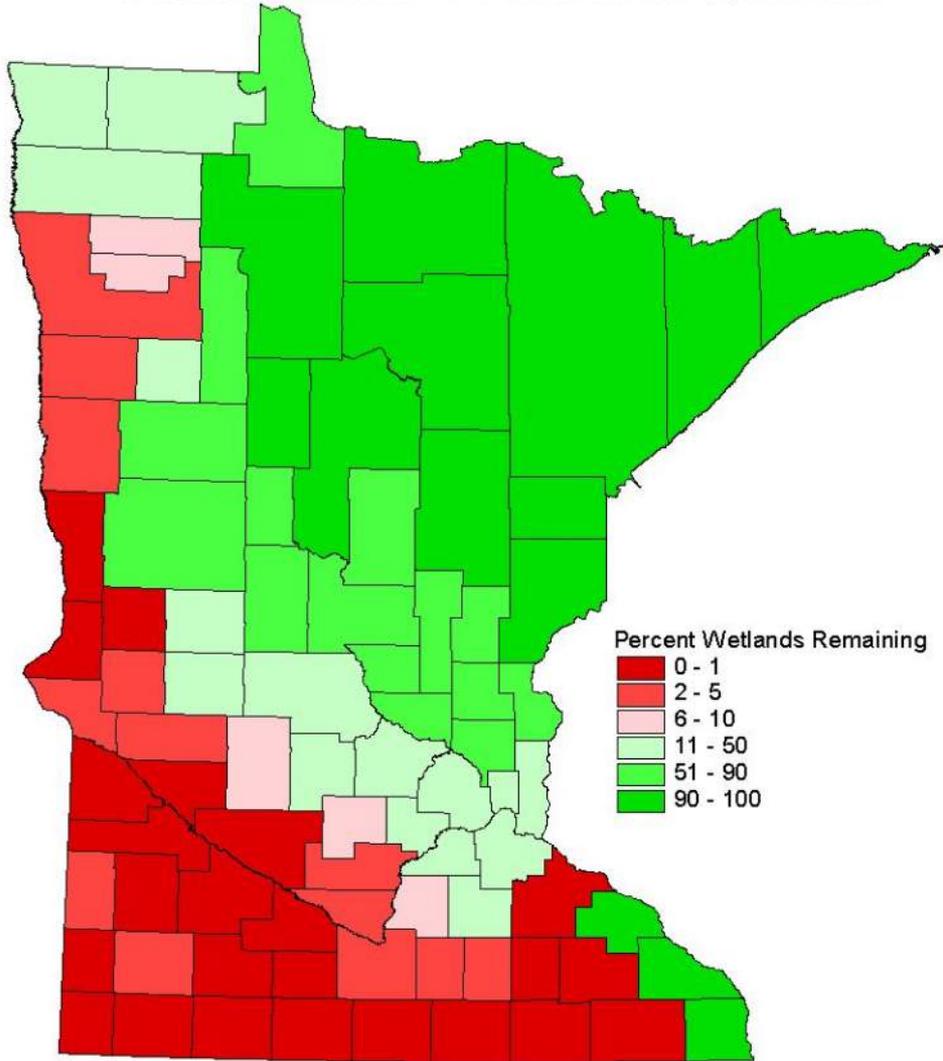
# Q21: What percent of natural wetlands remain in Blue Earth County?

- A. 0 – 1%.
- B. 2 – 5%.
- C. 6 – 10%.
- D. 11 – 50%.
- E. 51 – 90%.
- F. 90 – 100%.



# Watershed Management

## Minnesota Wetland Status



Source: Anderson, J and W. Craig, 1984. Growing energy crops on Minnesota's wetlands: the land use perspective. U. of Minn. Center for Urban and Regional Affairs, Publ. CURA 84-3.

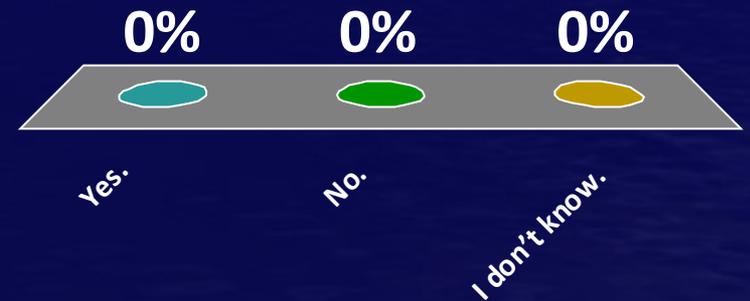


## Watershed Management

- Restoring wetlands and adjacent uplands
- Planting buffer strips
- Up-grading septic systems
- Reducing impervious surfaces
- Encouraging BMPs

Q22: Would YOU like more information about how your community can better serve conservation of lakes, rivers, and streams?

- A. Yes.
- B. No.
- C. I don't know.



Thank You! Questions?

Please remember to fill out the questionnaire!

Session Name: New Session 5-9-2017 8-03 PM

Date Created: 5/9/2017 6:16:04 PM

Active Participants: 36 of 36

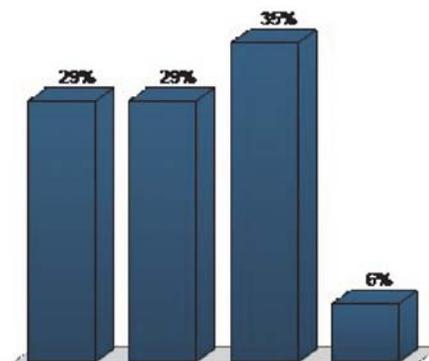
Average Score: 0.00%

Questions: 22

## Results By Question

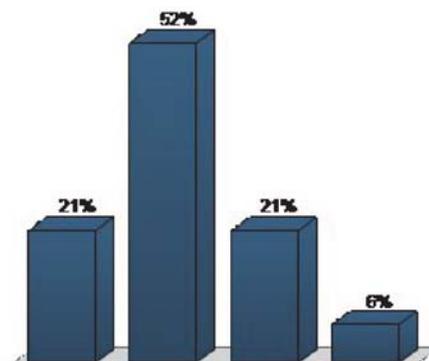
### 1.) Q1: Which Lake or Jurisdiction do you Represent (Multiple Choice)

	Responses	
	Percent	Count
City of Lake Crystal – Crystal, Loon Mills.	29.03%	9
City of Madison Lake – Madison, Duck or Ballantyne.	29.03%	9
Blue Earth County – other lakes.	35.48%	11
Other not listed.	6.45%	2
<b>Totals</b>	<b>100%</b>	<b>31</b>



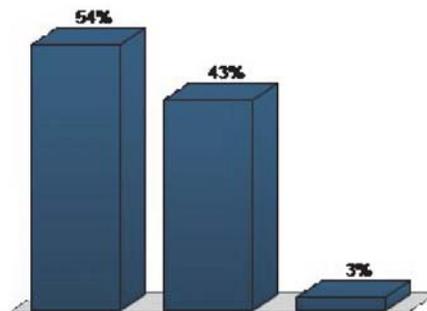
### 2.) Q2: How would you describe the QUALITY of lakes in Blue Earth County? (Multiple Choice)

	Responses	
	Percent	Count
Good	21.21%	7
Poor	51.52%	17
Very Poor.	21.21%	7
I Don't Know.	6.06%	2
<b>Totals</b>	<b>100%</b>	<b>33</b>



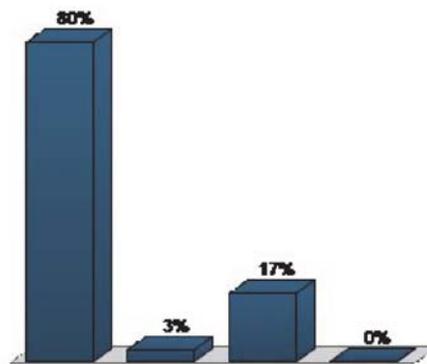
3.) Q3: Rate your level of concern with residential development near lakes and rivers? (Multiple Choice)

Responses		
	Percent	Count
Very Concerned	54.29%	19
Somewhat Concerned	42.86%	15
Not Concerned.	2.86%	1
<b>Totals</b>	<b>100%</b>	<b>35</b>



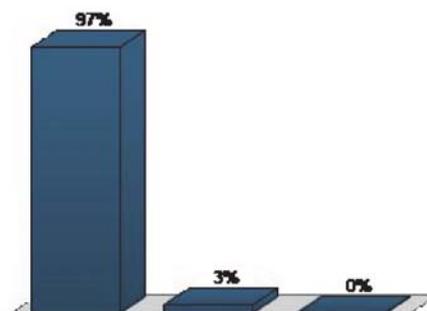
4.) Q4: What would you consider a better lake to visit: a lake with extensive aquatic plants but clear water, OR a lake without aquatic plants that is algae dominated? (Multiple Choice)

Responses		
	Percent	Count
Extensive aquatic plants, clear water.	80%	28
Limited aquatic plants, algae dominated.	2.86%	1
Some mix between the two.	17.14%	6
It doesn't really matter.	0%	0
<b>Totals</b>	<b>100%</b>	<b>35</b>



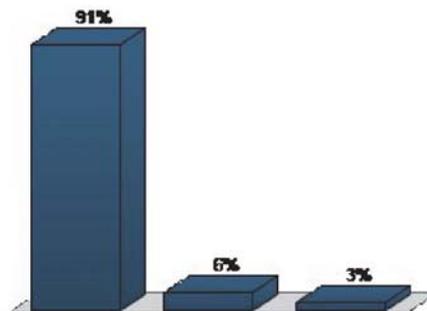
5.) Q5: Do you feel that a healthy population of fish, turtles, frogs and other wildlife are important to people that live on or are visiting a lake? (Multiple Choice)

Responses		
	Percent	Count
Yes.	97.14%	34
No.	2.86%	1
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>35</b>



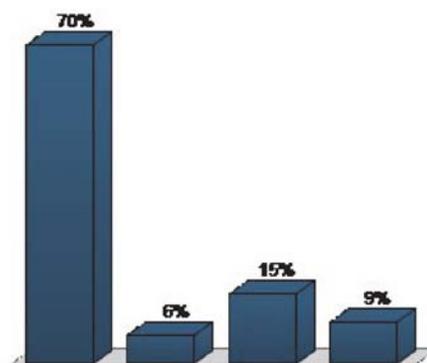
6.) Q6: Which shoreline would YOU consider to be most indicative of lake impairment? (Multiple Choice)

Responses		
	Percent	Count
Shoreline A in photo.	90.91%	30
Shoreline B in photo.	6.06%	2
I don't know.	3.03%	1
<b>Totals</b>	<b>100%</b>	<b>33</b>



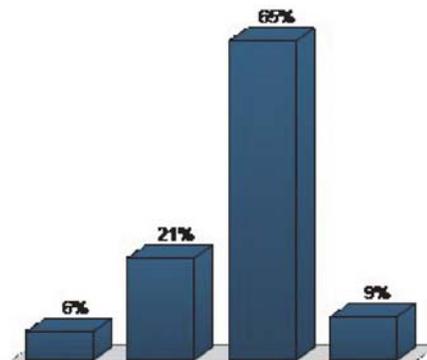
7.) Q7: Which species is least tolerant to low winter oxygen? (Multiple Choice)

Responses		
	Percent	Count
Walleye.	69.7%	23
Black bullhead.	6.06%	2
Northern Pike	15.15%	5
I don't know.	9.09%	3
<b>Totals</b>	<b>100%</b>	<b>33</b>



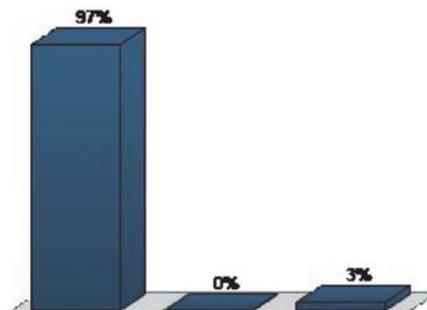
8.) Q8: Northern pike are native locally and until the last half century thrived in Blue Earth County. What type of habitat do pike require to successfully reproduce? (Multiple Choice)

	Responses	
	Percent	Count
Deep, cool water with ample food for newly hatched fish.	5.88%	2
Shallow lake bay with rock/gravel shoreline.	20.59%	7
Lake bay or attached wetland containing spring flooded vegetation.	64.71%	22
I don't know.	8.82%	3
<b>Totals</b>	<b>100%</b>	<b>34</b>



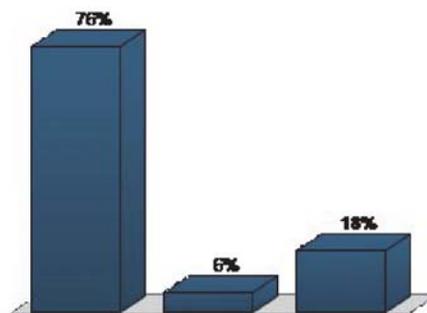
9.) Q9: Based on what you know, do you suspect Lake Crystal is impaired based on the most recent IBI survey? (Multiple Choice)

	Responses	
	Percent	Count
Yes.	96.97%	32
No.	0%	0
I don't know.	3.03%	1
<b>Totals</b>	<b>100%</b>	<b>33</b>



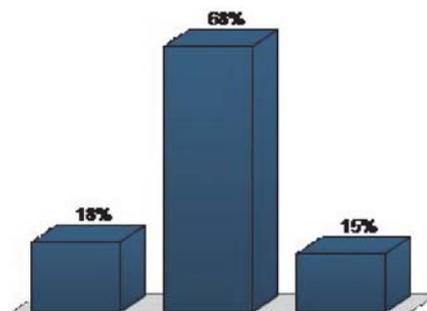
10.) Q10: Based on what you know, do you suspect Duck Lake is impaired based on the most recent IBI survey? (Multiple Choice)

Responses		
	Percent	Count
Yes.	76.47%	26
No.	5.88%	2
I don't know.	17.65%	6
<b>Totals</b>	<b>100%</b>	<b>34</b>



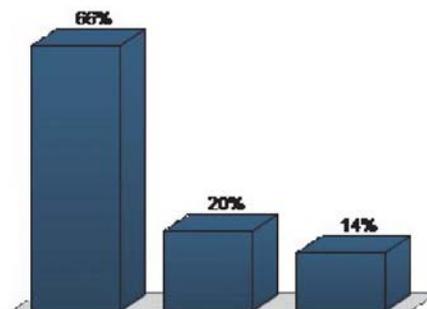
11.) Q11: Based on what you know, do you suspect Lake Ballantyne is impaired based on the most recent IBI survey? (Multiple Choice)

Responses		
	Percent	Count
Yes.	17.65%	6
No.	67.65%	23
I don't know.	14.71%	5
<b>Totals</b>	<b>100%</b>	<b>34</b>



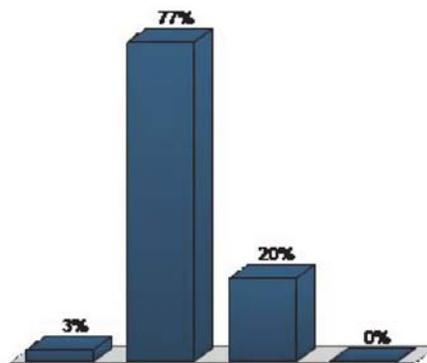
12.) Q12: Based on what you know, do you suspect Lake Washington is impaired based on the most recent IBI survey? (Multiple Choice)

Responses		
	Percent	Count
Yes.	65.71%	23
No.	20%	7
I don't know.	14.29%	5
<b>Totals</b>	<b>100%</b>	<b>35</b>



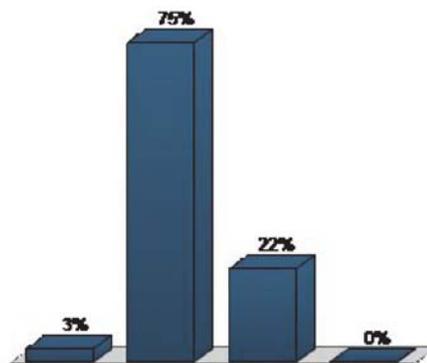
13.) Q13: How effective do you think enforcement of ordinances are at protecting sensitive areas near lakes, rivers, and streams? (Multiple Choice)

	Responses	
	Percent	Count
Very effective.	2.86%	1
Somewhat effective.	77.14%	27
Not effective	20%	7
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>35</b>



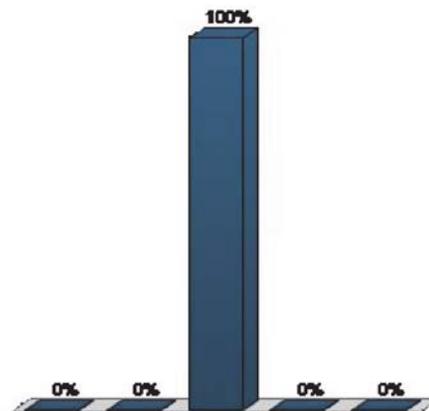
14.) Q14: Which is the 'transition' zone? (Multiple Choice)

	Responses	
	Percent	Count
'A' in diagram.	3.12%	1
'B' in diagram.	75%	24
'C' in diagram.	21.88%	7
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>32</b>



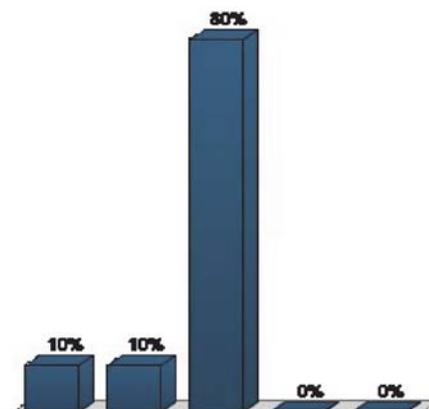
15.) Q15: Which of these developed lots has the most impact on the lake? (Multiple Choice)

Responses		
	Percent	Count
'A' in photo.	0%	0
'B' in photo.	0%	0
'C' in photo.	100%	31
'D' in photo.	0%	0
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>31</b>



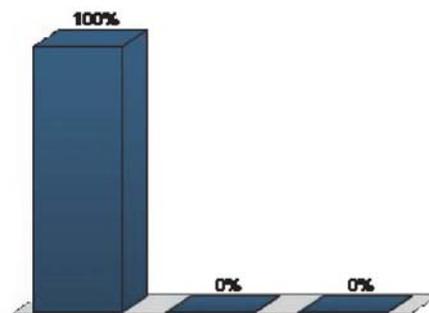
16.) Q16: Where do YOU think efforts should be focused to protect or improve your lake? (Multiple Choice)

Responses		
	Percent	Count
Agricultural areas.	10%	3
Residential and urban areas.	10%	3
All of the above.	80%	24
None of the above (other).	0%	0
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>30</b>



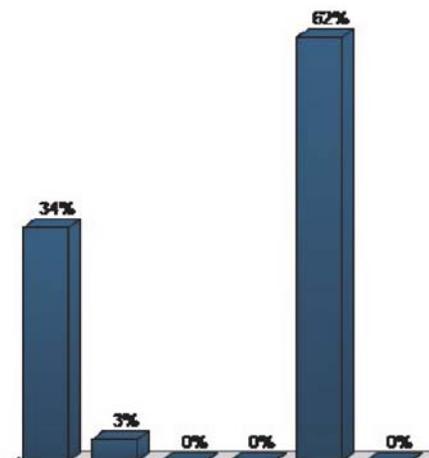
17.) Q17: Do YOU think stormwater management could be improved in your city or lake watershed? (Multiple Choice)

Responses		
	Percent	Count
Yes.	100%	31
No.	0%	0
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>31</b>



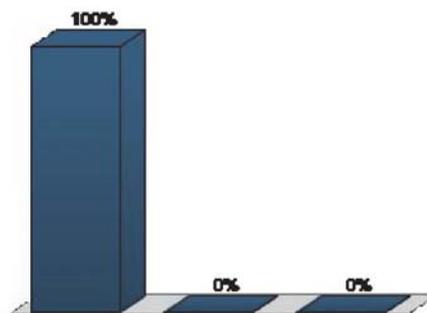
18.) Q18: What works best to reduce shoreland erosion? (Multiple Choice)

Responses		
	Percent	Count
Maintain natural shoreline vegetation.	34.38%	11
Riprap or other methods.	3.12%	1
Restrict housing density.	0%	0
Structure setbacks.	0%	0
All the above.	62.5%	20
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>32</b>



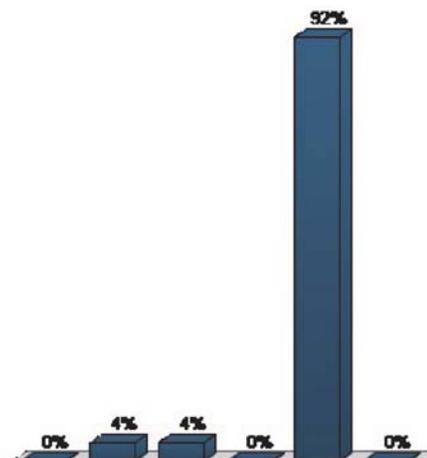
19.) Q19: Which of these lots would you prefer to live across the lake from? (Multiple Choice)

Responses		
	Percent	Count
Lot 'A' on image.	100%	31
Lot 'B' on image.	0%	0
I don't care, either is fine by me.	0%	0
<b>Totals</b>	<b>100%</b>	<b>31</b>



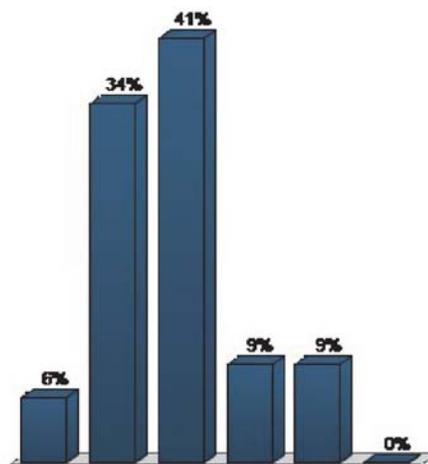
20.) Q20: What is the best reason to preserve natural aquatic plants? (Multiple Choice)

Responses		
	Percent	Count
Protect view from the water or across the lake.	0%	0
Stabilize soils and slow runoff.	3.85%	1
Provide habitat.	3.85%	1
Protect water quality.	0%	0
All of the above.	92.31%	24
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>26</b>



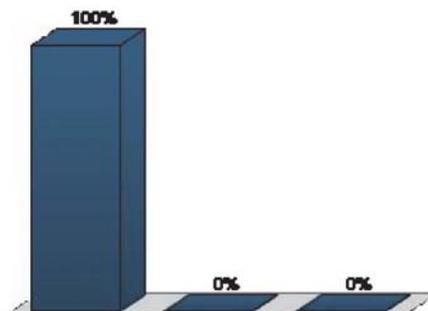
21.) Q21: What percent of natural wetlands remain in Blue Earth County? (Multiple Choice)

Responses		
	Percent	Count
0 – 1%.	6.25%	2
2 – 5%.	34.38%	11
6 – 10%.	40.62%	13
11 – 50%.	9.38%	3
51 – 90%.	9.38%	3
90 – 100%.	0%	0
<b>Totals</b>	<b>100%</b>	<b>32</b>



22.) Q22: Would YOU like more information about how your community can better serve conservation of lakes, rivers, and streams? (Multiple Choice)

Responses		
	Percent	Count
Yes.	100%	27
No.	0%	0
I don't know.	0%	0
<b>Totals</b>	<b>100%</b>	<b>27</b>



# **LAKES AND ZONING SEMINAR**

## **SURVEY RESULTS**

**City of Lake Crystal, City of Madison Lake and Blue Earth County**

**Elected and Appointed Officials**

**Tuesday, May 9, 2017**

## Background

A seminar on lakes and shoreland zoning was held at the Country Inn and Suites in Mankato on May 9, 2017. The seminar focused on the connection between shoreland management, lake water quality, fisheries and aquatic life in the Middle Minnesota River watershed lakes. Local government elected and appointed officials and staff from Blue Earth County, the City of Madison Lake, and the City of Lake Crystal were invited to the seminar. Five lake associations from lakes in the Middle Minnesota River Watershed were also invited to the meeting.

The meeting featured presentations from Craig Soupir, Department of Natural Resources (DNR) Manager of Waterville Fisheries, Gary Bennett, DNR Hydrologist in the Middle Minnesota watershed, and Bryan Spindler, the Minnesota Pollution Control Agency manager for the Middle Minnesota watershed project.

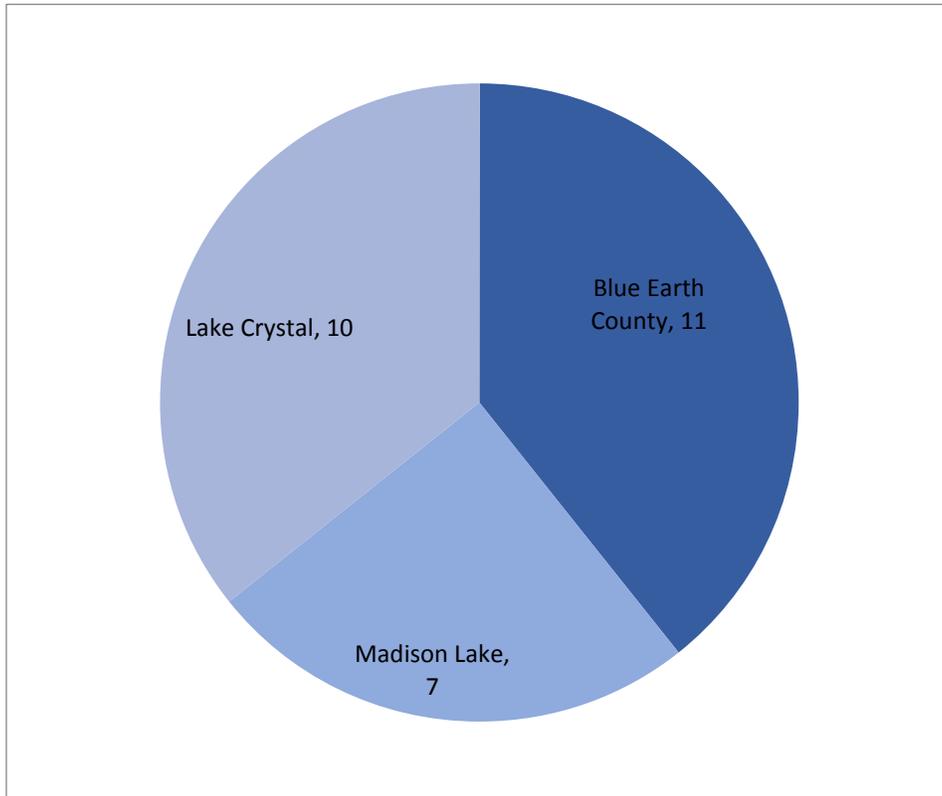
After the presentations, a written survey was distributed to attendees to learn more about their opinions on the benefits of the various strategies affecting lakes and water quality.

There was good representation at the meeting. Of the 46 local officials invited, 40 attended. Of the 50 lake association members invited, ten attended. A total of 28 surveys were completed by representatives of the following lakes and jurisdictions:

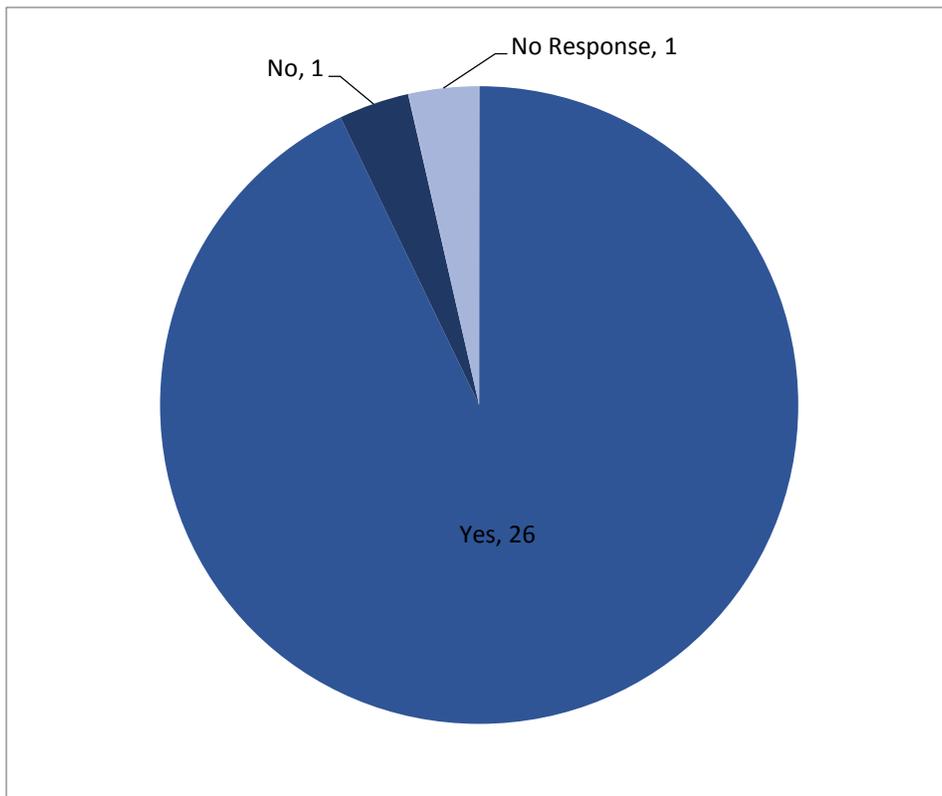
- Blue Earth County, all lakes - 11 surveys completed
- City of Lake Crystal, Lake Crystal, Loon and Mills - 10 Surveys completed
- City of Madison Lake, Ballantyne, Duck and Madison - 7 Surveys completed

The charts on the following pages display the responses to the written survey. An example survey is at the end of this report.

**Which jurisdiction do you represent?**

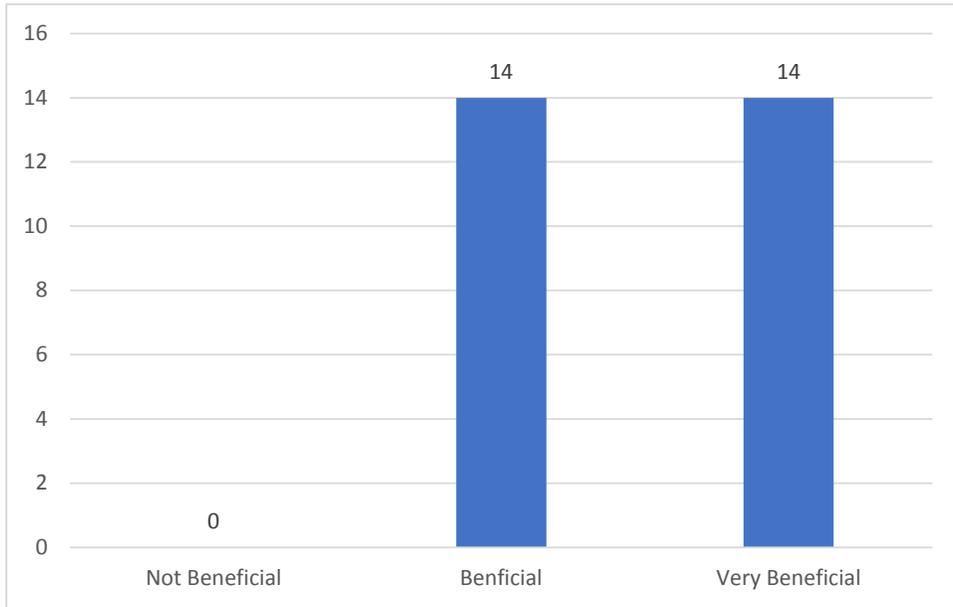


**Do you think your city/county has a role in protecting your lake water quality?**

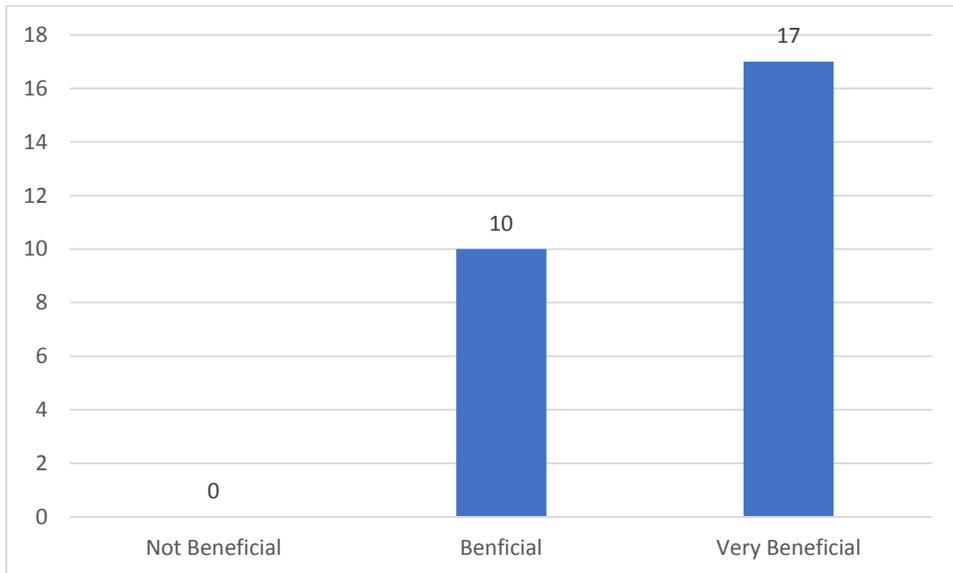


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Managing Construction Site Water Runoff**

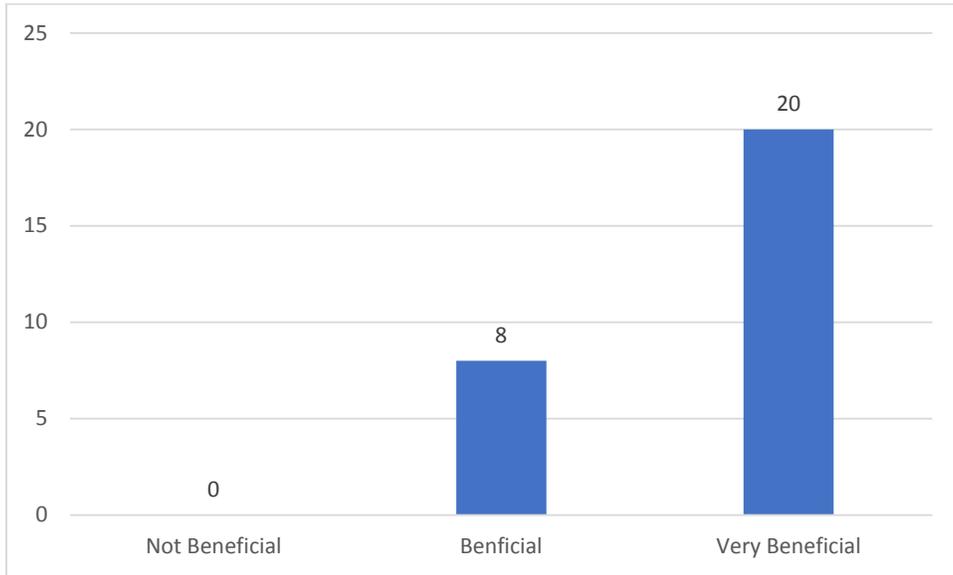


**Managing Stormwater Runoff from Existing Development**

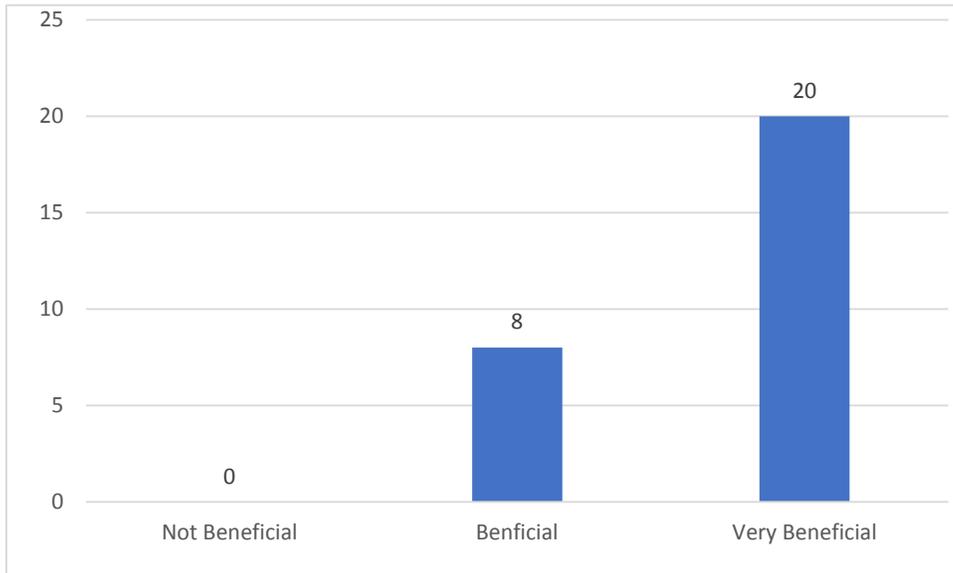


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Managing Stormwater Runoff from New Development**

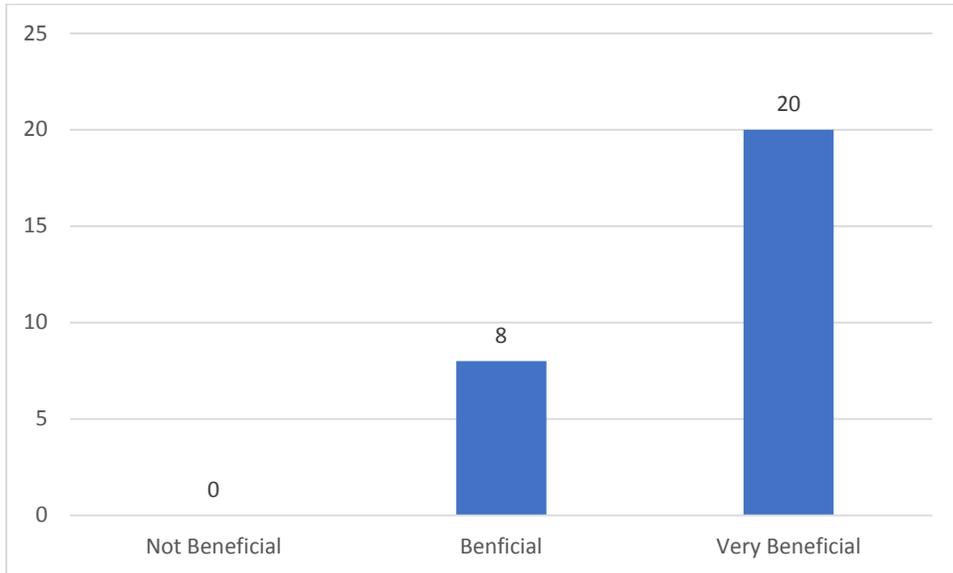


**Restoring Vegetation in And Near the Lakeshore**

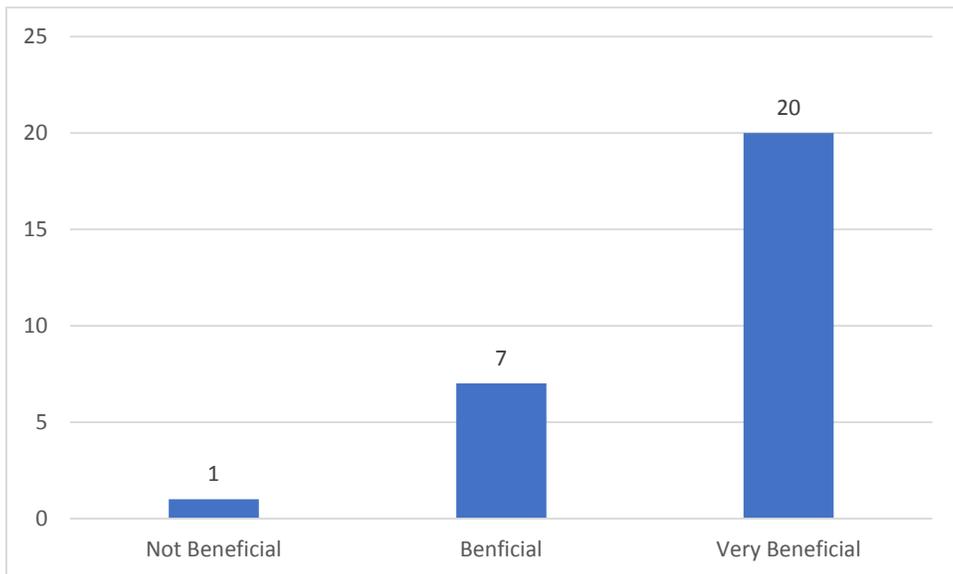


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Protecting Vegetation on Steep Slopes**

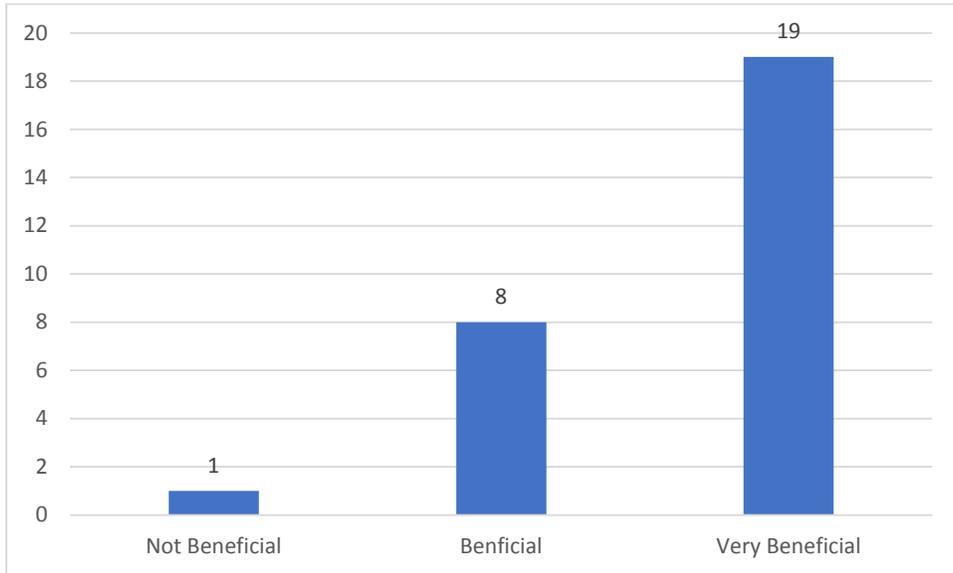


**Stabilizing Shorelines**

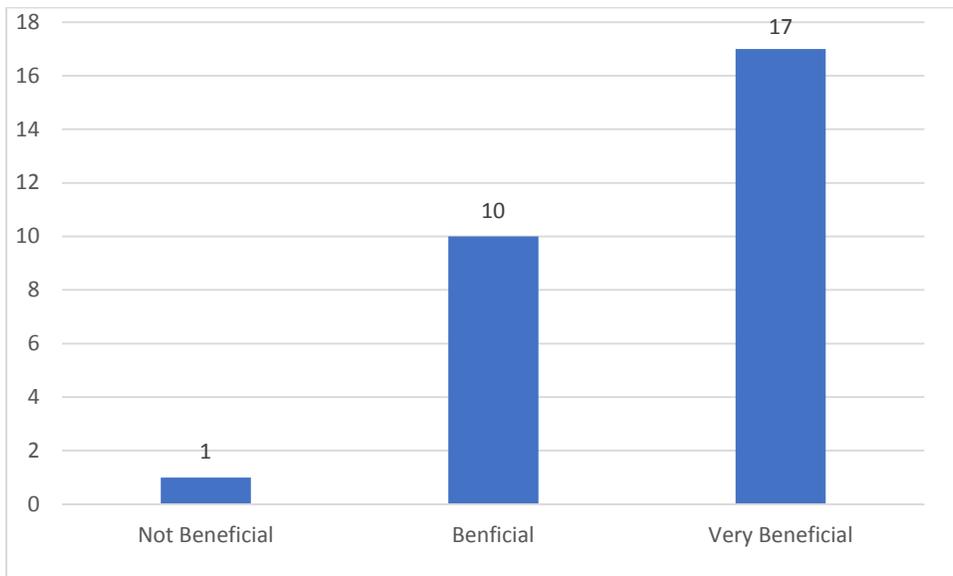


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Protecting Existing Wetlands**

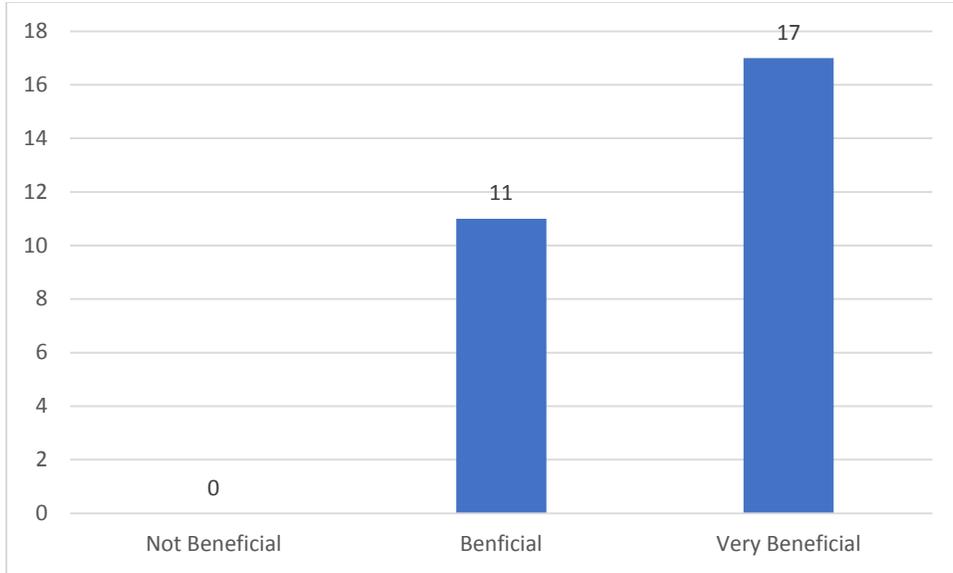


**Restoring Wetlands Near or in the Lake Watershed**

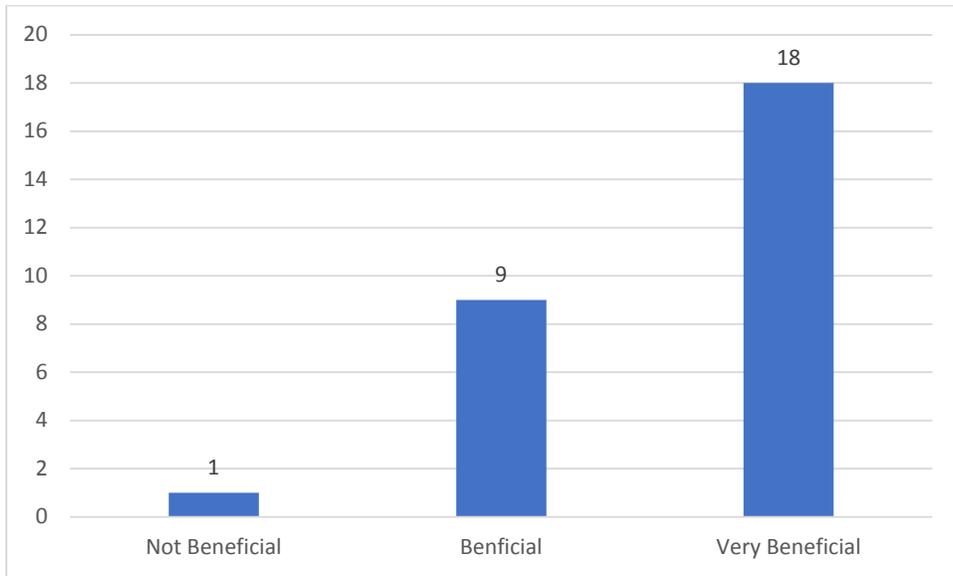


**How beneficial the following strategies are to lake water quality and the lake in general:**

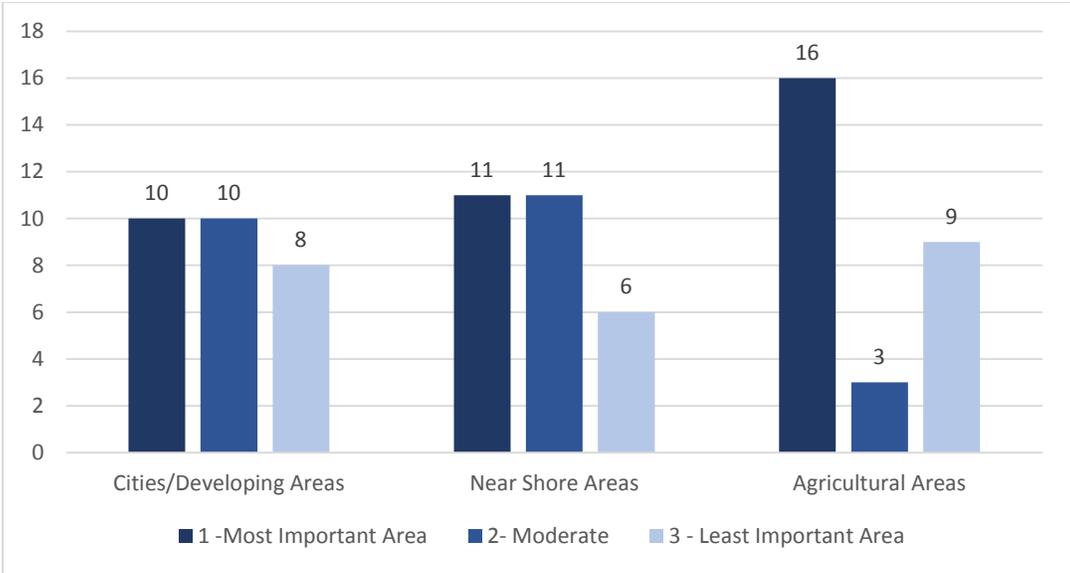
**Enforcing Shoreland Regulations**



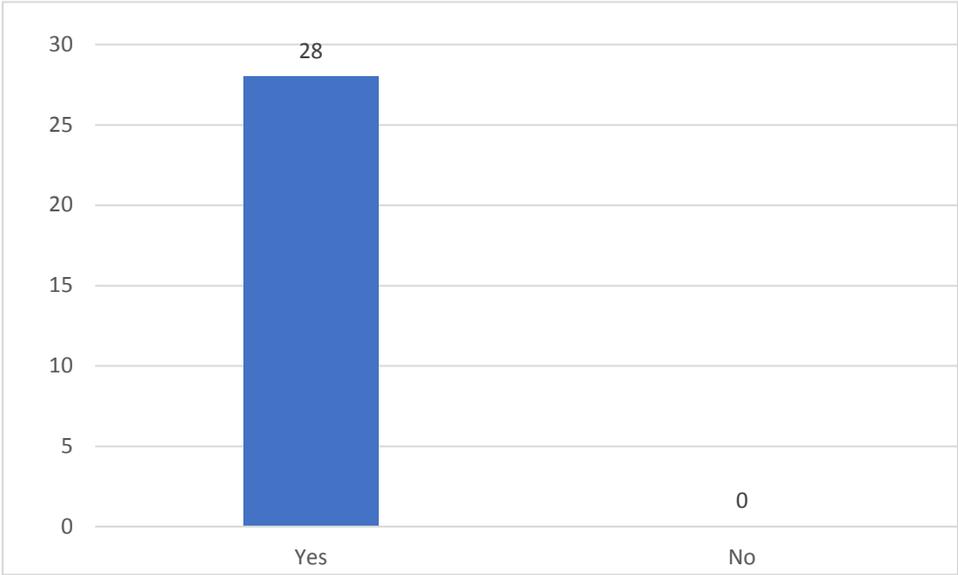
**Educating Citizens About Lake Watersheds**



Please rank from 1 to 3 the areas where you think efforts to protect lakes should be focused with 1 being the most important:



Did you find this seminar helpful?



## Written Comments Summary

**In the space below and on the back list any other strategies that you think may be beneficial for lakes:**

- “Need more local enforcement, education, and local officials involved with permitting, and to do surveying of current conditions of shorelands. Let's do river education, bluff erosion, H2O earth charging, & erosive conditions also related to river recreation. Why can't we do river shore cleanup. There's so many dead trees falling into the river. Let's cut down shore area trees and plant more riparian grasses, bushes, etc. - not these huge willows, etc.”
- “Education of the public is essential in getting better results. Anyone applying for a building permit on a river or lake should see a DNR presentation. Slides on a website - good idea!”
- “I think educating residents of the shoreland & shoreland impact zones as well as ag. Producers are the key to making improvements across a broad spectrum of water issues. I would propose creating a shoreland property owners certification program. Implementation could be achieved through a series of online educational courses with session quizzes to establish competency with land use standards. This program could maximize participation (voluntary) through property tax reductions as incentives upon certification. This could be modeled similarly to the over "55" Drivers Education (refresher classes) to obtain discounts on auto insurance. A pilot program could be implemented at county level.”
- “1) Quick contact list on anything shoreline related. 2) Mandatory review of local building/land use permits - one week review permit. Note: I love local control, but this is an area in which local decision makers have little expertise and knowledge. Furthermore, local government is not recognized as an authority on this issue.”
- “Would like a meeting to help City establish more effective shoreline ordinance with enforcement.”
- “1) Funding and assistance to cities to design/redesign adequate stormwater systems. 2) County drainage systems should address creating wetlands in system before it enters a public water.”
- “Holding ponds, before run-off enters lakes.”
- “Pick a lake. Then inventory properties that are good, fair, poor and bad. Protect through education and acknowledging the good. Improve the others with education and guidance.”
- “Neighborhood meeting with landowners.”
- “Run off, preserve/add natural vegetation.”

**Are there specific topics or areas related to tonight's topics on which you would like to learn more about (like stormwater, fisheries, shoreland rules, water quality results)?**

- Stormwater, shoreland rules
  
- 1) Demonstrations held during our Lake Days events. 2) Funding opportunities. 3) Partnering on grants.
  
- Stormwater management
  
- 1) Milfoil 2) Educate owners, cities.

## Lake Restoration and Protection Strategies – May 9, 2017 Survey

Please circle the jurisdiction or lakes you represent:

1. City of Lake Crystal - Crystal Waters Project, Crystal-Loon Recreation Association
2. City of Madison Lake – Ballantyne Lake Association, Duck Lake Preservation Association and Madison Lake Association
3. Blue Earth County – all lakes

Do you think your city/county has a role in protecting your lake water quality?

Yes                      No                      Not Sure

Please circle the value representing your opinion on how beneficial the following strategies are to lake water quality and the lake in general:

Strategy	Not Beneficial	Beneficial	Very Beneficial
Managing Construction Site Water Runoff	1	2	3
Managing Stormwater Runoff From Existing Development	1	2	3
Managing Stormwater Runoff From New Development	1	2	3
Restoring Vegetation In And Near The Lakeshore	1	2	3
Protecting Vegetation On Steep Slopes	1	2	3
Stabilizing Shorelines	1	2	3
Protecting Existing Wetlands	1	2	3
Restoring Wetlands Near Or In The Lake Watershed	1	2	3
Enforcing Shoreland Regulations	1	2	3
Educating Citizens About Lake Watersheds	1	2	3

Please rank from 1 to 3 the areas where you think efforts to protect lakes should be focused with 1 being the most important:

Cities/Developing Areas \_\_\_\_\_ Near-Shore Areas \_\_\_\_\_ Agricultural Areas \_\_\_\_\_

Did you find this seminar helpful?

Yes                      No                      Not Sure

**In the space below and on the back list any other strategies that you think may be beneficial for lakes.**

**Are there specific topics or areas related to tonight's topics on which you would like to learn more about (like stormwater, fisheries, shoreland rules, water quality results)?**

# YOUR LAKES

BALLANTYNE, DUCK AND MADISON

# YOUR WATERSHEDS



## OPEN HOUSE

Thursday, May 18, 2017

4:00 pm to 7:00 pm

Point Pleasant, 400 Sheppard Circle  
Madison Lake

You are invited to this Open House meeting for citizens in Ballantyne, Duck and Madison Lake watersheds.

Come anytime during the open house and join the conversation with your neighbors in the watershed and water quality specialists.

There will be experts from the Minnesota Department of Natural Resources (DNR) to answer questions about aquatic invasive species.

The Minnesota Pollution Control Agency (MPCA) will have results of recent lake monitoring. You will have the opportunity to suggest strategies that the MPCA can include in their ten-year Watershed Restoration and Protection Strategies (WRAPS) report for these lakes.

The photo above was taken at Duck Lake in 2013.  
Funding for this event is from MPCA and aquatic invasive species grants.

### OPEN HOUSE TOPICS

#### AQUATIC INVASIVE SPECIES

Get more information about aquatic invasive species. Experts from the DNR will be available to answer questions.

#### WATER QUALITY

Find out about water quality monitoring results and how your lakes meet state standards for water quality and aquatic life. Experts from the MPCA will be available to provide information.

#### STRATEGIES

You can suggest strategies for a ten-year plan to improve water quality in your lakes.

#### APPETIZERS AND BEVERAGES

pizza, cookies, pop and other snacks

# BLUE EARTH COUNTY CLEAN LAKES PROJECT CIVIC ENGAGEMENT REPORT

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PREPARED FOR:

BLUE EARTH COUNTY

PREPARED BY:

REGION NINE DEVELOPMENT COMMISSION

10 CIVIC CENTER  
PLAZA, 3<sup>RD</sup> FLOOR  
MANKATO, MN 56002  
SCOTT REITEN  
507-389-8880

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## BLUE EARTH COUNTY CLEAN LAKES PROJECT

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### I. INTRODUCTION

In the Spring of 2017, the Blue Earth County contracted with Region Nine Development Commission (RNDC) to facilitate civic engagement session to collect information from the citizens of Blue Earth County relating to issues with area lakes and to find courses of action and improvements to the area lakes of Duck and Ballantyne in the Middle Minnesota watershed and Madison Lake in the same City of Madison Lake community.

### II. APPROACH AND METHODOLOGY

RNDC's objective is to develop an engagement session to listen to the citizens from the area lakes in the Madison Lake area of Blue Earth County to capture what types of projects can be done to help improve the quality of the area lakes. The goal of this civic engagement is to inform Blue Earth County Environmental services about future projects which could be done to help improve water quality over the next 10 years.

Blue Earth County Environmental Services held an open house at Point Pleasant in Madison Lake on May 18th from 4 pm to 7 pm. The facility was setup with four different areas for people to discuss issues about the area lakes. The first table was for the lake of Madison Lake, the second was for Duck Lake, the third was for Ballantyne Lake, and the last table was for aquatic invasive species. Each of the three lake booths were staffed by Region Nine staff. Staff from Minnesota Department of Natural Resources, Blue Earth County Environmental Services, and Minnesota Pollution Control Agency were able to move from table to table to answer any questions or discussions with property owners.

We were pleased with the attendance and feedback received during this event. There was an atmosphere of cooperative learning and sharing that took form from the start as one to one discussions between the facilitators, and the public. It was easy to get the citizens to discuss an exchange of ideas to help form connections and plan for the future of the problems and solutions of each lake. As a result, both the facilitators and the stakeholders became more aware of the problems occurring in each lake, how some issues impact water quality, as well as what we might be able to do for the future of water quality in each lake.

### III. ISSUES FOR EACH LAKE

#### OVERALL

During analysis of the data collected during the civic engagement process we were able to identify some categories of the issues and solutions. The issue categories are current practices, erosion, invasive species, management infrastructure, policy/regulation, and water quality. The solutions categories are new policy, change in practices, physical structure improvements, treatment, education, and more resources.

#### DUCK LAKE

The analysis of the issues and solutions for Duck Lake have some different concerns from citizens.

The first issue for Duck Lake is the concern for the increase of weeds in the lake. Some residents state the weeds are causing fishing to be more difficult. One of the solutions to the weed problem is to educate the residents on what harmless chemicals and lawn fertilizers can be used to eliminate the weeds.

The second issue is a concern of policies and regulations for new development around the lake as it seems the lake area is getting crowded according to property owners. Residents feel the lack of policies and regulations have allowed new development to ruin shoreline and increase storm water runoff. A solution is to establish more setbacks from lake shore and have the lake association have some rules on what property owners can and can't do.

The third issue is lack of filtering of the water coming into Duck Lake. The new developments have a lack of holding ponds which allows storm water to run directly to the lake. One of the solutions to this problem is to place in holding ponds near the newest developments to help filter the storm water. Another solution is to add rain gardens around the lake in strategic areas to help filter the water.

The last issue is education is needed for all residents, recreational users, and government leaders to inform each group on best practices and solutions to improve and protect water quality. Some of the suggestions for education are: educate lake property owners on the use of chemicals and fertilizers, milfoil, long-term impacts, how to find funding for restoration projects, and what options do you have to help improve water quality.

The issues for on Duck Lake according to the citizens attending the open house are as follows:

<b>Insight</b>	<b>Theme</b>	<b>Text</b>
Problem	Current Practices	People have different drain tiles
Problem	Current Practices	Weed Control
Problem	Current Practices	Ag land and tile
Problem	Current Practices	Tearing up Lake Shore with silt fence
Problem	Current Practices	People don't know how to access funds
Problem	Current Practices	Chemicals and lawn fertilizer
Solution	Change in Practices	Plant grasses and flowers with deep roots
Solution	Change in Practices	Meet with farmers to identify best practices
Solution	Change in Practices	Natural grasses along shoreline
Solution	Change in Practices	Education to lake owners about how to kill weeds without using harmful chemicals in the lake
Solution	Change in Practices	Plants with deep roots

Solution	Change in Practices	Partnerships with farmers and lake association
Solution	Change in Practices	Planting more trees (had to take out when new roads were put in)
Solution	Change in Practices	Utilize sloughs more creatively
Solution	Change in Practices	Buffer strips
Solution	Treatment	Use lake friendly weed killer
Solution	Treatment	Lake Restoration
Solution	Treatment	Import hippos to eat shallow weeds
Solution	Treatment	Rip vegetation out of shallow parts of the lake
Problem	Management Structures	People have different drain tiles
Problem	Management Structures	Storm sewers are backing up
Problem	Management Structures	Annexation, created outlet that is 6 in higher
Problem	Management Structures	Drain Tiles
Problem	Management Structures	No holding ponds
Problem	Management Structures	Asphalt is not having proper drainage
Problem	Management Structures	Raw sewage
Problem	Management Structures	Ag land and tile
Problem	Management Structures	Tearing up Lake Shore with silt fence
Problem	Management Structures	Asphalt road dams water
Solution	Physical Structures	Resources to filter water before reaching lake
Solution	Physical Structures	Swamp area, dig out and use as holding ponds. (dig out with different elevations)
Solution	Physical Structures	Can pull more tiles to slough rather than to lake
Solution	Physical Structures	Control runoff of phosphorus
Solution	Physical Structures	Pond near new development to help filter culvert
Solution	Physical Structures	Storm sewer filter
Solution	Physical Structures	Rain Gardens
Solution	Physical Structures	Filter strip that can be flexible with thawing and freezing
Solution	Physical Structures	Put in holding area, holding ponds
Problem	Policy/Regulation	New home construction
Problem	Policy/Regulation	Development, new houses
Problem	Policy/Regulation	Crowded Lake
Problem	Policy/Regulation	People don't know how to access funds
Solution	Better Policy	Farmers to be certified to be recognized for best practices
Solution	Better Policy	Communication plan about implementation of action steps
Solution	Better Policy	More stringent setbacks from lake shore
Solution	Better Policy	Lake Associations make rules about no fertilizers or make rules about setbacks
Problem	Water Quality	Area closest to the farm muddy and green (blue green algae)
Problem	Water Quality	Hard to fish due to vegetation
Problem	Water Quality	Wind is bringing in fire particles into lake
Problem	Water Quality	Water visibility, water clarity

Problem	Water Quality	Wind, affecting certain parts of the lake more than others
Problem	Water Quality	Weeds are getting worse
Solution	Education	Utilize Duck Lake Preservation Association as communication tool
Solution	Education	Education- Is lake harmful?
Solution	Education	Farmers to be certified to be recognized for best practices
Solution	Education	Meet with farmers to identify best practices
Solution	Education	Education to lake owners about how to kill weeds without using harmful chemicals in the lake
Solution	Education	Education, which weeds are for the lake
Solution	Education	Milfoil education, neighbor to neighbor action steps
Solution	Education	Education on long-term impacts containing as they are improving
Solution	Education	Engage farmers as part of the problem - solving process
Solution	More Resources	Resources to filter water before reaching lake
Solution	More Resources	DLPA, more supported
Problem	Erosion	Tearing up Lake Shore with silt fence
Problem	Invasives	Hard to fish due to vegetation
Problem	Invasives	Milfoil in shallow areas
Problem	Invasives	Weeds are getting worse

#### **BALLANTYNE LAKE**

The analysis of the issues and solutions for Ballantyne Lake, have shown a few needs for the residents, City and County Staff, and recreational users.

The first issue is the concern of Gilfillin Lake. Most residents feel ever since the DNR drained Gilfillin Lake, Ballantyne Lake water quality has gone down, an increase in milfoil, and water levels are higher. A solution for this is to stop pumping Gilfillin Lake into Ballantyne. A project they felt would be necessary is to test Gilfillin Lake to see if the problems of the water quality are coming from there.

The second issue is the erosion of the shoreline on many properties throughout the lake especially on the North and West sides of the lake. One solution is to look at Hager outlet off of Jacks drive to slow the flow coming from the outlet. Another solution is to look at the outlet and up to Mud Lake to see if this outlet needs to be widened to help with high water level.

The third issue is lack of regulation and enforcement. It appears some properties are allowed (or just did it anyway) to place riprap on their shore and others are not allowed to do this (because the asked what they can do). A solution is enforcement and fines for property owners who violate shoreline rules and make the property owner pay for restoration of natural vegetation.

The fourth issue is a storm water drainage issue on Nutmeg Road. The storm water runs directly into the lake from yards and fields. A solution to this is to place a holding pond in the East edge of the road before it enters the lake to help filter water before entering the lake.

The fifth issue is the milfoil, other weeds, and the Carp. Carp have increased dramatically over the past couple of years and are decreasing the water quality. A solution is to find an organization willing to come take out the carp.

The issues for Ballantyne Lake according to the citizens attending the open house are as follows:

<b>Insight</b>	<b>Theme</b>	<b>Text</b>
Problem	Current Practices	Gilfillan drained into Ballantyne
Solution	Change in Practices	Stop pumping Gilfillan
Solution	Change in Practices	Test Gilfillan for nutrients phosphorus and weeds
Solution	Treatment	Test Gilfillan for nutrients phosphorus and weed
Problem	Erosion	Erosion of property
Problem	Erosion	Hager outlet flows fast and cutting away properties
Problem	Management Structures	Nutmeg Rd. water flows over the road
Problem	Management Structures	Nutmeg drainage issue
Problem	Management Structures	Water levels higher
Problem	Management Structures	Southeast inlet is very wide. Opened up 2016
Problem	Policy/Regulation	No enforcement or policies for all property owners
Solution	Better Policy	develop uniform policies
Solution	Physical Structures	Outlet - to be checked on
Solution	Physical Structures	Mudd Lake outlet further north loop into
Solution	Physical Structures	New holding ponds on east end of Nutmeg Rd.
Solution	Physical Structures	Southeast inlet - narrow
Problem	Invasives	Milfoil
Problem	Invasives	More weeds, more mud
Problem	Invasives	Carp population
Problem	Water Quality	More weeds, more mud
Problem	Water Quality	Carp population

## **MADISON LAKE**

The analysis of the issues and solutions for Madison Lake, have shown a few needs for the Madison Lake residents, City and County Staff, and recreational users.

The first issue for Madison Lake is the concern of agricultural drainage to the lake. Some residents feel more water is coming into the lake from the area fields and is the cause for higher water which impacts erosion to the shoreline. A solution to this issue is to place holding ponds and rain gardens near lake for agricultural drainage.

The second issue is the lack of regulation and enforcement. With increase in new property development around the lake many feel the projects are not held to regulations to protect the lake and the city and county need to make sure they are doing their part on every project. A solution is to have ordinances the county and city can use and enforce.

The third issue is erosion of the shoreline and is due to both of the first two issues.

The last issue seems to be education for all residents, recreational users, and government leaders to inform each group on best practices and solutions to improve and protect water quality. An education program for property owners.

The issues for Madison Lake according to the citizens attending the open house are as follows:

<b>Insight</b>	<b>Theme</b>	<b>Text</b>
Problem	Current Practices	Farm Land right up to county ditches
Problem	Current Practices	Mowing to the water's edge
Problem	Current Practices	Poor managed development projects
Problem	Current Practices	Lake is a reservoir for Ag Drainage
Problem	Current Practices	Straight pipe tile dumping in the lake
Problem	Current Practices	Farmland on former wetlands on lake shore
Problem	Current Practices	Ag Drainage- too much for ditches
Problem	Current Practices	City Management of storm water
Problem	Current Practices	Chemical treatments kill non-target vegetation
Solution	Change in Practices	Directive from commissioners on county park management
Solution	Change in Practices	County Implement DNR Best Management Practices on its land
Solution	Change in Practices	Rain gardens on lake shore property
Solution	Change in Practices	10 acres of farm = 1acre holding pond
Solution	Change in Practices	Buffers
Solution	Change in Practices	Copper sulfate
Problem	Erosion	Land lost to rising water levels
Problem	Erosion	Severe Shoreline erosion
Problem	Erosion	Wave action on grassed lake shore
Problem	Erosion	Ice ridge formation
Problem	Erosion	Eroding shoreline
Problem	Erosion	High water problem
Problem	Erosion	Ice ridge pushing rocks shorelines
Problem	Management Structures	Lake is a reservoir for Ag Drainage
Problem	Management Structures	High water problem
Problem	Management Structures	Straight pipe tile dumping in the lake
Problem	Management Structures	Ag Drainage- too much for ditches
Problem	Management Structures	Water is so high, inlets have become outlets
Solution	Education	Voluntary education programs for shoreline owners
Solution	More Resources	Grants for restored wetlands
Solution	Physical Structures	Rain gardens on lake shore property
Solution	Physical Structures	10 acres of farm = 1acre holding pond
Solution	Physical Structures	Riprap
Solution	Physical Structures	Better communication between parties
Solution	Physical Structures	Better sewer systems
Problem	Policy/Regulation	Poor managed development projects
Problem	Policy/Regulation	Counties are not implementing on county projects
Problem	Policy/Regulation	Lots of after the fact variances
Problem	Policy/Regulation	Grandfathered forms
Problem	Policy/Regulation	Zoning and setbacks- Big Difference
Problem	Policy/Regulation	City Management of storm water
Solution	Better Policy	Directive from commissioners on county park management
Solution	Better Policy	Better communication between parties
Problem	Water Quality	Invasives create more phosphorus
Problem	Water Quality	Green Algae
Problem	Invasives	Milfoil Spreading
Problem	Invasives	Milfoil
Problem	Invasives	Invasives create more phosphorus
Solution	Treatment	Copper sulfate













**OPEN HOUSE**  
**SURVEY RESULTS**

**Point Pleasant – Madison Lake**

**Thursday, May 18, 2017**

## Background

An Open House meeting was held for all land owners in the Duck Lake and Lake Ballantyne watersheds. The Madison Lake Association was included because the three lakes are part of the same community and Madison Lake has a direct groundwater connection with the Minnesota River. Invitations to the Open House meeting were mailed to 320 property owners (640+ individuals) in the Duck Lake and Lake Ballantyne watersheds three weeks prior to the meeting. The Madison Lake Association emailed an invitation to lake association members. The meeting was held at Point Pleasant Resort in Madison Lake from 4 pm -7 pm on May 18, 2017.

The meeting room was set up with a large table and wall-size aerial photos and maps for each lake. There was also an Aquatic Invasive Species (AIS) table with DNR staff to answer questions about AIS. MPCA, Blue Earth County and DNR staff were available to provide information and answer questions and at least one person was stationed at each table.

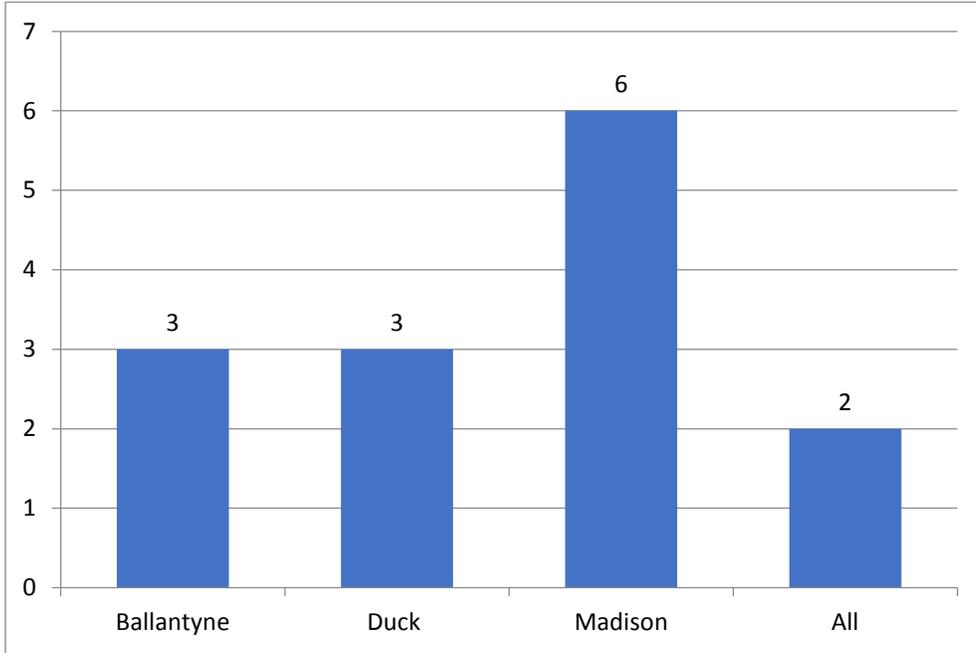
Region 9 staff were at each lake's table talking with attendees about problems and solutions and assisting participants with posting "sticky notes" showing problems and solutions on a large chart. Following the meeting Region 9 staff analyzed information collected from citizens and developed a summary report.

Written surveys were available for participants to utilize in addition to or instead of face-to-face conversations with consultants and staff who recorded their comments about problems and solutions. There were 27 Duck and Ballantyne watershed residents and 15 Madison Lake residents who "signed in" at the Open House. A total of 14 surveys were completed by the attendees from the following jurisdictions.

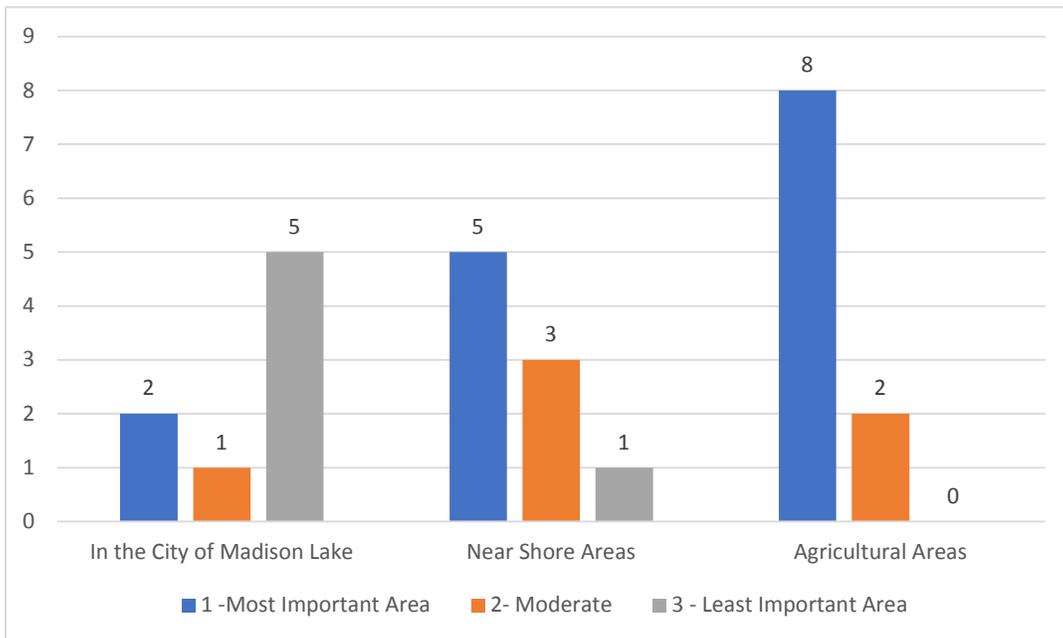
- Duck or Ballantyne – six surveys
- Madison Lake – six surveys
- All three lakes – two surveys

The charts on the following pages display the responses to the written survey. The survey is also included at the end of this report for reference.

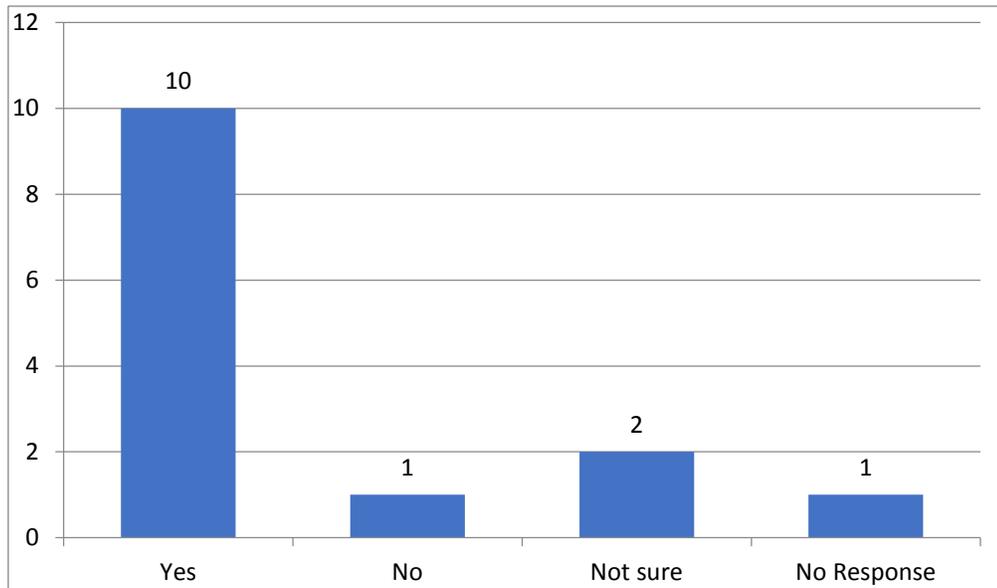
**Which lake is most important to you?**



**Please rank from 1 to 3 the areas where you think efforts should be focused in your lake watershed to protect water quality with 1 being the *most* important:**

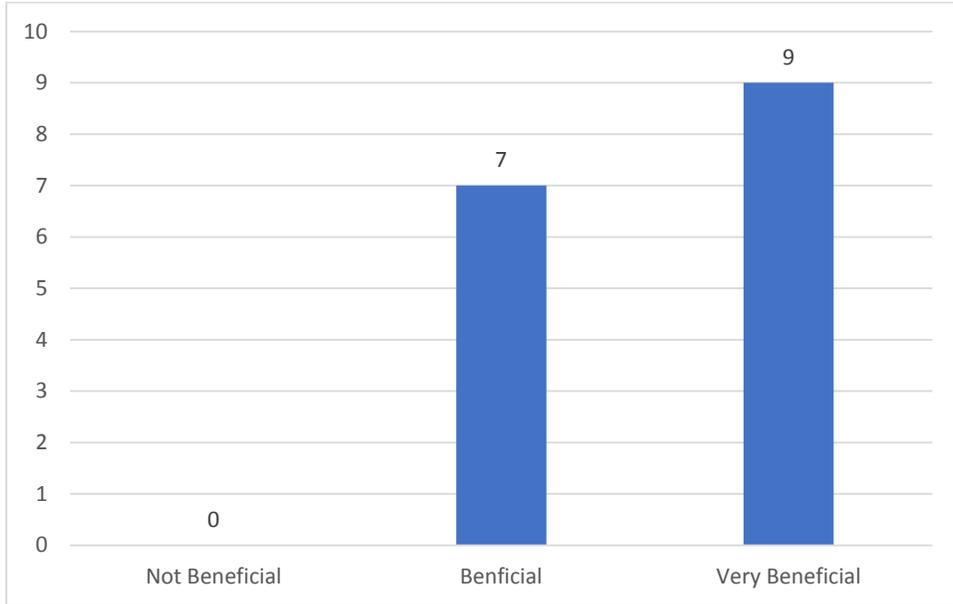


**Please tell us if you think you can make a difference in lake water quality and wildlife habitat.**

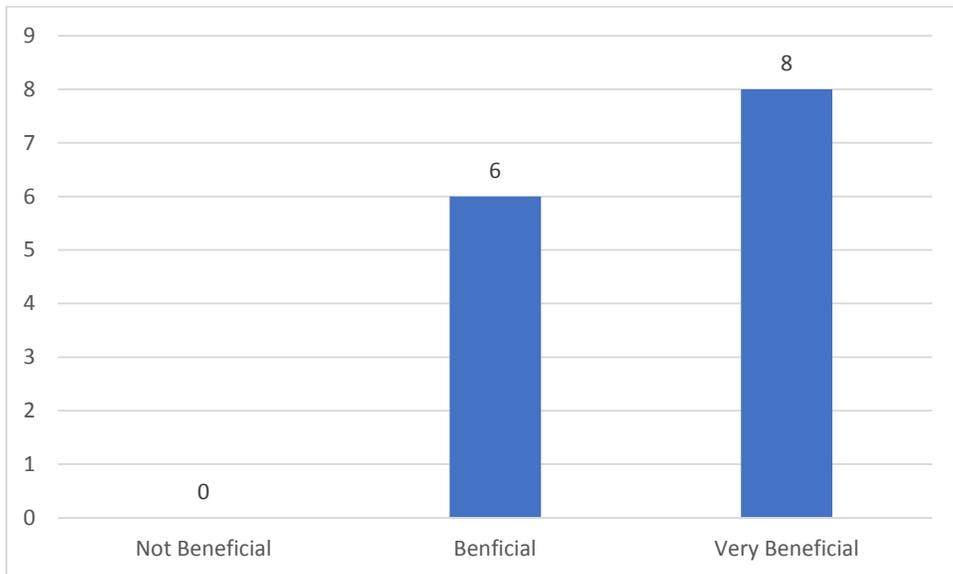


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Managing Stormwater Runoff from Construction Sites**

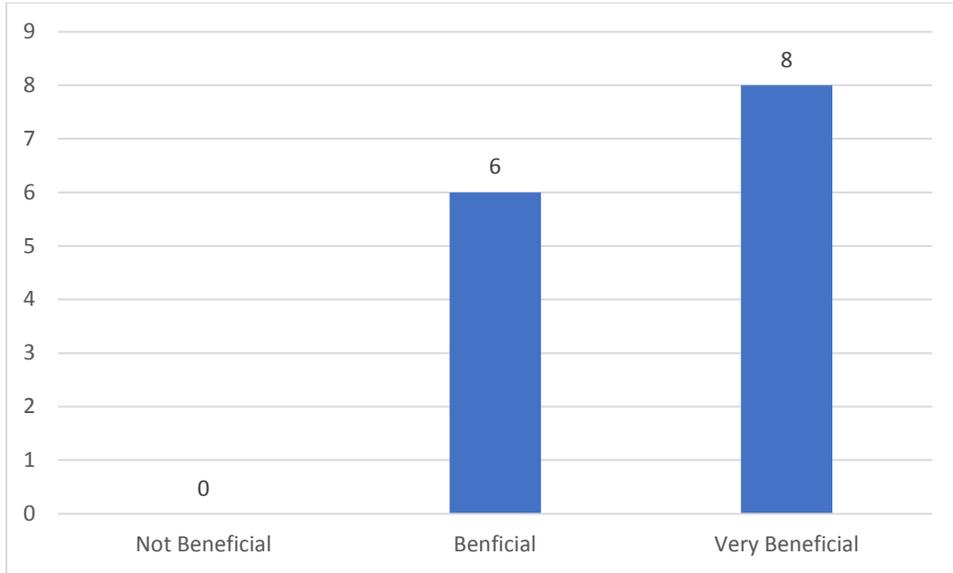


**Managing Stormwater Runoff from Existing Development**

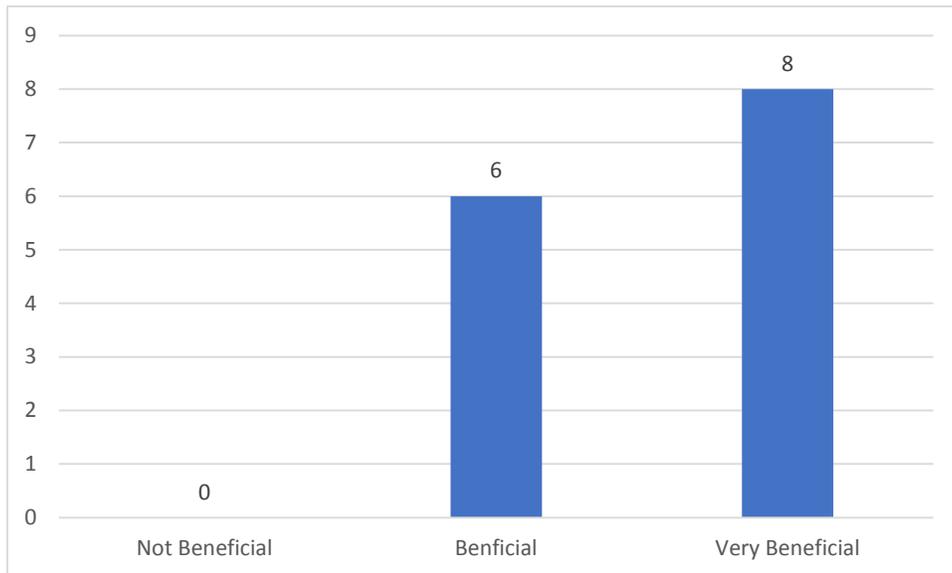


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Managing Stormwater Runoff from New Development**

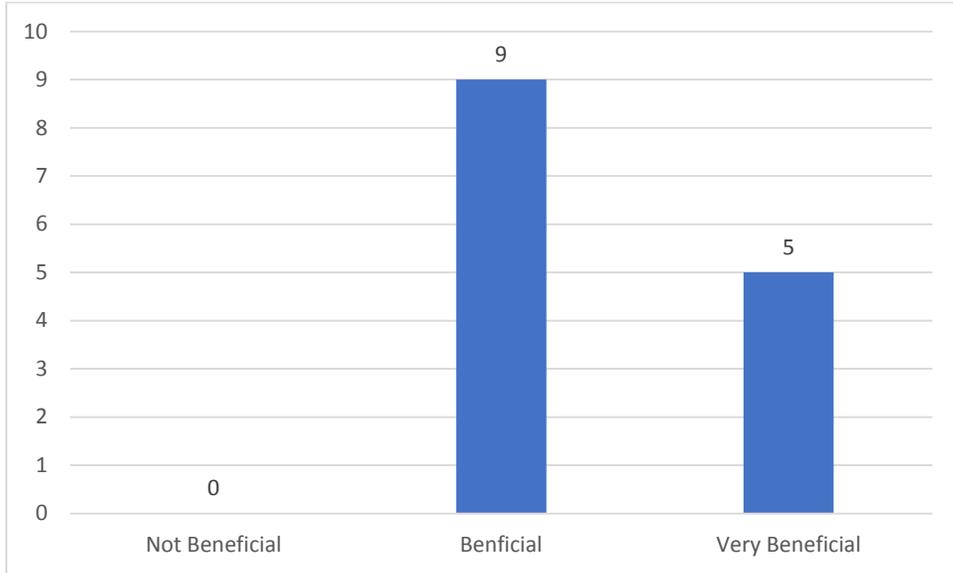


**Restoring Vegetation in and Near the Lakeshore**

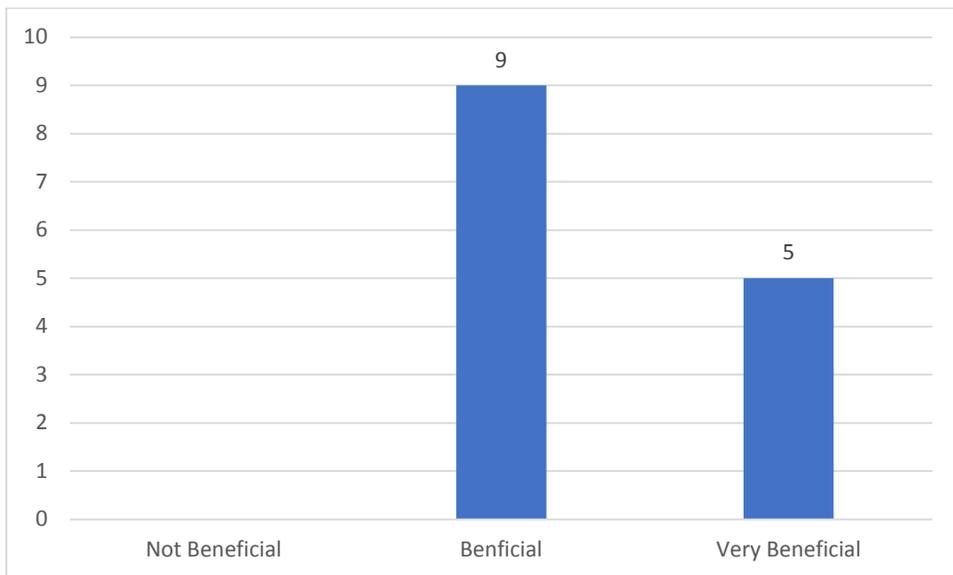


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Protecting Vegetation on Steep Slopes**

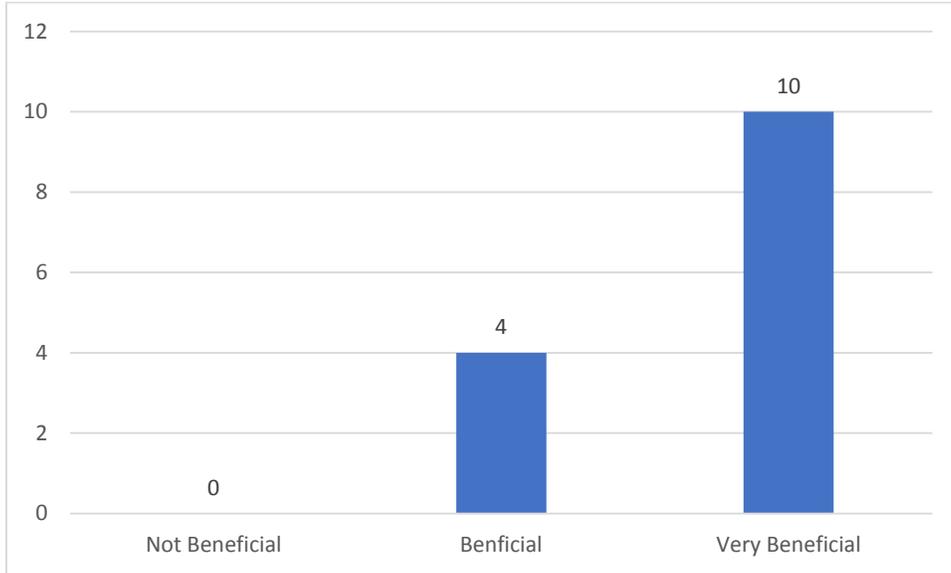


**Stabilizing Shorelines**

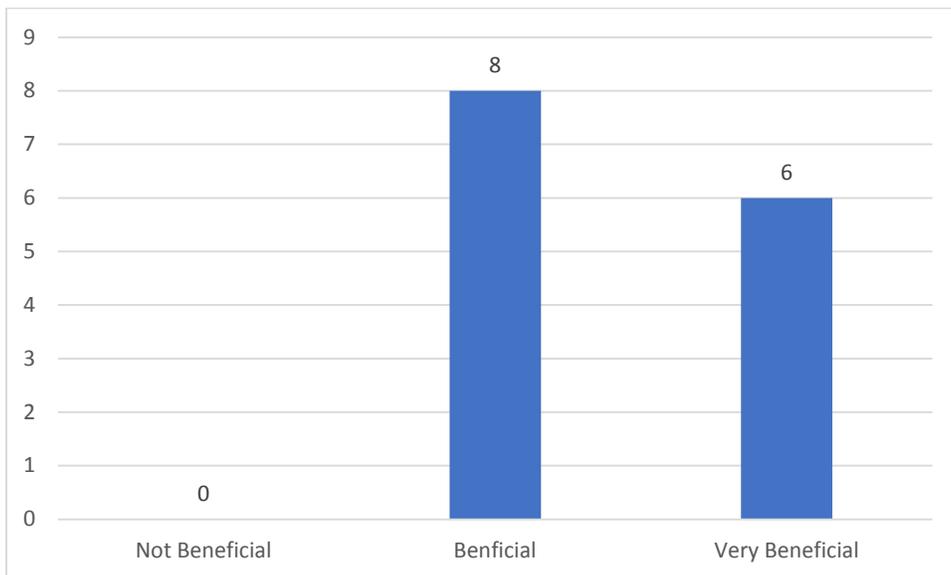


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Protecting Existing Wetlands**

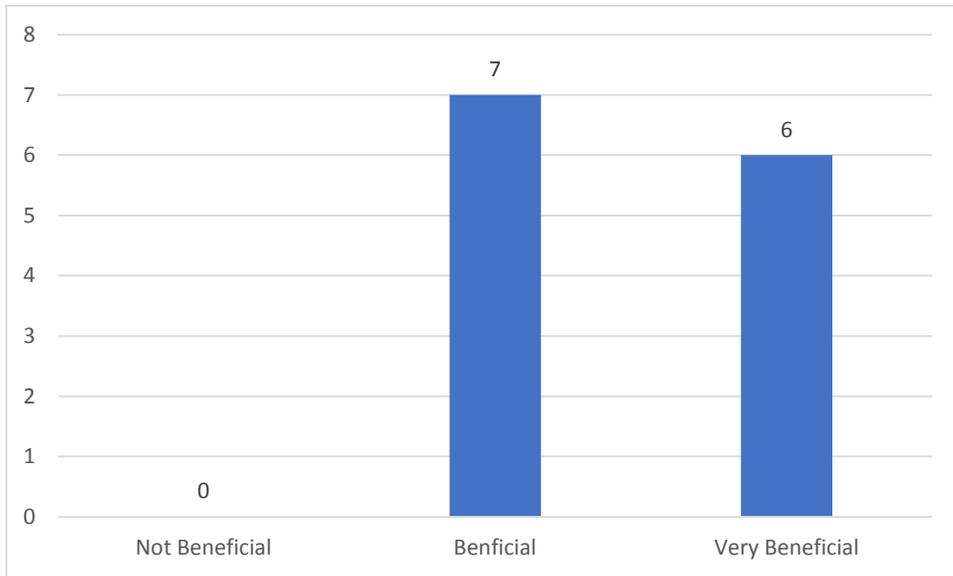


**Restoring Wetlands Near or in the Lake Watershed**

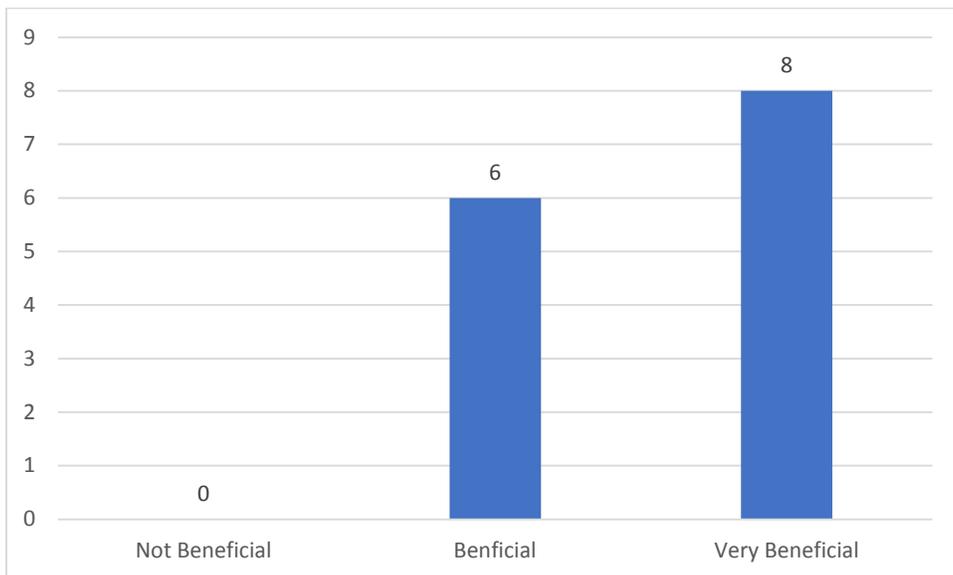


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Enforcing Shoreland Regulations**

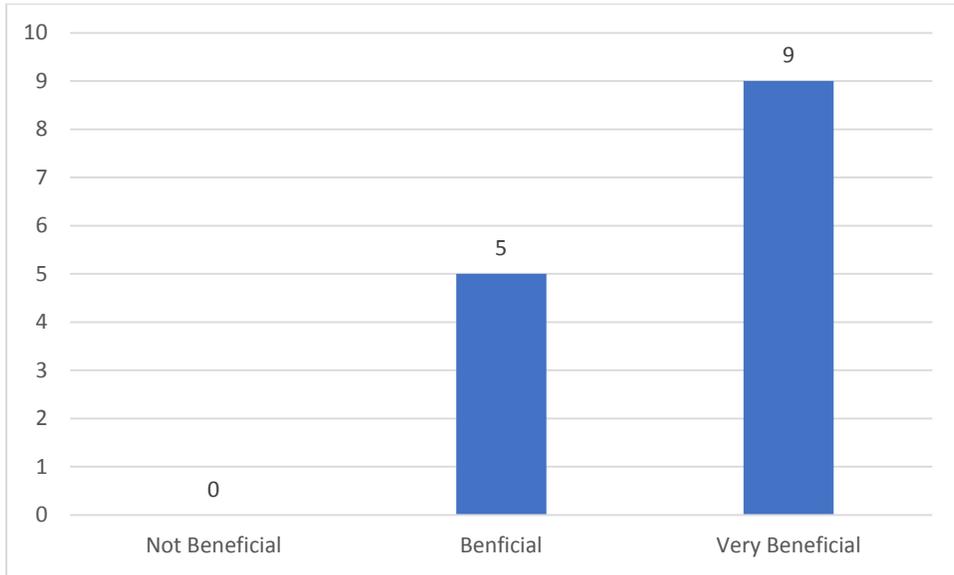


**Educating Citizens about Lake Watersheds**

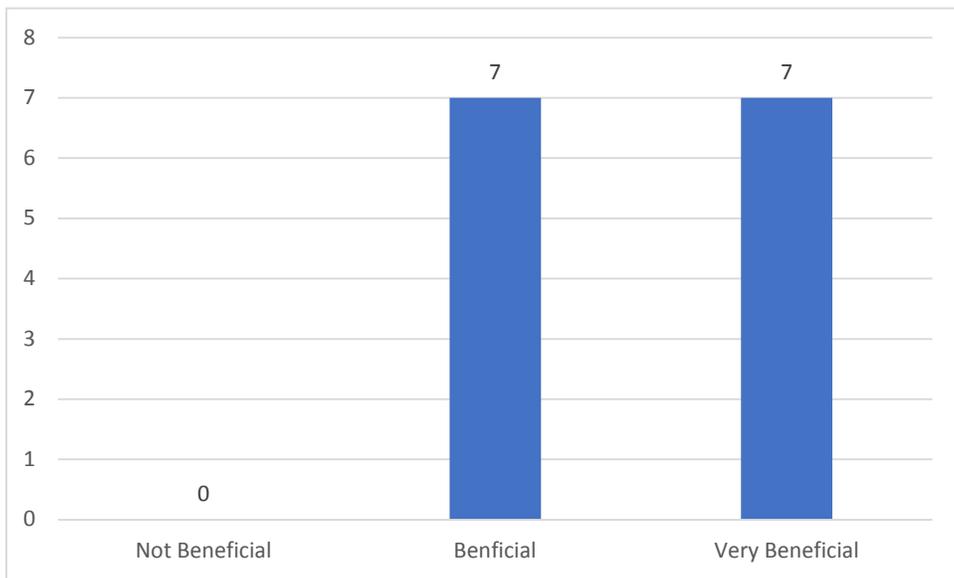


**How beneficial the following strategies are to lake water quality and the lake in general:**

**Nutrient management**

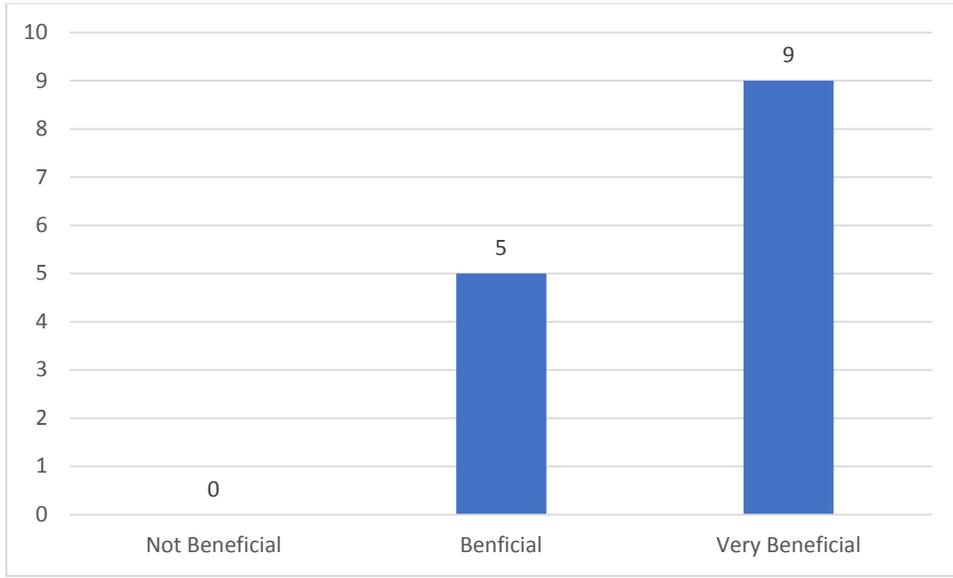


**Cover crops and soil health**

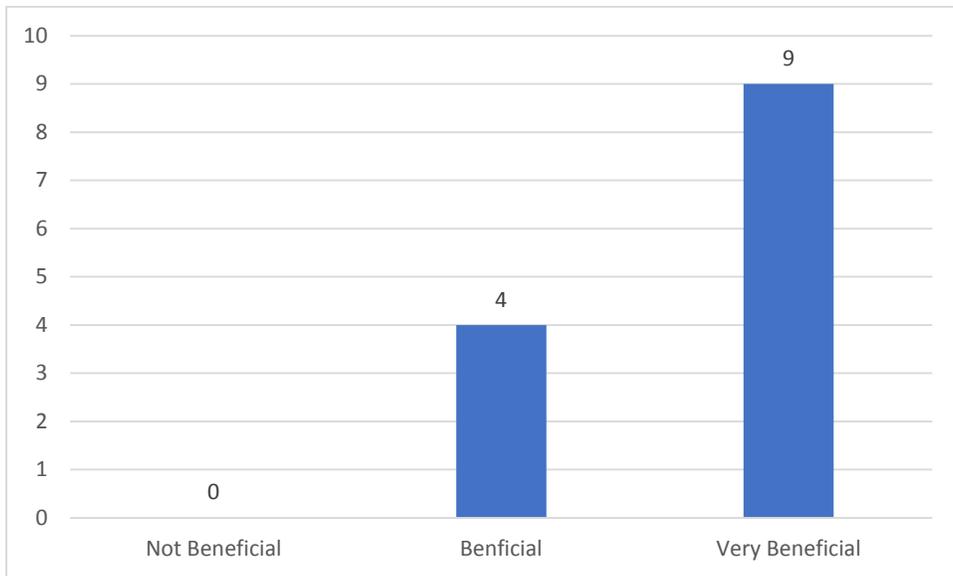


**How beneficial the following strategies are to lake water quality and the lake in general:**

Water storage and treatment practices



Crop tillage practices



**In the space below, please make other comments or any other strategies you think may be beneficial in your watershed.**

- “Better drainage from stormwater. New construction and development needs a filtration pond by it instead of going through the culvert first.”
- “Individual respect for shoreline registration. Check before you dig or remove present area. Pick up your area. We need more participation on our spring and fall road pick up.”
- “The annexation into the City of Madison Lake doesn't appear to have improved lake quality. There are remaining concerns about the construction project. I hope the MPCA doesn't force annexations of other county lakes. Let cabin owners get septic systems compliant.”
- “Holding ponds on farm fields. Do not let water drain into lakes. Why copper sulphate cannot be used.”
- “Have home visits to educate willing homeowners to figure out what to do with their property - short-term and long-term goal setting.”
- “Need to do more than fine people who change their shorelines. Too many people just "do and ask forgiveness" later. Shouldn't just fine people who break the rules, but also make them (or charge them ) to restore the property to its original state.”
- “1) Wetland restoration, 2) Created wetland banks within watersheds, 3) Tile flow, not sure how?, 4) No wake zones around lake.”

## Lake Restoration and Protection Strategies

The purpose of this open house meeting is to learn what strategies citizens think are needed to protect and restore water quality in area lakes. This information will be used by Blue Earth County and the Minnesota Pollution Control Agency in upcoming watershed plans and reports to better target our work in the coming years. *Thank you for coming today!*

1. Please circle which lake is most important to you.    Madison Lake    Duck Lake    Lake Ballantyne

2. Please rank from 1 to 3 the areas where you think efforts should be focused in your lake watershed to protect water quality with 1 being the *most* important:

In the City of Madison Lake \_\_\_\_\_    Near-Shore Areas \_\_\_\_\_    Agricultural Areas \_\_\_\_\_

3. Please tell us if you think you can make a difference in lake water quality and wildlife habitat.

\_\_\_\_\_ Yes, I can make a difference in water quality or wildlife habitat

\_\_\_\_\_ No, my actions won't make a difference in water quality or wildlife habitat

\_\_\_\_\_ I'm not sure

4. Please circle the number representing your opinion about the benefit of the following strategies for your lake and watershed.

Strategy	Not Beneficial	Beneficial	Very Beneficial
Manage stormwater runoff from construction sites	1	2	3
Manage stormwater runoff from existing developments	1	2	3
Manage stormwater runoff from future new development	1	2	3
Restore vegetation in and near the lakeshore	1	2	3
Protect vegetation on steep slopes	1	2	3
Stabilize shorelines	1	2	3
Protect existing wetlands	1	2	3
Restore wetlands near the lake	1	2	3
Enforce Shoreland Regulations	1	2	3
Educate citizens	1	2	3
Nutrient management	1	2	3
Cover crops and soil health	1	2	3
Water storage and treatment practices	1	2	3
Crop tillage practices	1	2	3

**Please make additional comments or suggest more strategies on the next page.**



# Middle Minnesota Civic Engagement

## Le Sueur County

Through the WRAPS process for the Middle Minnesota Watershed, Le Sueur County worked to engage its citizens by attending an Annual Lake Association meeting, holding an informational meeting, and through a survey.

A presentation was given at the Annual Lake Washington Improvement Association's Annual Meeting on August 23<sup>rd</sup>, 2016. Approximately 110 people attended the meeting. At the meeting, general information about the WRAPS process and its importance to water quality planning was discussed. Through a Q&A session, concerns from area property owners were addressed.

Le Sueur County held a public meeting at the Lake Washington County Park Community Room from 7-9pm on Wednesday, June 7<sup>th</sup> 2017 to provide information about shoreland ordinances, lake health, and water quality for Lake Washington. Thirty nine lake shore property owners attended the meeting from various locations around Lake Washington.

An introduction was done by Joshua Mankowski with a brief summary of the results from a survey that was passed out at last Falls Lake Washington Improvement Association's Annual Meeting.

Mike Schultz, Le Sueur County SWCD then presented a summary of the results from primary producer interviews.

Garry Bennett presented on the hydrology of Lake Washington in its associated watershed.

Craig Soupir gave a presentation on shoreline minimum standards established by the DNR and the fisheries of Lake Washington.

Bryan Spindler presented on the current Middle Minnesota WRAPS process.

Local concerns voiced at the meeting:

- Implementation of cover crops in the Lake Washington Watershed: Le Sueur SWCD has a county wide initiative to implement cover crops. There are currently no cover crops in the Lake Washington watershed but work is being done to change this.
- Concerns about aquatic vegetation management: Discussion with the DNR about issuing permits for spraying aquatic vegetation. Lake Washington is at about the maximum acreage of allowable spraying. To permit spraying in new

areas, current efforts would need to shift. There was discussion about the importance of aquatic vegetation as fish habitat and the correlation with increased aquatic vegetation and increased water clarity.

- Difficulties and frustrations with shoreland regulations: There was a presentation about the minimum standards drafted by the DNR that is the basis for the County's shoreland ordinances.
- AIS: Discussion about AIS Prevention Funding received by the County. Discussion about current efforts being undertaken by the County with enforcement and education. A portion of the funds are also set aside to be used by the Lake Association if they would like to submit a proposal.
- Developed shoreline: Concerns with the conversion of natural shoreline into developed shoreline and the associated impact to lake quality were discussed. Developing a shoreline, removing the natural vegetation, will have negative impacts on the water quality and lake ecosystems. It is important to work towards reducing impacts and possibly restoring shorelines.
- LGU: Concerns with shoreline regulations in Le Sueur County were discussed. It is general consensus that most lakeshore property owners have issues understanding why some regulations are being implemented and difficulties navigating through the process. The cost of permitting is also thought to be a barrier to completing projects. There was discussion about the need for Condition Use Permits (CUP), why there are Variances and the possibility of completing smaller projects with a Land Alteration Plan instead of going through the CUP process.
- Funding concerns: Questions were asked about possible funding for shoreline projects. The DNR had a program at one time but it is no longer funded. The County may have some funding available depending on the parameters of the proposed project. If there are larger projects or projects that are being done with the assistance of the Lake Association, there may be additional funding. The County (both the County and SWCD) will keep a list of possible project increase funding come available so please contact us.

At the Lake Washington Improvement Association meeting, a survey was distributed to those in attendance to gather additional information about the local concerns. One hundred and eight surveys were distributed, 27 were returned for a response of 25%. The survey was also mailed to each property owner around Lake Emily (62 parcels), the other major Le Sueur County lake located in the watershed. Of the surveys sent, eight were returned for a response of 13%. The results from each survey can be seen on the following pages.

Lake Washington  
Middle Minnesota Watershed Questionnaire

1. What do you like about where you live?  
Great people (18.5%), Good County cooperation (3.7%), The Lake(92.6%), Water Quality (7.4%), Peace & Quiet (11.1%), Rural setting (3.7%), Environment/Nature (14.8%), Lake Association (11.1%), Beach (3.7%), Enjoy aquatic recreational activities (11.1%)
2. What are your priority concerns about your community?  
Water Quality (57.9%), Shoreland management (3.7%), Ag management (3.7%),Community Involvement (3.7%), Follow guidelines (3.7%), Future quality of the Lake (3.7%), Safety (3.7%),Erosion (7.4%), Increased spraying for aquatic vegetation (3.7%), Amount of money spent on large projects (3.7%), None (3.7%),Run-off (3.7%), Preservation of fish habitat (3.7%),Milfoil control (3.7%), AIS Inspections (3.7%),Wetland improvements (3.7%), Parkland (3.7%)
3. What part of the year do you live on your lake property?
  - a) Full time (70.4%)
  - b) ½ year (14.8%)
  - c) Seasonally (11.1%)
  - d) Holidays and weekends (0%)
4. How likely do you believe your community would rally around an issue, opportunity or problem? 1-5, 1-being not likely and 5-being highly likely. \_\_\_\_\_
  - 1 (0%)
  - 2 (3.7%)
  - 3 (33.3%)
  - 4 (18.5%)
  - 5 (37.0%)
5. Are there any groups or organizations in your area that are trusted by your community
  - a) Lake Association (100%)
  - b) Knights of Columbus (3.7%)
  - c) VFW (14.8%)
  - d) Sportsman's Group (7.4%)
  - e) other \_\_\_\_\_()
6. Would any of the following programs or conditions increase the likelihood that you would implement a conservation practice on your shoreland property?
  - a) Payments (22.2%)
  - b) Cost-share (48.1%)
  - c) Technical assistance (70.4%)
  - d) Success stories (29.6%)
  - e) other \_\_\_\_\_ ()

7. How important are local water resources (streams, lakes) to you and your family?  
1-5, 1-not important, 5-very important \_\_\_\_\_
- 1 (0%)
  - 2 (3.7%)
  - 3 (0%)
  - 4 (7.4%)
  - 5 (88.9%)
8. How important are local water resources (streams, lakes) to your community?  
1-5, 1-not important, 5-very important \_\_\_\_\_
- 1 (0%)
  - 2 (0%)
  - 3 (7.4%)
  - 4 (14.8%)
  - 5 (70.4%)
9. How concerned are you about the current state of local water resources?  
1-5, 1-not concerned, 5-very concerned \_\_\_\_\_
- 1 (0%)
  - 2 (3.7%)
  - 3 (22.2%)
  - 4 (18.5%)
  - 5 (55.6%)
10. What do you believe to be the biggest concern impacting water quality in your area?
- a) Algae Blooms (51.9%)
  - b) Aquatic Vegetation (40.7%)
  - c) Ag runoff (48.1%)
  - d) Invasive Species (33.3%)
  - e) Other (please specify) Residential landscaping . (3.7%)
11. Who is responsible for the quality of water in your area?
- a) Local property owners (51.9%)
  - b) County (44.4%)
  - c) State (37.0%)
  - d) Ag community (40.7%)

12. What is your view of farming in your area?

Buffer law will help (3.7%), Chemicals (3.7%), Run off (7.4%), Still using outdated practices (3.7%), Good Stewards (29.6%), Doesn't benefit the lake (3.7%), Unaware of environmental impacts (3.7%), Need more buffers and ponds (7.4%), Need to be held responsible for water degradation (3.7%), Poor drainage management (11.1%), Over fertilizing (3.7%), Farming future depends on improving environmental impacts (3.7%), Ok (7.4%), Positive (3.7%), more Ag (3.7%), Necessary and appropriate (3.7%).

13. How would you describe farming in your area?

Very intensive (14.8%), Slow to embrace new conservation practices (3.7%), Good farmers (22.2%), Self-interested (3.7%), Large (7.4%), Hard to regulate (3.7%), Protected (3.7%), Family-farms (3.7%), Attentive farmers (11.1%), Heavily dependent on fertilizers (3.7%), Need buffers (3.7%), Fine proximity to lake (3.7%), Polluters (3.7%), Proactive (3.7%), Average (11.1%), Don't know (3.7%), Prosperous (3.7%), Tiling (3.7%).

14. What concerns do you have about farming in your area?

Very intensive (14.8%), Slow to embrace new conservation practices (3.7%), Good Farmers/stewards (22.2%), Self-interested (3.7%), Large (7.4%), Hard to regulate (3.7%), Protected (3.7%), Family farms (3.7%), Attentive farmers (11.1%), Heavily dependent on fertilizers (3.7%), Need buffers (3.7%), Fine proximity to the lake (3.7%), Polluters (3.7%), Proactive (3.7%), Average (14.8%), Don't know (3.7%), Prosperous (3.7%), Tiling (3.7%).

15. If you could change something about farming, what would it be?

Increase water retention in watershed (7.4%), Reduce/change tile and field inlets (22.2%), Increase buffers (11.1%), Wetland restorations (7.4%), Nothing (11.1%), Chemical/fertilizer use (14.8%), Erosion management (3.7%), Less Government (3.7%), Already reducing tiling, fertilizer and chemical use (3.7%), Don't know (3.7%).

16. What, if any, conservation practices do you have in place on your property (rain garden, buffer, rain barrel, etc.)?

Buffer (37%), Rain garden (14.8%), Low/no lawn fertilizer/spraying (11.1%), Closed sewer system (3.7%), Grassed waterways (3.7%), Terracing (3.7%), Rain barrels (11.1%), None (7.4%), Shoreline restoration (14.8%), None (3.7%), Rip rap (3.7%).

17. Rank the following issues in order from most important (1) - least important (5).

1 (53) Agricultural runoff

2 (57) In-lake issues (vegetation management, invasive species, etc.)

3 (67) Erosion

4 (79) Stormwater

5 (88) Septic system

Lake Emily  
Middle Minnesota Watershed Questionnaire

1. What do you like about where you live?  
Quiet (12.5%), Environment/Nature (100%), Country living/privacy (37.5%), The Lake (25%), Location (12.5%)
2. What are your priority concerns about your community?  
Water quality (62.5%), Algae blooms (12.5%), AIS (12.5%), Drinking water (12.5%), Taxes (12.5%), Safety (12.5%), Stay like this (12.5%), Less Government regulations (12.5%).
3. What part of the year do you live on your lake property?
  - a) Full time (75%)
  - b) ½ year (0%)
  - c) Seasonally (12.5%)
  - d) Holidays and weekends (12.5%)
4. How likely do you believe your community would rally around an issue, opportunity or problem? 1-5, 1-being not likely and 5-being highly likely. \_\_\_\_\_
  - 1 (0%)
  - 2 (12.5%)
  - 3 (12.5%)
  - 4 (12.5%)
  - 5 (62.5%)
5. Are there any groups or organizations in your area that are trusted by your community
  - a) Lake Association (87.5%)
  - b) Knights of Columbus (12.5%)
  - c) VFW (25%)
  - d) Sportsman's Group (12.5%)
  - e) other \_\_\_\_\_ (0%)
6. Would any of the following programs or conditions increase the likelihood that you would implement a conservation practice on your shoreland property?
  - a) Payments (50%)
  - b) Cost-share (75%)
  - c) Technical assistance (62.5%)
  - d) Success stories (12.5%)
  - e) other \_\_\_\_\_ (0%)

7. How important are local water resources (streams, lakes) to you and your family?  
1-5, 1-not important, 5-very important \_\_\_\_\_  
1 (0%)  
2 (0%)  
3 (0%)  
4 (12.5%)  
5 (87.5%)
8. How important are local water resources (streams, lakes) to your community?  
1-5, 1-not important, 5-very important \_\_\_\_\_  
1 (0%)  
2 (0%)  
3 (0%)  
4 (37.5%)  
5 (62.5%)
9. How concerned are you about the current state of local water resources?  
1-5, 1-not concerned, 5-very concerned \_\_\_\_\_  
1 (0%)  
2 (0%)  
3 (50%)  
4 (25%)  
5 (25%)
10. What do you believe to be the biggest concern impacting water quality in your area?  
a) Algae Blooms (25%)  
b) Aquatic Vegetation (12.5%)  
c) Ag runoff (62.5%)  
d) Invasive Species (25%)  
e) Other (please specify) \_\_\_\_\_. (37.5%)
11. Who is responsible for the quality of water in your area?  
a) Local property owners (62.5%)  
b) County (17.5%)  
c) State (37.5%)  
d) Ag community (62.5%)
12. What is your view of farming in your area?  
Yield at the cost of the environment (25%), Need stronger laws and penalties (12.5%), Need incentives to improve (12.5%), Vital (12.5%), Just one part of the puzzle (12.5%), Positive (12.5%), Great (12.5%), Utilizing better farm practices (12.5%), Okay (12.5%).

13. How would you describe farming in your area?  
Aggressive (12.5%), Tiled directly to the lake (12.5%), Small (12.5%), No impact to water quality (12.5%), Stewards of the land (12.5%), Great, Increased yield is primary motive (12.5%), Okay (12.5%).
14. What concerns do you have about farming in your area?  
No concerns (25%), Just concerned about money (12.5%), Leading cause of impaired waters (12.5%), Not effecting water quality at all (12.5%), Stewards of the land (12.5%), Increased yield is primary concern (12.5%)
15. If you could change something about farming, what would it be?  
Require treatment of runoff prior to discharge (12.5%), Make pesticides and nutrients biodegradable (12.5%), Less tiling (12.5%), Nothing (12.5%), Management and education to reduce runoff (12.5%).
16. What, if any, conservation practices do you have in place on your property (rain garden, buffer, rain barrel, etc.)?  
Rain garden (12.5%), None (25%), Buffer (37.5%), Trees (12.5%), Rain barrel (12.5%), No lawn chemicals (12.5%).
17. Rank the following issues in order from most important (1) - least important (5).
- 1 (14) Agricultural runoff
  - 2 (17) In-lake issues (vegetation management, invasive species, etc.)
  - 3 (23) Stormwater
  - 4 (25) Erosion
  - 5 (26) Septic system
18. Why do you live by your lake?  
Great Environment/Nature (18.5%), Enjoy lake activities/recreation (51.8%), The lake (33.3%), Quality of life (7.4%), Friends and Family (7.4%).
19. What would you like to see change at the lake?  
Weed control (3.7%), Reduced mowing to the lake (residential buffer) (3.7%), reduced lawn fertilizer use (3.7%), Reduce wave action from boaters (3.7%), water conservation (no pumping of lake water) (3.7%), Water quality (44.4%), control water inlets (3.7%), pollution (trash) (7.4%), Lake activities (3.7%), Lake management seminars (3.7%), Rough fish control (3.7%), Reduce algae bloom (3.7%), Run-off (3.7%), AIS monitoring/education/info (3.7%), Increase spraying of aquatic plants (7.4%).

#### Items that went well:

- People were generally glad to share their opinions on improving water quality in the watershed.
- Good experience working with the MPCA

#### Challenges:

- Finding an audience wasn't easy if there wasn't an established lake association.
- Working across county lines. Each county is different and it can be difficult to employ strategies over jurisdictional boundaries. We have different ordinances governing similar areas and that can cause issues when trying to speak in general terms when specific issues arise. Discussions about ordinances can be a very confusing topic, and then to mix residents from multiple counties can add another layer of confusion.

#### Strategies for Lake Washington and Lake Emily:

- Communication was very difficult with property owners around Lake Emily. The lake association has been having issues since the resignation of their previous president and there has been no communication. Attempts to contact the lake association have been unsuccessful. In an attempt to reach property owners, individual letters were mailed to each property owner, return surveys were very few. Additional outreach to this area via additional mailing and a possible meeting in their area may have been beneficial. A meeting like this may not be very well attended due to the fact there are only approximately 60 properties located around the lake, a number of them being agriculture or business.
- The Lake Washington Improvement Association should be contacted if conservation work is planned in this area. They are a good tool for communication to lakeshore property owners. They also work to complete conservation projects and are usually looking for assistance from Le Sueur County.
- Both of the watersheds for these two lakes have a large amount of agriculture. Best manage practice targeted for this are need to keep this in mind. Working with the Ag community may provide for greater reductions for the dollar.
- BMP list for this area
  - Shoreline restorations and stabilizations
  - Bluff restorations and stabilizations
  - Cover crops
  - Filter Strip
  - Grade stabilization Structure
  - Grassed Waterway
  - Water and sediment control basin
  - Wetland restoration
  - Wetland Enhancement

# ATTACHMENTS

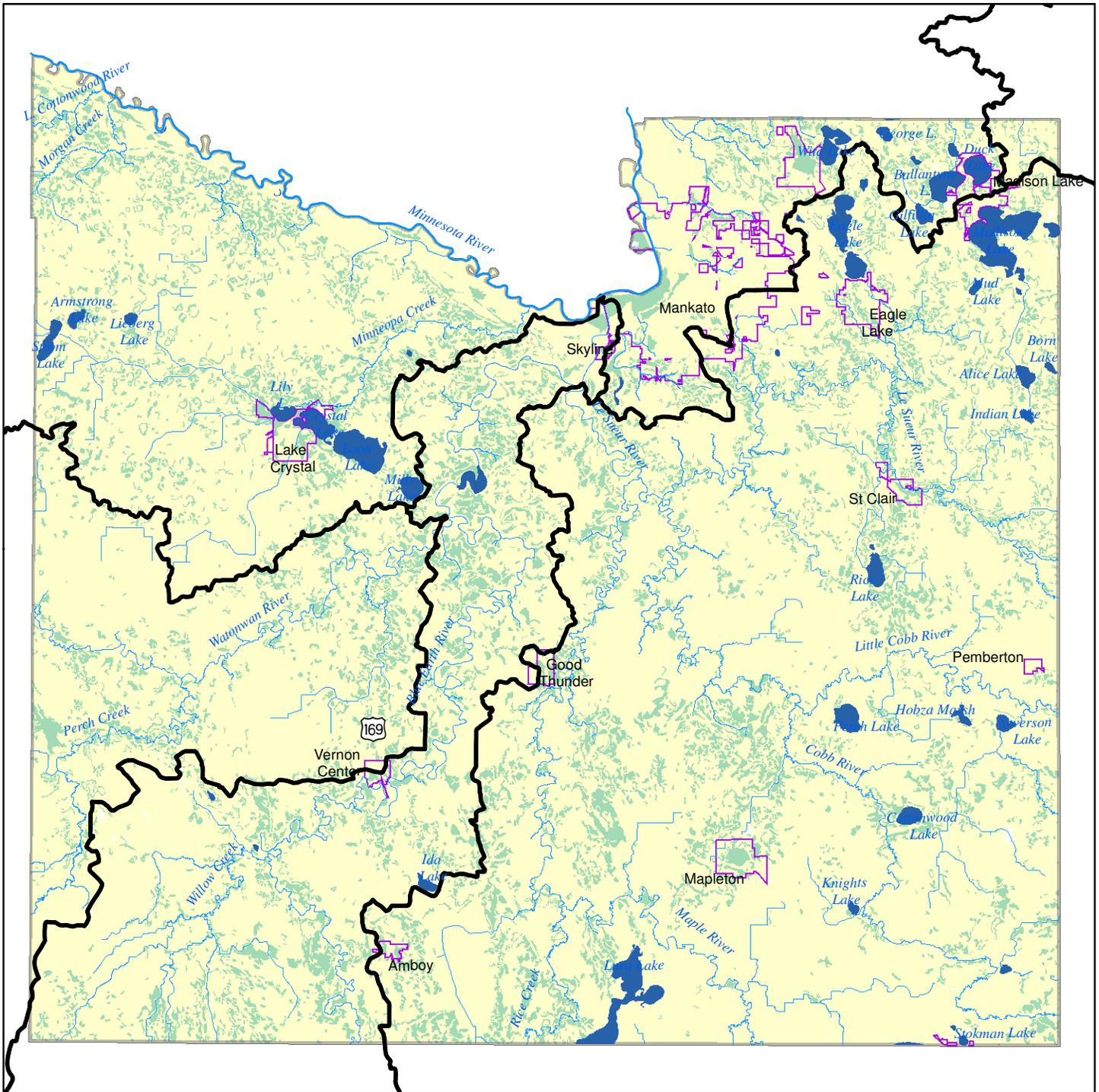
## Middle Minnesota Watershed Civic Engagement Lakes Final Report

The final report contains strategies for targeting strategies in Blue Earth County. The following show priority areas identified in the *Blue Earth County Water Management Plan 2017-2027* and are related to the list of recommended strategies in this Middle Minnesota Watershed Civic Engagement Lakes final report.

### **Blue Earth County Water Management Plan Priority Areas**

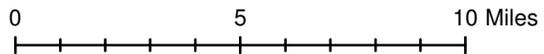
- Soils sensitive for nutrient management
- Greenprint priority areas
- Potentially restorable basins for nutrient treatment functions
- Potentially restorable basins for water storage functions

# Sensitive Soils for Nutrient Management



**Sensitivity Rating of Soil for Nutrient Management**

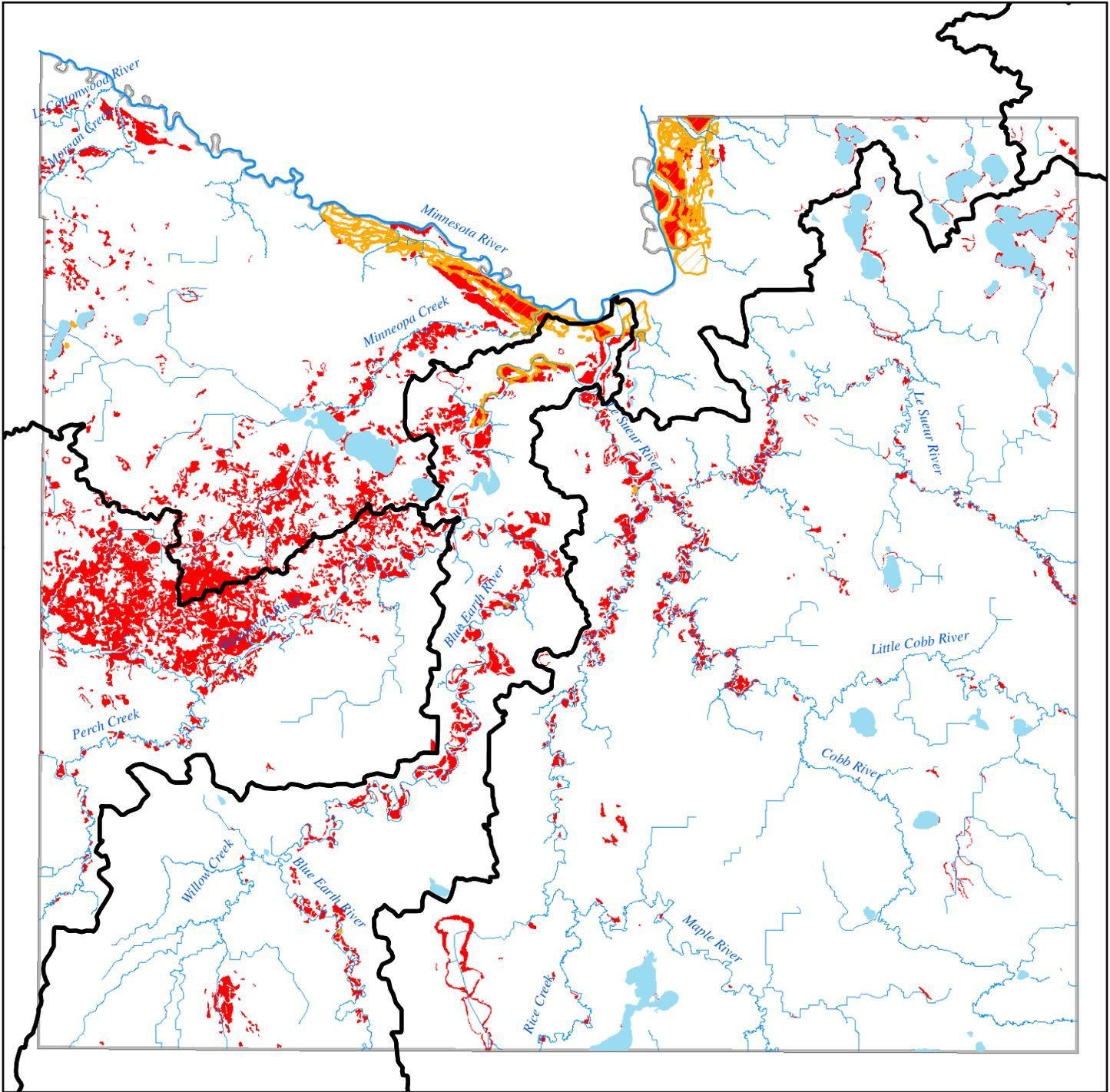
- Sensitive
- Not sensitive
- Not rated or not available



Prepared By: Blue Earth County  
Environmental Services  
2016

Source: NRCS SSURGO Soils

# Sensitive Soils for Nutrient Management Due to Coarse Textured Soils or Shallow Bedrock



 Major Watershed

0 5 10 Miles

## Sensitive Soils for Nutrient Management Due to Coarse Textured Soils or Shallow Bedrock

 Soil with Shallow Bedrock

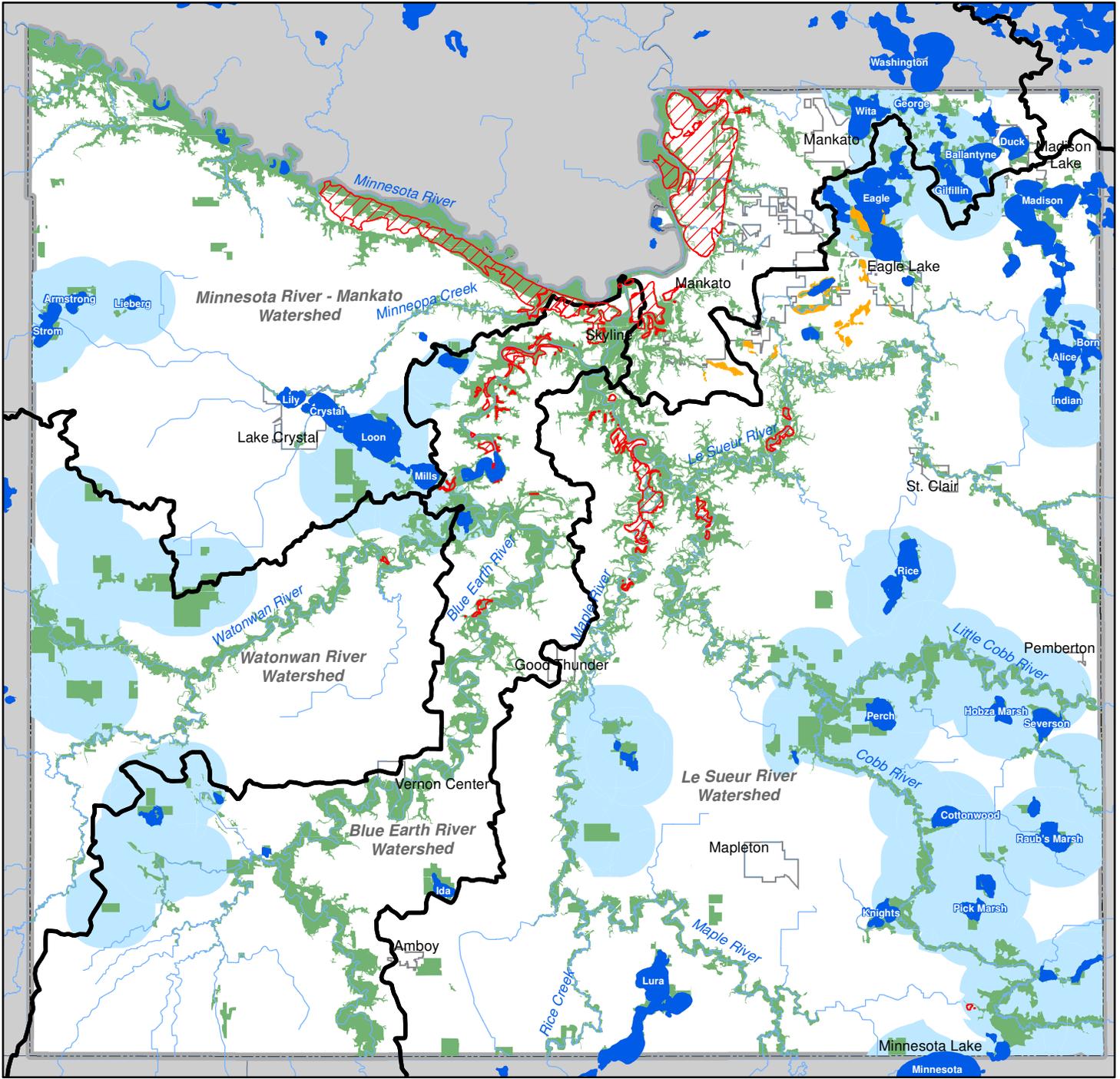
 Coarse Textured Soil



Prepared By: Blue Earth County  
Environmental Services  
2016

Source: NRCS SSURGO Soils

# Greenprint, Wetland Complexes, Shallow Bedrock and Karst



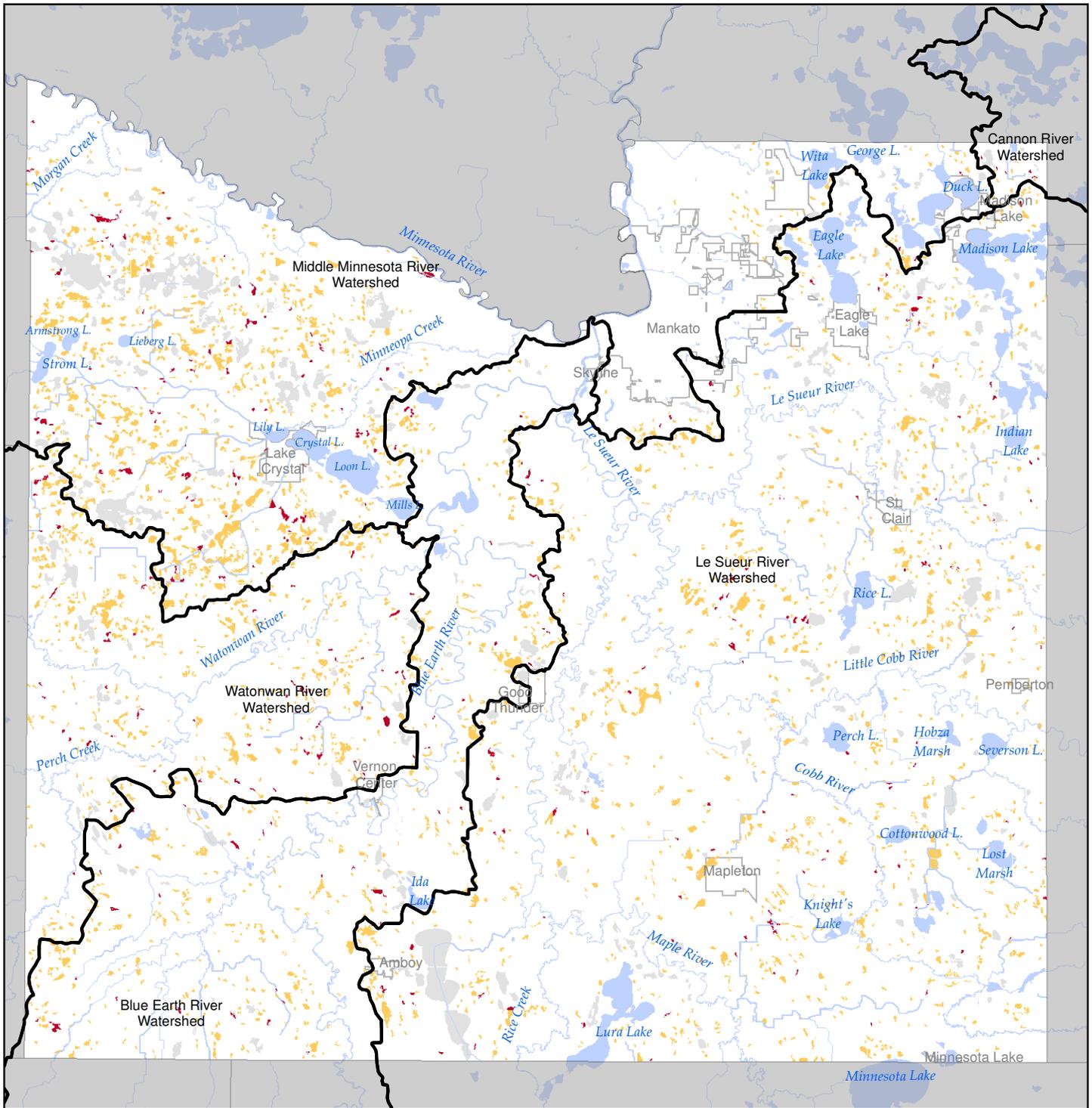
-  Bedrock within 10 Feet of Ground Surface or Karst
-  Planned Greenprint Corridor Connection
-  Greenprint Corridor
-  Wetland Complexes
-  Major Watershed
-  Public Water Basin

0 5 Miles

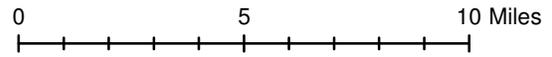



Prepared By: Blue Earth County  
2016

# Potentially Restorable Basins for Nutrient Treatment



○ Major Watershed (HUC 8)



Potentially Restorable Basins -  
Nutrient Treatment Potential

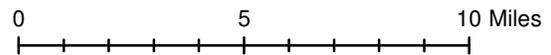
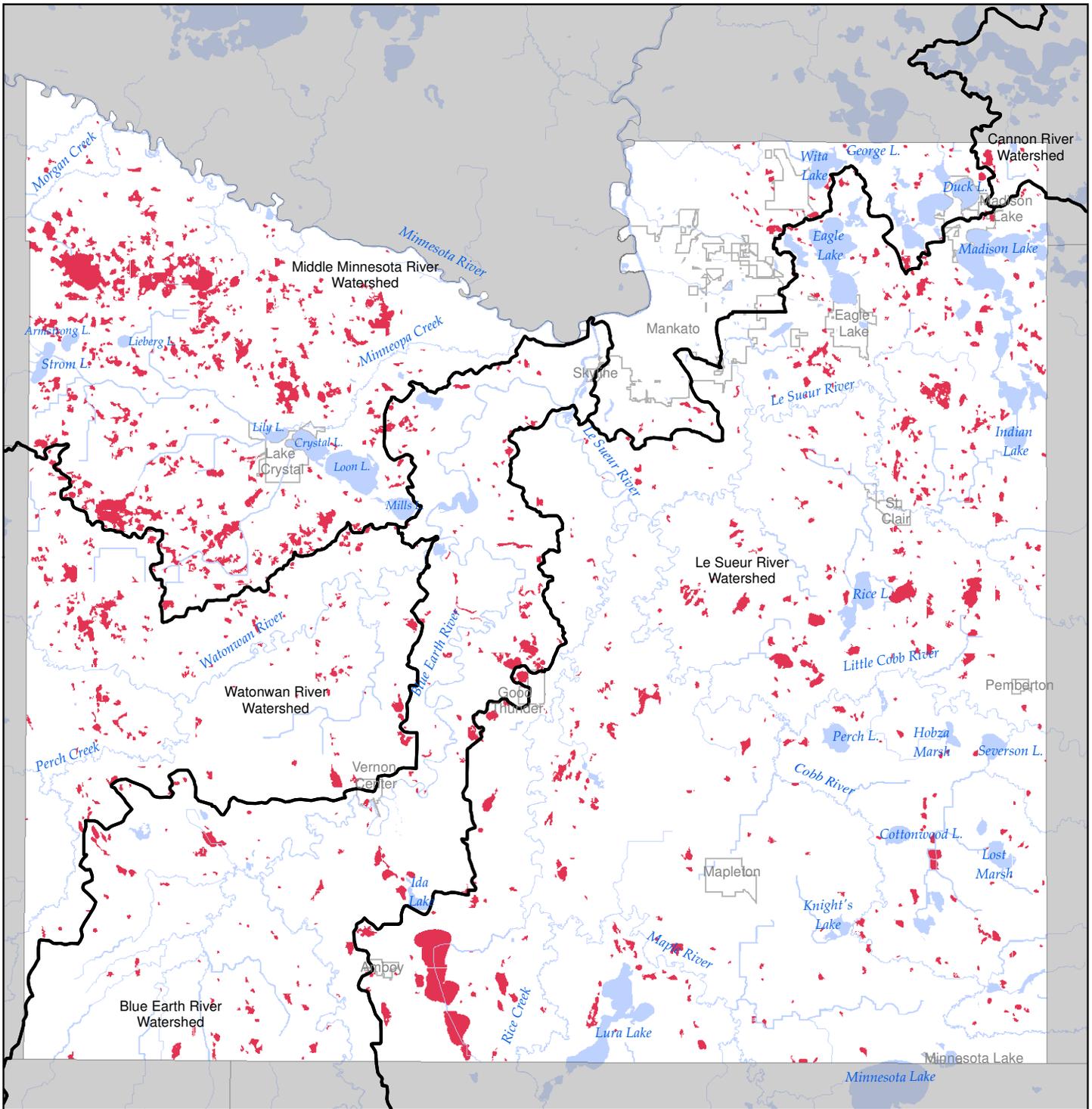
- High
- Medium
- Low



Prepared By: Blue Earth County  
Environmental Services  
2017

Source: Potentially Restorable Wetlands  
LiDAR Terrain Analysis - Houston  
Engineering Inc. 2015

# Potentially Restorable Basins that can Store the 10-Year 24-Hour Rain Event (4.37 inches)



 Potentially Restorable Basin that can Store the 10-Year 24-Hour Rain Event

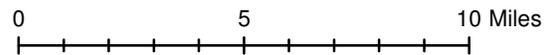
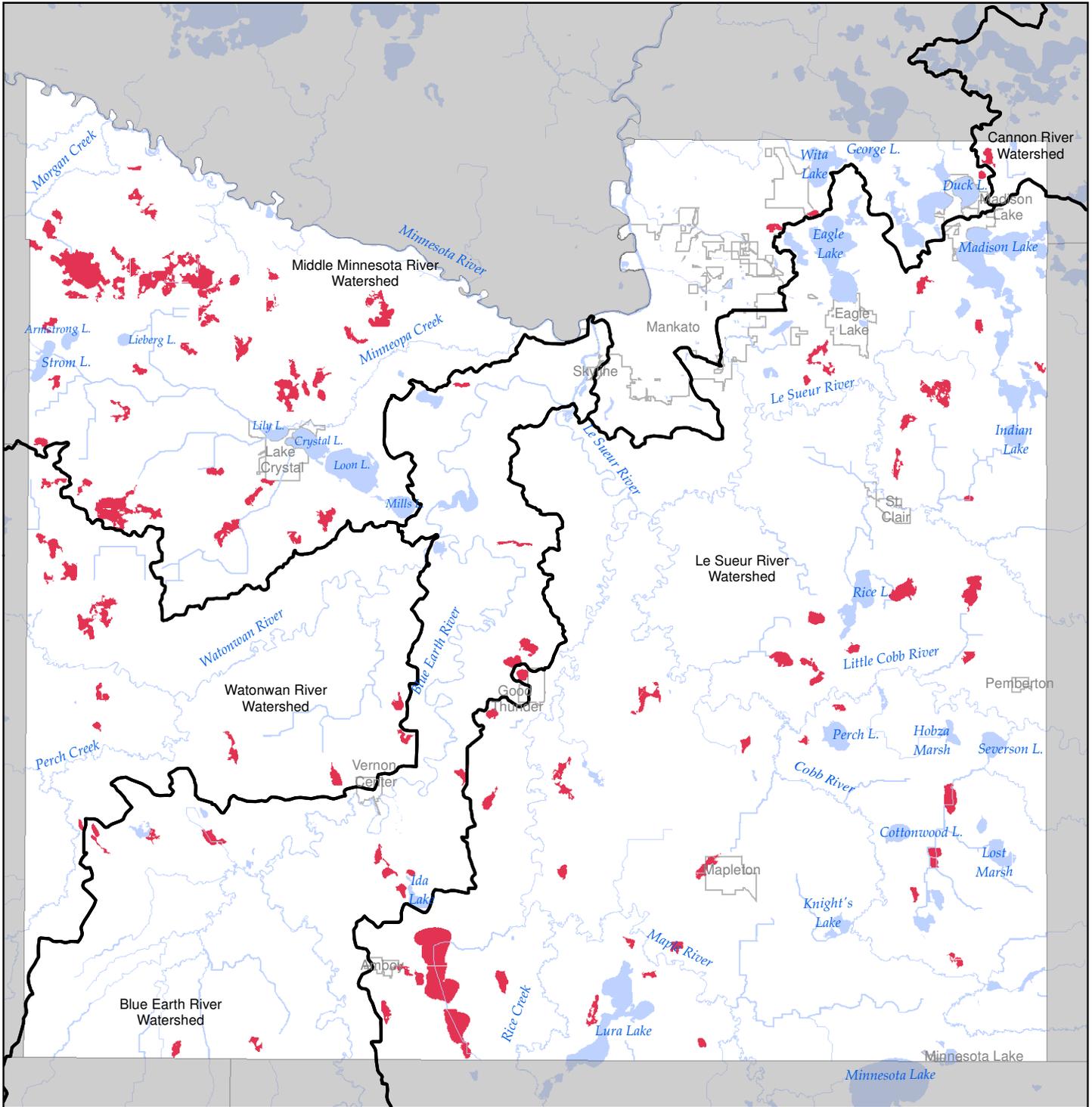
 Major Watershed (HUC 8)



Prepared By: Blue Earth County  
Environmental Services  
2017

Source: Potentially Restorable Basin  
LiDAR Terrain Analysis - Houston  
Engineering Inc. 2015

# Potentially Restorable Basins that Have a Volume of 100 Acre-Feet or More



 Potentially Restorable Basins that have A Volume of 100 Acre-Feet or More

 Major Watershed (HUC 8)



Prepared By: Blue Earth County Environmental Services 2017

Source: Potentially Restorable Basins LiDAR Terrain Analysis - Houston Engineering Inc. 2015

# Final Report

## Middle Minnesota Watershed Civic Engagement Lakes

July 30, 2017

### Executive summary

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#### Problem

In the Middle Minnesota River watershed, lakes are most prevalent south and east of the Minnesota River in the Minneopa Creek and Shanaska Creek watersheds in Blue Earth and Le Sueur counties. This project was focused on Crystal, Loon and Mills lakes in the Minneopa Creek watershed and Duck, Ballantyne, Washington and Emily lakes in the Shanaska Creek watershed.

Many of the lakes in this watershed are important recreational and fisheries resources in the region. Most of the lakes are impaired for aquatic recreational uses and are on the 303(d) list of impaired waters. Protection and restoration of the lakes' water quality and aquatic life will require widespread understanding and support for establishing best practices in these watersheds.

#### Water Bodies and Water Bodies on the 303(d) list

Lake Name	AUID#	Listed Pollutant	Impaired Use	Start//End Dates
<b>Shanaska Creek Watershed</b>				
Duck	07-0053-00	Nutrient/Eutrophication Biological Indicators	Aquatic Recreation	2013//2017
Ballantyne	07-0054-00	None listed	No listed or proposed impairment	N/A
George	07-0047-00	Mercury in Fish Tissue Nutrient/Eutrophication Biological Indicators*	Aquatic Consumption Aquatic Recreation*	2002//2015 2016*
Washington	40-0117-00	Nutrient/Eutrophication Biological Indicators Mercury in Fish Tissue Fishes Bioassessments*	Aquatic Recreation Aquatic Consumption Aquatic Life*	2013//2017 2016*
Emily	40-0124-00	None listed	No listed or proposed impairment	N/A
<b>Minneopa Creek Watershed</b>				
Crystal**	07-0098-00	Nutrient/Eutrophication Biological Indicators Fishes Bioassessments*	Aquatic Recreation Aquatic Life*	2008//2012 2016*
Loon	07-0096-00	Nutrient/Eutrophication Biological Indicators	Aquatic Recreation	2013//2017
Mills	07-0097-00	Nutrient/Eutrophication Biological Indicators*	Aquatic Recreation*	2016*
*Proposed 2016 303(d) list – no start or end date available				
**Addressed in Crystal Lake Excess Nutrients Total Maximum Daily Load Study (2012)				
<b>Source:</b> Middle Minnesota Watershed Civic Engagement Lakes Project Work Plan, Attachment A and MPCA 2016 <i>Minnesota River-Mankato Watershed Monitoring and Assessment Report</i>				

## Water Quality Problems and Sources

The following table is a list of water quality problems and sources and subcategories for the problem in each lake watershed.

Water Quality Problems and Sources	
Category of the Problem	Subcategory of the Problem
<b>Lake Watershed: Duck</b> AUID# 07-0053-00	
<b>Water Quality Problem:</b> Nutrient/Eutrophication Biological Indicators	
Agriculture	High percentage of "highly-erodible" crop land
Agriculture	Drainage and altered hydrology
Agriculture	Wetland encroachment and degradation
Shoreland Development and Urban Development	Stormwater runoff and altered hydrology
Shoreland Development and Urban Development	Wetland encroachment and degradation
Aquatic Invasive Species	Curlyleaf pondweed; More carp
<b>Lake Watershed: Ballantyne</b> AUID# 07-0054-00	
<b>Water Quality Problem:</b> No 303(d) impairments. Concern about excess nutrients	
Agriculture	High percentage of "highly-erodible" crop land
Agriculture	Drainage and altered hydrology
Agriculture	Wetland encroachment and degradation
Shoreland & Urban Development	Stormwater runoff and altered hydrology
Shoreland & Urban Development	Wetland encroachment and degradation
Aquatic Invasive Species	Eurasian Water Milfoil; More carp
<b>Lake Watershed: George</b> AUID# 07-0047-00	
<b>Water Quality Problem:</b> Nutrient/Eutrophication Biological Indicators	
Agriculture	High percentage of "highly-erodible" crop land
Agriculture	Drainage and altered hydrology
Agriculture	Wetland encroachment and degradation
Shoreland Development	Stormwater runoff and altered hydrology
Shoreland Development	Wetland encroachment and degradation
Aquatic Invasive Species	
<b>Lake Watershed: Washington</b> AUID# 40-0117-00	
<b>Water Quality Problems:</b> Nutrient/Eutrophication Biological Indicators; Mercury in Fish Tissue; Fishes Bioassessments*	
Agriculture	High percentage of crop land
Agriculture	Drainage and altered hydrology
Agriculture	Wetland encroachment and degradation
Shoreland Development	Stormwater runoff and altered hydrology
Shoreland Development	Wetland encroachment and degradation
Aquatic Invasive Species	
<b>Lake Watershed: Emily</b> AUID# 40-0124-00	
<b>Water Quality Problems:</b> No 303(d) list impairments; Concern: increased nutrients	
Agriculture	Crop land
Agriculture	Drainage and altered hydrology
Shoreland Development	Stormwater runoff and altered hydrology
<b>Lake Watershed: Crystal</b> AUID# 07-0098-00	
<b>Water Quality Problems:</b> Nutrient/Eutrophication Biological Indicators; Fishes Bioassessments*	
Agriculture	High percentage coarse-textured soils, high wind erodibility index and shallow depth to water table

Agriculture	Drainage and altered hydrology
Shoreland Development and Urban Development	Stormwater runoff and altered hydrology
Shoreland Development and Urban Development	Wetland encroachment and degradation
Aquatic Invasive Species	Common Carp
In-lake loading	
<b>Lake Watershed: Loon</b> AUID# 07-0096-00	
<b>Water Quality Problem: Nutrient/Eutrophication Biological Indicators</b>	
Agriculture	Coarse-textured and poorly drained soils
Agriculture	Drainage and altered hydrology
Agriculture	Wetland encroachment and degradation
Shoreland Development	Stormwater runoff and altered hydrology
Shoreland Development	Wetland encroachment and degradation
Aquatic Invasive Species	
<b>Lake Watershed: Mills</b> AUID# 07-0097-00	
<b>Water Quality Problem: Nutrient/Eutrophication Biological Indicators</b>	
Agriculture	Poorly drained soils
Agriculture	Drainage and altered hydrology
Agriculture	Wetland encroachment and degradation
Aquatic Invasive Species	

## Watershed Restoration and Protection Strategies (WRAPS)

A Total Maximum Daily Load (TMDL) or Watershed Restoration and Protection Strategies (WRAPS) report was not completed as part of this project workplan.

The purpose of this project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the Minnesota River-Mankato watershed lakes. The findings from this project will inform the development of the WRAPS report regarding lakes in Blue Earth and Le Sueur counties in the Minnesota River Mankato Watershed.

## Waterbody improved

The purpose of this project was to conduct education and outreach and other civic engagement activities with watershed residents to identify strategies for addressing water quality problems in lake watersheds to restore water quality as well as strategies to protect water quality in lakes without 303(d) listed impairments. No water bodies were removed from the 303(d) list.

This civic engagement project was targeted to the six recreational lake watersheds in the Middle Minnesota River watershed. The results were intended to be representative of all lakes in the watershed. Two of the six lakes targeted for this project are not on the MPCA 2016 proposed 303(d) list of impaired water bodies - Ballantyne and Emily, both in the Shanaska Creek watershed. There are concerns about these lakes trending toward impairment in future years. The MPCA 2016 *Minnesota River-Mankato Watershed Monitoring and Assessment Report* describes how both lakes are sensitive to additional phosphorus input.

## Project highlights

### *Major partners*

The major partners were the MPCA, Blue Earth County, Le Sueur County, DNR Waterville Fisheries, the DNR Hydrologist for the Middle Minnesota River watershed, City of Lake Crystal, City of Madison Lake. Consultant partners were Region 9 Development Commission and Lauren Klement.

### *Project timeframe*

The project period was June 5, 2015 to June 30, 2017. Most of the civic engagement activities were conducted in the final twelve months of the two-year project.

### *Comprehensive Watershed Planning Context*

The primary goal of this project was to contribute to development of an MPCA Watershed Restoration and Protection Strategies (WRAPS) report. This civic engagement project for lakes engagement was one of four teams that were part of the overall Minnesota River at Mankato Watershed Public Participation Team. The four teams included the Lakes Engagement Team, SWCD WRAPS Strategy Team, Nicollet County WRAPS Team and Renville County WRAPS Team.

The results of this project and the WRAPS will support local working groups and jointly develop scientifically-supported restoration and protection strategies to be used for subsequent implementation planning at the local level and in the future *Comprehensive Watershed Management Plan* in this portion of the Middle Minnesota River Watershed planning area. (Reference Minnesota Statute 103B.801)

## Results

There were three education and information meetings in the watershed and one presentation at a lake association annual meeting. The meetings were attended by more than 200 watershed citizens, local officials and technical staff. Written surveys and face-to-face interviews were used to collect citizens', landowners', land managers' and local government officials' opinions about problems, solutions and obstacles for protecting and restoring water quality in lake watersheds in the Middle Minnesota River watershed. Lists of strategies were developed for each lake. The list of strategies include project development, stormwater management, shoreland management, soil health, nutrient management, wetland restoration and enhancement, education and technical assistance. The strategies will be considered by the MPCA and other partners in development of the Watershed Restoration and Protection Strategies (WRAPS) report for the entire watershed.

# Final Report

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## Section I – Workplan Review

### Approved Workplan Changes

There was one budget revision contract amendment approved in 2016.

### Workplan Activities and Tasks

The following is a brief report on each task and subtask in the approved project workplan.

#### **Objective 1: WRAPS Development**

##### **Task A: Public Participation Engagement Team (also known as the Lakes Engagement Team)**

Develop a process to identify community/landowner opportunities, obstacles, and opinions on land management and water quality.

##### **Subtask 1. Involvement in the Minnesota River Mankato Watershed Lakes Engagement Team.**

The Lakes Engagement Team consisted of Blue Earth County, Le Sueur County, Region 9 Development Commission, Lauren Klement. The Lake Engagement Team met early in the project period. In the second year members of the Lake Engagement Team spoke on the phone or connected with email a few times each year. The Lake Engagement Team met less frequently and coordinated activities to a lesser degree than anticipated. In Blue Earth County, the demands on staff participating in various stages of four major watershed projects while also preparing and finalizing the *Blue Earth County Water Management Plan* left less time available for all projects. Le Sueur County staff was involved in three major watershed projects, and there was staff turnover/new staff.

The Lake Engagement Team was expanded in Blue Earth County to also include DNR Fisheries and the DNR Middle Minnesota River Watershed Hydrologist in designing two public participation events: an Open House meeting for Duck and Ballantyne lakes and an information meeting for local elected and appointed officials and staff responsible for planning and zoning in Blue Earth Earth County. The team met with the city administrators of the City of Lake Crystal and City of Madison Lake and Blue Earth County planning and zoning staff to help plan the information meeting for local officials. Blue Earth County, DNR and MPCA staff developed a power point presentation about the importance of lake shoreland and watershed management for water quality and aquatic life. The presentation was based on the historic DNR “*Our Waters Our Choices*” training for planning and zoning officials as well as the DNR’s work assisting landowners with shoreland restoration projects. The MPCA lake water quality results in the Middle Minnesota River watershed were included in the presentation. Survey “clicker” slides were also incorporated in the presentation. The power point was presented by the DNR and MPCA staff at the information meeting. The DNR and MPCA also repeated the power point at an informational meeting for members of the Lake Washington Improvement Association in Le Sueur County. Blue Earth County staff invited the SWCD to participate in all civic engagement meetings for lakes in the county and also discussed coordination to avoid duplicative efforts in the Lake Crystal watershed.

**Task B: Public Participation Implementation**

Implement public participation processes according to the timeline and designs prepared by the Engagement Team.

**Subtask 1: Data Collection and Documentation**

Each of the subcontractors (Blue Earth County, Le Sueur County, Lauren Klement and Region 9) documented the activities and results of the public participation activities and findings regarding the community capacity to engage in the watershed management process, options for restoration and protection strategies, best management practices, and local understanding and concerns about water quality conditions and aquatic life. Blue Earth County summarized the results in semiannual reports and this final report.

**Objective 2: Administration****Task A: Progress Tracking.**

Plan and track progress regarding public participation costs and activities according to locally agreed upon outcomes.

**Subtask 1: Develop outcomes indicators.**

The Lakes Management Team agreed that developing citizen-supported strategies for protection and restoration of aquatic resources in lake watersheds would be the most important project outcome. The team agreed that lists of strategies, concerns and obstacles for implementation would be collected using written surveys, face-to-face conversations and meeting summaries during civic engagement events or other meetings.

**Subtask 2: Track and Report outcomes.**

Each of the subcontractors (Blue Earth County, Le Sueur County, Lauren Klement and Region 9) prepared summary reports from civic engagement events and the written surveys responses. Lists of strategies to protect and restore water quality and aquatic resources in Middle Minnesota River watershed lakes were included in the subcontractors' summary reports.

**Task B: Project Management****Subtask 1: Coordinate financial expenditures. Prepare and submit contract progress reports.**

The project subcontractors (Blue Earth County, Le Sueur County, Lauren Klement and Region 9) filed reimbursement requests and semi-annual report updates. The project sponsor (Blue Earth County) and the MPCA project manager tracked progress with public participation design and implementation. The project sponsor (Blue Earth County) prepared and submitted semiannual and the final reimbursement requests and synthesized subcontractor reports into semiannual reports and this final report all submitted to the MPCA project manager.

## Section II – Grant results

### Measurements

Written surveys were distributed 1) by Le Sueur County via US mail to Lake Emily watershed property owners, 2) by Le Sueur County during a regular Lake Washington Lake Improvement Association meeting, and 3) by Blue Earth County at two information meetings for Middle Minnesota watershed lakes.

Watershed citizens' perceptions about problems and solutions were captured and later summarized from 1) informal, face-to-face interviews at an Open House meeting for Ballantyne and Duck lake watershed property owners, 2) from group discussion at information meetings in Blue Earth and Le Sueur counties.

Summaries of each civic engagement activity are below.

### Surveys

#### Le Sueur County Written Surveys

Le Sueur staff worked with MPCA staff to prepare a written survey distributed to two lakes. Le Sueur County staff distributed the surveys and analyzed the results. The results of the surveys were incorporated in a list of strategies and BMPs in the Le Sueur County final project report.

*Lake Washington* – 27 of the 108 surveys distributed to citizens at the August 2016 Lake Washington Improvement Association Annual Meeting were completed and returned to Le Sueur County staff.

*Lake Emily* – 8 of the 62 surveys mailed to property owners in the Lake Emily watershed were completed and returned to Le Sueur County staff. Le Sueur County had difficulty contacting the Lake Emily lake association due to lack of a lake association president during the project period.

#### Blue Earth County Surveys

Blue Earth County staff prepared and distributed written surveys for participants at two information meetings. Blue Earth County staff and consultant Lauren Klement also prepared one web-supported survey (survey monkey) to help plan the content of one of the information meetings. DNR, MPCA and Blue Earth County staff prepared a "clicker" survey administered by the DNR during a power point presentation at one of the informational meetings. Blue Earth County staff and Lauren Klement analyzed the written survey results.

*Ballantyne, Duck, Crystal and Loon lakes* – Written surveys were available for participants at an information meeting for local officials and lake association representatives on May 9, 2017. Of the 38 citizens attending, 26 completed the written survey. All 38 participants completed the "clicker" survey questions during the presentation. The results of the clicker survey and the written survey are attached to this report.

*Lake Ballantyne and Duck Lake* – Written surveys were available for citizens to use in addition to or instead of face-to-face conversations with consultants and staff who were noting their comments about problems and solutions at an Open House on May 18, 2017. There were 27 Duck and Ballantyne watershed residents who "signed in" at the Open House, and six completed the written survey. Not all of those who attended "signed in." The results of the written survey and the face-to-face interviews are attached to this report.

## Public Outreach and Education

There were three information meetings. Each of the meetings is summarized below.

### May 9, 2017 – Shoreland and Zoning Seminar for Local Officials City of Lake Crystal, City of Madison Lake and Blue Earth County

#### **Purpose**

Protecting and improving aquatic habitat both in-lake and on adjacent shoreline is key to promoting strong natural reproduction and a healthy food web to provide the building blocks for diverse aquatic communities. Local government officials have an important role protecting aquatic and natural resources. One of those roles is administering the Minnesota Shoreland Rules with local ordinances. Understanding the relationship between land use and water quality and fish and wildlife habitat may help improve local land use decision making.

#### **Description of participants**

This education and information meeting was targeted to local government elected and appointed officials with land management responsibility in Middle Minnesota River Watershed lake watersheds in Blue Earth County. Of the 46 local government officials invited, 30 attended (65%). Invited to the meeting were the City of Madison Lake City Council, Planning Commission and staff, City of Lake Crystal City Council, Planning Commission and staff, and the Blue Earth County Board of Commissioners, Planning Commission and staff. Five lake associations in the Middle Minnesota watershed in Blue Earth County were invited to bring up to ten lake association members. Of 50 possible lake association participants, 10 attended. A member of the Lake Washington Improvement Association who also serves on the Lake Washington sewer district in Blue Earth and LeSueur counties and the Tri-County Coalition of Lake Associations also attended.

#### **Education Materials Distributed**

Wall-size maps and aerial photos of the lake watersheds were on display (Ballantyne, Duck, Crystal, Loon, Mills) for participants to view and use for discussion before and after the meeting and during breaks.

A folder containing education materials was provided to each participant. The folder contained the meeting agenda, speaker biographies, DNR fact sheets for shoreland management and a map of the watershed. The meeting agenda and speaker biographies are attached to this report. The DNR fact sheets are available on the DNR website and included the following:

#### **Shoreline Alteration Information Sheets**

[Stairways, Landings, and Lifts](#) **PDF**  
[Beach Sand Blanket](#) **PDF**  
[Healthy Shorelines](#) **PDF**  
[Lakescaping](#) **PDF**  
[Ice Ridges](#) **PDF**  
[Riprap](#) **PDF**  
[Docks and Access in Public Waters](#) **PDF**

#### **Shoreland Rules Fact Sheets**

[Healthy Shorelines Information Sheet](#) **PDF**  
[Shoreline Management: How Did It All Get Started?](#) **PDF**  
[Conservation Subdivisions](#) **PDF**  
[Natural Shorelines](#) **PDF**  
[Why Shoreland Vegetation Is Important](#) **PDF**  
[Managing Runoff in Shoreland Areas](#) **PDF**  
[Management of Bluffs and Slopes](#) **PDF**  
[Vegetation Buffer Strips in Agricultural Areas](#) **PDF**  
[Designing Plats to Fit the Environment](#) **PDF**

#### **Civic Engagement Outcomes**

All survey respondents indicated the meeting was worthwhile and all would like more information about how

their community can better serve conservation of lakes, rivers and streams. More information about stormwater management was requested as a future topic. Concerns about technical assistance were also important. Participants requested the power point presentation and website links to the DNR fact sheets. The results of the written survey and the “clicker” survey questions are attached to this report. These were used to develop the recommendations and strategies in this report.

### **May 18, 2017 – Lakes Open House for Duck, Ballantyne and Madison Lake**

#### **Purpose**

Provide watershed residents with general information and answer questions about water quality and aquatic invasive species in their lakes, talk face-to-face with landowners in the watershed to learn their perspectives about problems and solutions and document findings for recommendations and strategies in this report.

#### **Description of participants**

All 320 owners of land parcels in the Duck and Ballantyne watersheds were mailed an invitation three weeks prior to the meeting. The meeting invitation is attached to this report. Communications with lake both Duck and Ballantyne lake associations is difficult because they lack email lists of members. There is no longer a local newspaper to print meeting notices or articles about this project. Sending a meeting reminder closer to the meeting date would likely have increased participation. The Madison Lake Association was also included in the meeting because the three lakes are in very close proximity and are all part of the same community. An invitation to the meeting was emailed to the Madison Lake Association and forwarded to its members. Madison Lake also has a direct groundwater connection to the Minnesota River according to the *Geologic Atlas of Blue Earth County, Part B* completed in 2016.

#### **Education Materials Distributed**

Wall-size maps and aerial photos of the lake watersheds were on display (Ballantyne, Duck, Madison) for participants to view and discuss during the meeting. The maps and aerial photos were given to the lake associations for their use after the meeting.

DNR fact sheets were available for citizens interested in learning more about shoreland management. The fact sheets available at the meeting are the same listed above for May 9, 2017 meeting for local officials.

Aquatic invasive species (AIS) awareness information and promotional items were also available because AIS is a common concern among lake users.

#### **Civic Engagement Outcomes**

Attendees were eager to learn talk about problems and solutions. Sticky notes were used to record problems and solutions and a thorough list of specific problems was generated for Ballantyne and Duck lakes. The results of the written survey and a report analyzing the results of face-to-face conversations are attached to this report. These were used to develop the recommendations and strategies in this report.

### **June 7, 2017 - Le Sueur County Informational Meeting for Lake Washington**

#### **Meeting Description**

The DNR and MPCA gave the same presentation from the May 9, 2017, meeting in Blue Earth County, at an information meeting for Lake Washington Improvement Association members in Le Sueur County. The Le Sueur County SWCD manager also presented an overview of the results of the SWCD WRAPS Strategies Team results in the Lake Washington watershed in Le Sueur County.

### **Description of participants**

The Lake Washington Improvement Association emailed a meeting announcement to its members. There were 39 citizens at the meeting.

### **Meeting Outcomes**

Le Sueur County staff summarized in their final report the concerns expressed by Lake Washington Improvement Association members at the meeting. The Le Sueur County final report is attached to this report. The concerns expressed by Lake Washington attendees at the June 7, 2017, meeting were the following:

- Lack of cover crops in the watershed.
- Aquatic vegetation management: Lake Washington is at about the maximum acreage allowed for spraying. To permit spraying in new areas, current efforts would need to shift. There was discussion about the importance of aquatic vegetation for fish habitat and the correlation with increased aquatic vegetation and increased water clarity. Also discussed was how Le Sueur County uses AIS Prevention Aid for education and enforcement.
- Difficulties and frustrations with shoreland regulations in Le Sueur County. It is general consensus that most lakeshore property owners have issues understanding why some regulations are being implemented and difficulties navigating through the process.
- Concerns with the conversion of natural shoreline into developed shoreline and the associated impact to lake quality were discussed. Developing a shoreline and removing the natural vegetation will have negative impacts on the water quality and lake ecosystems. It is important to work towards reducing impacts and possibly restoring shorelines.
- Funding concerns: There were questions about possible funding for shoreline projects.

### **Products**

Wall-size aerial photos and hillshade maps showing Ballantyne and Duck Lake and Crystal, Loon, Mills watersheds were produced for the May 9, 2017, Shoreland and Zoning Seminar for Local Officials, and the May 18, 2017, Open House for property owners in the Duck and Ballantyne lake watershed. These 36"x36" and 28"x40" maps and photos are not attached to this report due to size limitations. The maps and aerial photos were given to the lake associations for their use following the meetings.

Other documents produced during the reporting period are attached to this report include the following:

#### **Blue Earth County Shoreland and Zoning Seminar for Local Officials, May 9, 2017**

- Meeting Invitation
- Agenda
- Speaker Biographies
- Presentation (also presented later at Lake Washington informational meeting)
- Presentation Clicker Slides and Results
- Survey and Survey Results Report

#### **Lakes Open House for Duck Lake and Lake Ballantyne Watersheds, May 18, 2017**

- Meeting Invitation
- Open House Survey and Report
- Report on Face-to-Face Conversations, Problems, Solutions and Strategies

## Le Sueur County Final Report

The Le Sueur County report contains a description of civic engagement activities and a list of strategies and BMPs for Lake Emily and Lake Washington

## Long-term results

### *Environmental Problems Identified or Understood*

As a result of information meetings in Blue Earth and Le Sueur counties, there is an increased understanding of the impact of near-shore areas and stormwater on water quality and aquatic life and renewed or continued interest in protection and restoration projects in Duck Lake, Lake Ballantyne, Washington, Crystal, Loon and Mills watersheds.

Environmental problems and solutions for each lake determined as a result of this project's civic engagement activities are summarized below.

### Lake Ballantyne Watershed

Citizens in the Lake Ballantyne watershed report declining water quality and increasing aquatic invasive species in recent years.

Residents attribute the problem to the following:

- 1) Lake Gilfillan and the DNR reclamation project that discharged surface water and nutrients to the lake.
- 2) Runoff from farmland to Nutmeg Lane that discharges directly to the lake as the result of a lowered roadway elevation, paving the road and stormwater catch basins with no storage or treatment constructed as part of the annexation and sewer district project.
- 3) Discharge from a ravine on the west side of the lake.
- 4) Aquatic Invasive Species - Eurasian water milfoil and more carp.
- 5) Higher water levels, bluff and near shore erosion.
- 6) Lack of enforcement and equitable enforcement in shoreland areas.

Landowners suggested the following solutions:

- 1) Testing water coming from Gilfillan Lake is necessary.
- 2) Reduce flow from ravine on west side of the lake.
- 3) Widen the Mud Lake outlet to help with the high water level.
- 4) Enforcement and fines for people who violate shoreland rules.
- 5) Make property owners pay to restore natural vegetation.
- 6) Need technical assistance for shoreland stabilization due to high water levels and erosion.
- 7) Manage runoff and stormwater on Nutmeg Lane.
- 8) Milfoil and Carp removal.

In addition, local water management staff are concerned about the following:

- 1) Runoff from shoreland development.
- 2) Increase in paved surfaces and lake access roads constructed on existing residential parcels.
- 3) Stormwater management and stormwater treatment for future development. (City of Madison Lake and Blue Earth County ordinances and oversight).
- 4) Wetland restoration, protection and enhancement. Buffers for wetlands and the lake.
- 5) Highly erodible cropland.

- 6) Need local capacity to provide technical assistance, education and information.

The MPCA 2016 *Minnesota River-Mankato Watershed Monitoring and Assessment Report* states "Ballantyne will be assessed as full support for aquatic recreation use and should be considered vulnerable to additional inputs of phosphorus." and "Lake Ballantyne is a high priority for development of local protection strategies to prevent degradation into an impaired state in the future. Land use throughout this subwatershed as a whole is continuing to change rapidly from the pressure of urban sprawl and agricultural production. Finding a healthy balance using responsible land and water management practices will be vital to curbing future degradation of water quality."

### Duck Lake Watershed

Citizens in the Duck Lake watershed report declining water quality and increasing "weed problems" in recent years.

Residents attribute the problems to the following:

- 1) Increased weeds in the lake.
- 2) Aquatic invasive species – Curlyleaf Pondweed worsening.
- 3) Agricultural land and tile drainage.
- 4) Chemicals and lawn fertilizer.
- 5) Annexation and sewer extension changed outlet elevation.
- 6) Lack of regulation has allowed new development with no stormwater holding ponds.
- 7) Lack of water storage.
- 8) Watershed residents need technical assistance and funds for projects.
- 9) Erosion control fencing along the lake ripped up the lake shore and it wasn't restored.

Landowners suggested the following solutions:

- 1) Stormwater management and treatment for future development.
- 2) Stormwater retrofits in strategic locations. Rain gardens for example.
- 3) Increase setbacks.
- 4) Duck Lake Improvement Association should also have some rules for property owners to protect the lake.
- 5) Education and communication among residents, recreational users and government leaders to inform and educate about water quality. For example, educate property owners about using chemicals and fertilizers, managing aquatic and near shore vegetation and AIS, long-term impacts, improving water quality and getting funding for restoration projects.
- 6) Lake association should work cooperatively and engage with farmers.

In addition, local water management staff are concerned about the following:

- 1) Runoff from shoreland development.
- 2) Stormwater management and stormwater treatment for future development. (City of Madison Lake)
- 3) Wetland restoration, protection and enhancement. Buffers for wetlands and the lake.
- 4) Target and manage "highly erodible" cropland.
- 5) Need local capacity to provide technical assistance, education and information.

### Additional Survey Responses

"The annexation into the City of Madison Lake doesn't appear to have improved lake water quality. There are remaining concerns about the construction project. I hope the MPCA doesn't force annexation of other county lakes."

The MPCA 2016 *Minnesota River-Mankato Watershed Monitoring and Assessment Report* states that Duck Lake is "fully supporting" aquatic life, but this lake does not support aquatic recreation due to nutrients and eutrophication. "There is concern from MPCA watershed assessment team members about Duck Lake possibly on the edge of impairment for aquatic life, because of the small watershed and high development potential from nearby cities. The team recommends local strategies should be developed to protect future water quality."

"Duck was surveyed in 2013, just meeting biological index threshold, eight insectivore taxa were observed potentially indicating fair water quality and complex habitat available for aquatic communities to thrive, three tolerant taxa were observed in relatively low abundance. Based on the relatively strong diversity of biological communities in Duck, it will be listed as full support for aquatic life use." "Protecting and improving aquatic habitat both in-lake and on adjacent shoreline is key to promoting strong natural reproduction and a healthy food web to provide the building blocks for diverse aquatic communities."

### Duck, Ballantyne, Crystal, Loon and Mills

Blue Earth County Local Officials (City of Madison Lake City of Lake Crystal and Blue Earth County) list of additional recommendations and strategies:

- "Need more local enforcement, education, and local officials involved with permitting, and to do surveying of current conditions of shorelands."
- "Education of the public is essential in getting better results. Anyone applying for a building permit on a river or lake should see a DNR presentation. Slides on a website - good idea!"
- "1) Quick contact list on anything shoreline related. 2) Mandatory review of local building/land use permits - one week review permit. Note: I love local control, but this is an area in which local decision makers have little expertise and knowledge. Furthermore, local government is not recognized as an authority on this issue."
- "I think educating residents of the shoreland & shoreland impact zones as well as ag. Producers are the key to making improvements across a broad spectrum of water issues. I would propose creating a shoreland property owners certification program. Implementation could be achieved through a series of online educational courses with session quizzes to establish competency with land use standards. This program could maximize participation (voluntary) through property tax reductions as incentives upon certification. This could be modeled similarly to the over "55" Drivers Education (refresher classes) to obtain discounts on auto insurance. A pilot program could be implemented at county level."
- "1) Funding and assistance to cities to design/redesign adequate stormwater systems. 2) County drainage systems should address creating wetlands in system before it enters a public water."
- "Neighborhood meeting with landowners."
- "Let's cut down shore area trees and plant more riparian grasses, bushes, etc. - not these huge willows, etc."

List of topics for follow up and additional outreach and education

- "Stormwater management and shoreland rules"
- "1) Demonstrations held during our Lake Days events. 2) Funding opportunities. 3) Partnering on grants."
- "Milfoil"
- "More education for landowners and cities."
- "Demonstration projects."

### Lake Washington Watershed

The Lake Washington Improvement Association survey respondents believe the biggest concern impacting water quality are:

- 1) Algae blooms (52% of respondents)
- 2) Ag runoff (48% of respondents)
- 3) Aquatic vegetation (41% of respondents)
- 4) Invasive species (33% of respondents)

The Lake Washington Improvement Association survey respondents ranked the following issues in priority order:

- 1) Agricultural runoff
- 2) In-lake issues (vegetation management, invasive species, etc.)
- 3) Erosion
- 4) Stormwater

The Lake Washington Improvement Association survey respondents indicated the following would increase their likelihood of implementing a conservation practice on their shoreland property:

- 1) Technical assistance (70% of respondents)
- 2) Cost-share (48% of respondents)
- 3) Success stories (30% of respondents)
- 4) Payments (22% of respondents)

Lake Washington Improvement Association survey respondents would change the following if they could change something about farming:

- 1) Reduce/change tile and field inlets (22.2% of respondents)
- 2) Chemical/fertilizer use (14.8% of respondents)
- 3) Increase buffers (11.1% of respondents)
- 4) Wetland restorations (7.4% of respondents)
- 5) Increase water retention in watershed (7.4% of respondents)

The MPCA 2016 *Minnesota River-Mankato Watershed Monitoring and Assessment Report* states "Devoting time and financial resources to develop long term restoration and protection strategies will be required for these lakes to see water quality improvements."

### Lake Emily Watershed

The Lake Emily watershed survey respondents ranked the following issues in priority order:

- 1) Agricultural runoff
- 2) In-lake issues (vegetation management, invasive species, etc.)
- 3) Erosion
- 4) Stormwater
- 5) Septic systems

The MPCA 2016 *Minnesota River-Mankato Watershed Monitoring and Assessment Report* states "Emily will be considered fully supporting aquatic recreation use, noting that it is vulnerable to additional nutrients and could benefit from watershed restoration and protection strategies to prevent a future impairment."

### *Land Use Changes in the Watershed*

Urban and shoreland development has increased in Duck and Ballantyne lake watersheds in the past ten years. While development has slowed in this area, the trend for new development is expected to continue.

In the past ten years, regional sewer systems were extended from the City of Madison Lake and the Lake Washington sewer district to Duck Lake and part of Lake Ballantyne and Madison Lake shoreland. The sewer extension eliminated septic system sources of pollution but may have increased stormwater runoff sources from existing and future development. Ballantyne and Duck lake citizens reported problems with paved surfaces increasing stormwater runoff directly to the lake and changes in outlet elevations that may contribute to water quality problems.

The City of Madison Lake and Blue Earth County may consider revising stormwater management policies and establishing stormwater retrofits in these watersheds as Lake Ballantyne is a priority for protection and Duck Lake does not have aquatic life impairments while it does have aquatic recreation impairment due to nutrients.

### *Consensus for Action*

- Work to improve the lake should be targeted to agricultural runoff, in-lake vegetation and invasive species, stormwater management and shoreland management.
- Protecting and improving aquatic habitat both in-lake and on adjacent shoreline is key to promoting strong natural reproduction and a healthy food web to provide the building blocks for diverse aquatic communities.
- Technical assistance for landowners in shoreland is needed for lake shore residents to support establishing conservation practices.
- The municipalities in the watershed (the City of Madison Lake and the City of Lake Crystal) have an important role protecting lake water quality with stormwater management and retrofits in the Middle Minnesota River watershed.
- The Soil and Water Conservation Districts have an important role working with farmers in the Middle Minnesota River lake watersheds. Best practices should be targeted to soils sensitive for nutrient management, "highly erodible land", steep slopes and riparian areas along with overall Soil Health.
- The Crystal Waters Project does a good job communicating with members and nonmembers using a Facebook page and email to promote their work with in-lake projects, carp removal, shoreland restoration, and urban housekeeping practices.
- The Duck Lake Preservation Association would like to improve communications and work with farmers and with new development to improve stormwater management and treatment.
- Le Sueur County recommends involving the Lake Washington Improvement Association in all future projects.

### *Strategies and Recommendations*

#### **List of Strategies for Lake Ballantyne and Duck Lake**

##### **Project development, education and outreach**

- Involve city officials and staff, lake association and farmers with identifying projects, practices and other needs. (City of Madison Lake, Duck Lake Preservation Association, Ballantyne Lake Association, DNR, SWCD, Drainage Authority, MPCA)

- Conduct regular shoreland ordinance and stormwater management training (every 2-3 years) with City of Madison Lake and Blue Earth County elected and appointed officials and staff.
- SWCDs work with farmers in the watershed.

#### **Stormwater Management**

- Involve city officials and lake association with identifying practices and other needs.
- Technical assistance to update stormwater ordinances in City of Madison Lake and Blue Earth County. (Minimum Impact Development and Low Impact Development design standards for example)
- Stormwater retrofits in the City of Madison Lake, shoreland, and unincorporated areas, also State Highways, County Roads and Township Roads.
- Constructed wetlands, stormwater wetlands and water quality treatment wetlands.
- Construction site erosion control and training.

#### **Shoreland management**

- Technical assistance and local capacity for technical assistance needed for landowners in shoreland areas.
- Disconnect impervious surfaces in residential and urban areas.
- Shoreland restoration.
- Bluff stabilization with perennial and native vegetation.
- Enforce shoreland regulations and consider updating regulations to better protect shoreland.

#### **Soil Health, Nutrient management and Soil protection**

- Involve farmers in identifying and choosing BMPs.
- Cover crops, tillage and nutrient management plans, nutrient removal structures, terraces, WASCOBs, grassed waterways.
- Target and manage highly erodible land and riparian areas.
- Target areas sensitive to nutrients. (*see attached maps*)

#### **Wetland protection, enhancement and restoration of important functions (*see attached maps*)**

- Greenprint priority areas for multiple aquatic and natural resource benefits.
- Duck Lake wetland restoration in shoreland for fisheries.
- Water storage functions.
- Nutrient treatment functions.
- Wetland buffers on existing wetlands to protect water storage, nutrient treatment and wildlife habitat functions.

#### **Aquatic invasive species of concern in 2017**

- Lake Ballantyne - Eurasian water milfoil.
- Duck Lake – Curlyleaf pondweed.

### **List of Strategies for Crystal, Loon and Mills Lake Watershed**

#### **Education and outreach**

- Crystal Waters Project website and social media.
- Crystal Waters Project sponsoring and participating in special events.
- SWCD work with farmers in the watershed.

#### **Soil Health – Coarse-textured soils sensitive to nutrient management (*see attached map*)**

- Cover crops.
- Tillage and nutrient management, strip-till and no-till plans.

#### **Nutrient treatment**

- Denitrifying bioreactors.
- Phosphorus removal structures.

#### **County Ditch 56**

- Multipurpose Drainage Plan prepared for the Drainage Authority by ISG identified projects for implementation.

#### **Stormwater Management**

- Stormwater retrofits.
- Constructed wetlands and water quality treatment wetlands.
- Phosphorus removal structures.
- Construction site erosion control and training.

#### **Shoreland Management**

- Shoreland restoration.
- Training, education and outreach for local officials and citizen.

#### **Wetland Protection, Restoration and Enhancement to Provide Important Functions (*see attached maps*)**

- Greenprint priority areas.
- Water storage functions.
- Nutrient treatment functions.

#### **In-lake treatment**

#### **Aquatic invasive species of concern –Carp**

#### **Strategies for Lake Washington and Lake Emily Watersheds**

- 1) Additional outreach to Lake Emily watershed via additional mailing and a possible meeting in their area may be beneficial. A meeting like this may not be very well attended due to the fact there are only approximately 60 properties located around the lake, a number of them being agriculture or business.
- 2) The Lake Washington Improvement Association should be contacted if conservation work is planned in this area. They are a good tool for communication to lakeshore property owners. They also work to complete conservation projects and are usually looking for assistance from Le Sueur County.
- 3) Both Lake Washington and Lake Emily have a large amount of agriculture. Best manage practice targeted for this are need to keep this in mind. Working with the Ag community may provide for greater reductions for the dollar.

#### **List of BMPs for Lake Washington and Lake Emily Watersheds**

- Shoreline restorations and stabilizations
- Bluff restorations and stabilizations
- Cover crops
- Filter strip
- Grade stabilization structure
- Grassed waterway
- Water and sediment control basin
- Wetland restoration
- Wetland enhancement

#### ***Activities by others that resulted in implementation of similar projects in other locations.***

Larry Maruska, member of the Lake Washington Improvement Association, Lake Washington Sewer District board and president of the Tri-County Coalition of Lake Associations attended the shoreland management and zoning information meeting in Blue Earth County. Mr. Maruska requested ten folders containing DNR fact sheets to distribute at the following Tri-County COLA meeting.

The City of Madison Lake City Administrator requested website links to the DNR fact sheets for the City to post on their website to help with citizens' questions about shoreland.

The Crystal Waters Project posted the DNR fact sheets on their Facebook page to help citizens understand shoreland management and shoreland rules.

#### *Partnerships.*

The DNR staff were a tremendous resource for technical assistance. Greater capacity for technical assistance is needed in Blue Earth County, and citizens want more education and information now and moving forward, particularly in the Duck and Ballantyne watersheds. DNR staff were at both information meetings in Blue Earth County. Many of the landowners who came to the Open House were there to get answers about problems they have with their parcels in shoreland. The DNR staff has direct knowledge of the lakes, AIS and shoreland areas, so they helped landowners with questions.

#### *Plans to continue the project beyond the end date of the grant agreement.*

Civic engagement will continue with the Comprehensive Watershed Management Plan (also known as One Watershed One Plan) which is expected to follow the WRAPS in the next few years.

Education and outreach and project implementation are underway and will be ongoing in the Lake Crystal watershed which includes Crystal, Loon and Mills lakes. The Crystal Waters Project, farmers, residents of Lake Crystal, the SWCD, Drainage Authority, City of Lake Crystal and Blue Earth County will continue working to improve water quality in this watershed.

Duck Lake Preservation Association has a strong history establishing in-lake aquatic vegetation and other projects through a Clean Water Partnership. As a result of this project civic engagement, many members of the Duck Lake Preservation Association have renewed interest in working with the local and state government partners as well as landowners and association members.

#### *How results of the project were and will be shared.*

The primary goal of this project was to contribute scientifically-supported strategies for development of an MPCA Watershed Restoration and Protection Strategies (WRAPS) report. The project results will be shared with the Minnesota River at Mankato Watershed Public Participation Team which consists of four teams including the Lakes Engagement Team, SWCD WRAPS Strategy Team, Nicollet County WRAPS Team and Renville County WRAPS Team.

The Duck Lake Preservation Association and Lake Ballantyne Association each requested a copy of this report and follow up activities with these lake associations are expected as time allows.

The lake protection and restoration strategies identified through the Middle Minnesota River lakes civic engagement project were included in the *Blue Earth County Water Management Plan 2017-2026*.

#### *Lessons Learned.*

Communications with lake associations can be a major challenge. Participation by lake associations was significantly greater with lake associations who are using email and social media.

#### *Recommendations for future action in this project area.*

Blue Earth County will need technical assistance and support for stormwater management training for local government officials and citizens and revising stormwater and land use ordinances.

Blue Earth County will need to increase local capacity to address the lakes' watershed needs for education and outreach, project development and technical assistance.

Le Sueur County recommends working closely with the Lake Washington Improvement Association and targeting BMPs to the ag community that may provide greater pollutant reductions for the dollar.

*Feedback or suggestions to improve MPCA grant programs.*

1. The MPCA Middle Minnesota River watershed project manager did a very good job working with local staff to identify and recognize variations in the Middle Minnesota River watershed in development of the work plan and support civic engagement project implementation. As stated in the workplan:  
"Local staff involvement is critical to the success of understanding the local community context and citizens' values and perspectives. Local staff will be the first point of contact for watershed residents regarding water quality issues. Providing these staff with the engagement process design is a key factor to the success of the project."
2. The workplan tasks and subtask categories are awkward for reporting and not reflective of real world processes. The tasks and subtasks are difficult to report because they are rarely executed as distinct subtasks as shown in this project workplan. Working with a multitude of partners, local staff and citizens to plan and conduct civic engagement activities is a convoluted process, not lineal a process as suggested in the categories, tasks and subtasks in this workplan.
3. The specificity required for MPCA contracts combined with lack of flexibility and the time required for the MPCA to approve amendments and "change orders" hinders project implementation and the ability to improve projects. The MPCA grant contracts do not recognize that costs and plans always change. During a three-year project, there will be changes, and costs will change especially when working with many partners. It took a year to get the work plan done to meet MPCA needs.
4. A financial tracking and reporting template would have been beneficial. The MPCA has specific expectations for financial reporting, but there is no templates or guidance.

## Section III – Final Expenditures

A spreadsheet report showing all final expenditures is attached to this final report.

## Grant project summary

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Project title: Middle Minnesota Watershed Civic Engagement Lakes

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Organization (Grantee): Blue Earth County

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Project start date: June 5, 2015 Project end date: June 30, 2017 Report submittal date: July 31, 2017

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Grantee contact name: Julie Conrad Title: Land Use & Natural Resources Planner

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Address: PO BOX 3566, 410 South Fifth Street

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City: Mankato State: MN Zip: 56002-3566

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Phone number: 507-304-4381 Fax: Email: julie.conrad@blueearthcountymn.gov

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Basin (Red, Minnesota, St. Croix, etc.) /Watershed & 8 digit HUC:: Minnesota River - HUC Counties: Blue Earth and Le Sueur

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**Project type** (check one):

- Clean Water Partnership
- Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development**
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL/WRAPS Implementation

## Grant funding

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Final grant amount: \$ 33,000.00 Final total project costs: \$ 22,590.67

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Matching funds: Final cash: Not applicable Final in-kind: Not applicable Final Loan: Not applicable

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MPCA project manager: Bryan Spindler

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## For TMDL/WRAPS development or TMDL/WRAPS implementation projects only

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Impaired reach name(s): Not applicable. See impaired lakes below.

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AUID or DNR Lake ID(s): Crystal Lake 07-0098-00, Loon Lake 07-0096-00, Duck Lake 07-0053-00, Ballantyne 07-0054-00, Lake Washington 40-0117-00, Emily 40-0124-00

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Listed pollutant(s): Nutrient/Eutrophication Biological Indicators

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303(d) List scheduled start date: Various (2008-2016) Scheduled completion date: Various (2012-2017)

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*AUID = Assessment Unit ID*

*DNR = Minnesota Department of Natural Resources*

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## **Executive summary of project** (300 words or less)

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### **Problem (one paragraph)**

In the Middle Minnesota River watershed, lakes are most prevalent south and east of the Minnesota River in the Minneopa Creek and Shanaska Creek watersheds in Blue Earth and Le Sueur counties. This project was focused on Crystal, Loon and Mills lakes in the Minneopa Creek watershed and Duck, Ballantyne, Washington and Emily lakes in the Shanaska Creek watershed. Many of the lakes in this watershed are important recreational and fisheries resources in the region. Most of the lakes are impaired for aquatic recreational uses and are on the 303(d) list of impaired waters. Protection and restoration of the lakes' water quality and aquatic life will require widespread understanding and support for establishing best practices in these watersheds.

### **Waterbody improved (one paragraph)**

The purpose of this project was to integrate water resource management into the community watershed context by involving local public stakeholders, citizens, landowners and land managers in identifying community and landowner opportunities, obstacles, and opinions on water quality and land management in lake watersheds in the Middle Minnesota River Watershed. The results will be considered by the MPCA and other partners in development of the Watershed Restoration and Protection Strategies report for the entire watershed.

### **Project highlights (one paragraph)**

There were three education and information meetings in the watershed and one presentation at a lake association annual meeting. The meetings were attended by more than 200 watershed citizens, local officials and technical staff. Written surveys and face-to-face interviews were used to collect citizens', landowners', land managers' and local government officials' opinions about problems, solutions and obstacles for protecting and restoring water quality in lake watersheds in the Middle Minnesota River watershed.

### **Results (one paragraph)**

Lists of strategies were developed for each lake. The list of strategies include project development and technical assistance, stormwater management, shoreland management, soil health, nutrient management, wetland restoration and enhancement, and education. These strategies will be considered by the MPCA and other partners in development of the Watershed Restoration and Protection Strategies (WRAPS) report for the entire watershed.

### **Pictures**



Participants at the May 18, 2017, Open House meeting in Madison Lake.



Duck Lake watershed citizens discussing problems and solutions at the May 18, 2017 Open House.

# ATTACHMENTS

## Middle Minnesota Watershed Civic Engagement Lakes Final Report

Work products and documents produced during the reporting period.

### **Blue Earth County Shoreland and Zoning Seminar for Local Officials, May 9, 2017**

- Meeting Invitation
- Agenda
- Speaker Biographies
- Presentation (also presented later at Lake Washington informational meeting)
- Presentation Clicker Slides and Results
- Survey and Survey Results Report

### **Lakes Open House for Duck Lake and Lake Ballantyne Watersheds, May 18, 2017**

- Meeting Invitation
- Open House Survey and Report
- Report on Face-to-Face Conversations, Problems, Solutions and Strategies

### **Le Sueur County Final Report**

- Description of civic engagement activities
  - Lake Washington Annual Meeting, August 2016
  - Lake Washington and Lake Emily Survey Results
  - Information Meeting for Lake Washington, June 7, 2017
- List of strategies and BMPs for Lake Emily and Lake Washington

# ATTACHMENTS

## Middle Minnesota Watershed Civic Engagement Lakes Final Report

### **Blue Earth County Priority Areas to Target Strategies for Nutrient Treatment, Wildlife Habitat and Multiple Benefits in the Greenprint, and Water Storage.**

The final report contains strategies for targeting strategies in Blue Earth County. The following maps show priority areas identified in the *Blue Earth County Water Management Plan 2017-2027* and are related to the list of recommended strategies in this Middle Minnesota Watershed Civic Engagement Lakes final report.

### **Blue Earth County Water Management Plan Priority Areas**

- Soils sensitive for nutrient management
- Greenprint priority areas
- Potentially restorable basins for nutrient treatment functions
- Potentially restorable basins for water storage functions

### **Middle Minnesota Watershed Nicollet County WRAPS Strategy**

The purpose of this project was to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the Nicollet County portion of the Minnesota River Mankato Watershed. This project was a collaboration of MPCA, county staff, University of Minnesota Department of Forestry Staff, and Great River Greening staff to develop a survey that identified attitudes and beliefs surrounding water resources and conservation in the Nicollet County portion of the watershed. Survey data was compiled and presented in a report. The report findings were then highlighted in a public meeting. The public meeting allowed people an opportunity to participate and provide feedback on the challenges of implementing conservation programs.



The Minnesota Pollution Control Agency (MPCA) provides grants to organizations to help fulfill the agency's mission. Each grant project is required to complete a final report. Information from this grant report will be used to illustrate progress toward meeting the MPCA's goals and missions and will be shared with interested parties, targeted audiences, and legislators.

More information about preparing a final project report for a Section 319 grant can be found in the [Section 319 Final Project Reports Workshop](#) on the U.S. Environmental Protection Agency (EPA) Polluted Runoff: Nonpoint Source Pollution website at <http://www.epa.gov/owow/nps>. This notebook describes the purpose of Section 319 final reports, the information that should be included in the report, examples of especially effective elements from 319 reports, and ways to expand the final report to be used for outreach and education, building partnerships, and many other uses.

**Instructions:** This grant report must be submitted **no later than 30 days after the end of the grant contract**. It must include results, in the form of data and information, that best demonstrate achievement of project goals and objectives.

Please follow the attached report format, referring back to the work plan and budget and any subsequent amendments to your grant agreement, contract, or work order. When completed, send an electronic copy of the completed report to your MPCA project manager for review.

## Executive summary

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### Problem

- Specify the location of the water body, and, if relevant, geographic connection with other streams/rivers.
- If applicable, what year was the water body put on the 303(d) list? (b) What beneficial use was not met? (c) Which parameter was the cause of the listing, if known? (d) If not identified in the listing, what pollutant(s) is believed to have been responsible for the impairment?
- What was the water quality problem?
- Describe the source(s) of the problem and specify category and subcategory (e.g., agriculture, cattle with access to streams).
- Was a Total Maximum Daily Load (TMDL) or Watershed Restoration and Protection Strategies (WRAPS) completed? If so, please provide information (e.g., the water body was listed for [insert parameter here], and the TMDL/WRAPS said it was necessary to meet a target of [insert concentration or loading] to achieve water quality standards).

### Waterbody improved

- What was done to address the problem?
- Did the water body improve or was it removed from the state's 303(d) list?

### Project highlights

- What major Best Management Practices (BMPs)/activities addressed causes of pollution and demonstrated in-stream improvements?
- Who were major partners in the effort?
- During what timeframe did the activities occur?
- Was there a larger context of a watershed/comprehensive plan?
- Are there ongoing plans to continue improvement

### Results

- What water quality goals were achieved?
- What were the specific load reductions in pollutants that indicate progress?
- Was the water body delisted? If so, which year was it delisted, or when does the state expect to delist the water body?
- Were any new ordinances or laws put into place as a result of the actions?

## Body of main report

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### Section I – Work plan review

- Briefly outline any approved changes from the original work plan, staff, or participating organizations.
- Please list and give a brief report on each activity/task identified in your work plan (Attachment A of the 319 Grant Agreement, contract, or work order) or most recently approved work plan amendment. For each task, briefly summarize the activities completed and describe any problems, delays, or difficulties that have occurred in completing the project work. Explain how problems were resolved or list any activities that were not completed.

### Section II – Grant results

*For TMDL/WRAPS Development Projects describe the work products of the contract, such as a written TMDL/WRAPS or technical report, data files, maps, and any other attachments that were produced by the project.*

- **Measurements:** Please describe your evaluation plan and its results.
  - What tools did you use, what methods did you use to gather information?
  - If you did a survey, what was the sample size and what was the response rate, how did you analyze the results, evaluate the monitoring data, etc.?
  - If you have measurable environmental results, such as pounds of chemicals reduced, best management practices installed, pollutants prevented, waste eliminated, changes in water quality, resources conserved, etc., also include those here or under the appropriate project objective.
- **Products:** Please list, and attach copies of any documents or products that have been produced during the reporting period, including monitoring data (if applicable, including the electronic summary of all data for the EQulS data base), brochures, articles, special reports, tapes, CDs, etc. Provide relevant project photographs.

**Note about photos:** Photos may be scenes of the water resource in question and/or may illustrate installations, BMPs, or other measures that help show what the project accomplished. **Attached electronic files (e.g., JPGs) are preferred.**

**Note for TMDL/WRAPS development projects and TMDL/WRAPS implementation projects:** All project monitoring data must be approved in the EQulS data system and all best management practices implementation activities must be inputted into the state eLINK system before the final report will be approved and final project payment will be made.

- **Public outreach and education:** If part of your work plan, please evaluate the effectiveness of public participation and education plans for the project. Also include the total numbers from project outreach and education activities, such as number of people reached, educational materials distributed, workshop participants, etc.
- **Long-term results:**
  - Do the results of this project build capacity that can increase the likelihood of long-term outcomes, such as:
    - environmental problems identified or understood
    - land use changes in the watershed
    - recommendations created
    - consensus for action created
    - increased ability to solve similar problems in the future, etc.?
    - if so, how?
  - Did you form new partnerships or alliances as a result of the project? If so,
    - What longer-term impact will this have on the project?
    - What future efforts are anticipated as a result of the partnership(s)?
    - Describe any activities you are aware of by others that benefited from the results of your project and/or resulted in implementation of similar projects in other locations.
  - Is there a plan to continue the project beyond the end date of the grant agreement or contract? If so, explain.
  - Describe how you shared the results of your project. List any information or technology transfer and dissemination (newsletters, web sites, training, reports, disseminated project activities, accomplishments, and lessons to the general public). Where and to what audiences have you made presentations?
  - What other audiences (media, businesses, other agencies, etc.) would be most interested in the results of this project?
  - Please describe any lessons learned during this project that would be valuable for future projects, even if the project didn't succeed as expected. What other recommendations or advice would you make for future activities related to this priority project area?
  - Please provide any feedback or suggestions that you would like to share with the MPCA to improve their grant programs.

### Section III – Final Expenditures

*Projects should use the format they used in their work plan for the budget to report on the final expenditures. This should list the tasks or activities outlined in their original (or amended) work plan.*

## **Executive Summary**

### Problem

The purpose of this project is to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the Nicollet County portion of the Minnesota River Mankato Watershed. This work will help identify land management options for the purposes of surface water quality restoration and protection within the watershed. This project will work with a collaboration of MPCA, Nicollet County, Dept. of Forest Resources -University of Minnesota, and Great River Greening to develop project strategies based on their specialized expertise and knowledge of local community goals and interests. The findings from this project will inform the development of the WRAPS report within the Minnesota River Mankato Watershed.

### Waterbody Improved

This project identifies behaviors and beliefs of residents within the Nicollet County portion of the Minnesota River Mankato Watershed.

### Project Highlights

Nicollet County partnered with Great River Greening and Dept. of Forest Resources - University of Minnesota to develop and implement a survey that identifies attitudes and beliefs surrounding water resources and conservation. The project was initiated in 2015 and surveys were sent to over 1,000 landowners in the watershed. Data from returned surveys was compiled and presented in a report. Findings highlighted in this report were presented in a public meeting on June 21, 2017.

### Results

The survey identified constraints including financial resources, equipment, and leadership are preventing landowners from initiating conservation projects. Drivers, such as easing complexity of programs and increasing program flexibility, would allow more landowners to enroll in programs. The public meeting allowed people an opportunity to participate and provide feedback on the challenges of implementing conservation programs.

## **Section I – Work Plan Review**

There were no changes from the original work plan, staff, or participating organizations during the project. A brief description of each task in the Work Plan is provided below:

### Public Participation Engagement Team:

The Engagement Team reviewed and discussed strategies for civic engagement. Public participation including development of the survey and presentation of results were discussed in order to put together an effective public participation program.

### Public Participation Implementation:

The Dept. of Forest Resources – University of Minnesota was contracted to develop a self-administered survey to be mailed to Nicollet County residents within the Minnesota River Mankato watershed. This survey was designed to identify landowner's values, beliefs, and norms associated with water resources. Information gained from the survey would also identify the conservation behaviors that landowners currently engaged in and what their perceptions of existing water resource programs are. This information was to be used for resource managers to design more effective conservation programs and also to promote them more effectively.

After the survey results were prepared by the Dept. of Forest Resources, Great River Greening and Nicollet County developed a public participation plan to discuss the findings with the residents who participated in the survey. Public participation involved a “Community Conversations” meeting that allowed residents to voice their thoughts on the challenges, attitudes, and beliefs surrounding water resources and conservation practices. The survey results were also presented at this meeting. A summary of the meeting was emailed to interested individuals and follow-up of actions identified in the meeting are expected to continue beyond the original project.

#### Administration – Progress Tracking:

Progress was tracked by Nicollet County regarding public participation costs and activities. Nicollet County worked with project partners on developing outcomes indicators, including the number of survey responses and specific responses within the survey. These indicators were tracked towards desired community capacity for purposes of adaptive management, WRAPS documentation, and program accountability reporting.

#### Administration – Project Management:

Nicollet County coordinated financial expenditures on a quarterly basis. Subcontractors filed reimbursement requests, as needed, at the end of each quarter. Nicollet County compiled and processed these expenditures and reported them to MPCA for reimbursement.

## **Section II – Grant Results**

The civic engagement was designed to have two parts and included both a survey and a public meeting. The survey was developed by the Dept. of Forest Resources with input from Great River Greening and Nicollet County. As described in Section I, this survey was designed to identify beliefs about water resources and conservation actions. The list of questions in the final survey can be found as an attachment to this report. The survey was mailed to a total of 1,163 Nicollet County residents that were located within the Minnesota River Mankato Watershed. We were interested in getting responses from those that would be able to implement conservation practices. Therefore, residents that owned at least 10 acres of land and located outside of a municipality were targeted for the survey. Of the total, 328 responded to the survey.

The results of the survey were summarized in a report and are included in this document as an attachment. From the results of the survey, we learned that the landowners in Nicollet County are highly concerned about the consequences of water pollution and feel a sense of personal obligation to protect water resources. Most landowners also believe that water pollution affects human health and that excessive water runoff causes soil and nutrient loss. A majority of landowners also expressed the belief that water resources in Minnesota need better protection.

The survey also told us that the biggest constraint to water resource conservation appears to be lack of personal financial resources, equipment, community financial resources, and community leadership. The biggest drivers of conservation action, according to the survey, appear to be reducing the complexity of and increasing flexibility of conservation programs, availability of financial resources, and evidence that conservation practices improve water resources. There is apparently a large gap and significant differences between subgroups (i.e., small landowners and large landowners) in beliefs,

norms, and behaviors. These differences are important to keep in mind as we structure our conservation programs and target implementation of practices.

One public meeting was held to discuss the results from the survey and to obtain information from residents about things that were working in conservation and things that needed to be changed. Ideas on how to bring about changes were discussed and residents were given opportunities to participate in making these changes. This meeting was developed through planning by Great River Greening and Nicollet County. A partner of Great River Greening that is involved in that organization's other public participation meetings, Evolve Leadership Consulting, facilitated the meeting.

Overall, the project was successful in identifying water resources behaviors as well as constraints and drivers regarding implementation of conservation practices. The project also allowed residents to actively participate in addressing some of the barriers with conservation. Taking this approach and expanding it to the entire watershed would provide benefits for the larger Minnesota River Mankato Watershed. Addressing drivers and constraints identified for this project would be applicable as general strategies for water quality improvement to consider for the larger watershed.

### **Section III – Final Expenditures**

Final expenditures for the project totaled \$47,428.94 out of a budget of \$51,000. See attached for a summary of final expenditures for the project.

## Grant project summary

Project title: Middle Minnesota Watershed WRAPS Nicollet County

Organization (Grantee): Nicollet County

Project start date: 7/25/2015 Project end date: 6/30/2017 Report submittal date: 7/14/2017

Grantee contact name: Amy Linnerooth Title: Environmental Specialist

Address: 501 S. Minnesota Ave.

City: St. Peter State: MN Zip: 56082

Phone number: (507) 934-7070 Fax: (507) 934-7079 Email: amy.linnerooth@co.nicollet.mn.us

Basin (Red, Minnesota, St. Croix, etc.) /Watershed & 8 digit HUC:: Minnesota River – Mankato 07020007 County: Nicollet

### Project type (check one):

- Clean Water Partnership
- Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL/WRAPS Implementation

## Grant funding

Final grant amount: \$ 51,000.00 Final total project costs: \$ 47,428.94

Matching funds: Final cash: \$ (N/A) Final in-kind: \$ (N/A) Final Loan: \$ (N/A)

MPCA project manager: Bryan Spindler, Pollution Control Specialist Senior

## For TMDL/WRAPS development or TMDL/WRAPS implementation projects only

Impaired reach name(s): Minnesota River - Mankato

AUID or DNR Lake ID(s): \_\_\_\_\_

Listed pollutant(s): PCB in Fish, Fecal Coliform, PCB in Water Column, Turbidity, Fish Bioassessments, E. coli, Nitrates, Chlorpyrifos,

303(d) List scheduled start date: \_\_\_\_\_

Scheduled completion date: \_\_\_\_\_

*AUID = Assessment Unit ID*

*DNR = Minnesota Department of Natural Resources*

## Executive summary of project (300 words or less)

This summary will help us prepare the Watershed Achievements Report to the Environmental Protection Agency. (Include any specific project history, purpose, and timeline.)

## Problem (one paragraph)

The purpose of this project is to identify community/landowner opportunities, obstacles, and opinions on land management and water quality in the Nicollet County portion of the Minnesota River Mankato Watershed. This work will help identify land management options for the purposes of surface water quality restoration and protection within the watershed. This project will work with a collaboration of MPCA, Nicollet County, Dept. of Forest Resources -University of Minnesota, and Great River Greening to develop project strategies based on their specialized expertise and knowledge of local community goals and

interests. The findings from this project will inform the development of the WRAPS report within the Minnesota River Mankato Watershed.

### **Waterbody improved (one paragraph)**

This project identifies behaviors and beliefs of residents within the Nicollet County portion of the Minnesota River Mankato Watershed.

### **Project highlights (one paragraph)**

Nicollet County partnered with Great River Greening and Dept. of Forest Resources - University of Minnesota to develop and implement a survey that identifies attitudes and beliefs surrounding water resources and conservation. The project was initiated in 2015 and surveys were sent to over 1,000 landowners in the watershed. Data from returned surveys was compiled and presented in a report. Findings highlighted in this report were presented in a public meeting on June 21, 2017.

### **Results (one paragraph)**

The survey identified constraints including financial resources, equipment, and leadership are preventing landowners from initiating conservation projects. Drivers, such as easing complexity of programs and increasing program flexibility, would allow more landowners to enroll in programs. The public meeting allowed people an opportunity to participate and provide feedback on the challenges of implementing conservation programs.

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### **Partnerships (Name all partners and indicate relationship to project)**

Nicollet County is the contractor for the project and was responsible for the project proceeding on time and within the budget provided. Nicollet County submitted invoices on a quarterly basis to MPCA for reimbursement of project expenses and provided summaries of project progress through semi-annual and final reporting. Nicollet County also participated in project development and implementation including project planning, development of survey questionnaire and its distribution, and presentation/outreach of survey results at an outreach workshop.

Great River Greening is a sub-contractor and their primary role was to serve with Nicollet County as a local project partner, provide support, and provide input from and a link to Nicollet SCWD. Great River Greening collaborated with all partners to help with project planning, development of survey questionnaire and its distribution, and assist with the presentation of the survey results. They also provided support and personnel to conduct an outreach workshop to present the study findings and reflect on action steps.

Department of Forest Resources, University of Minnesota is a subcontractor and prepared the survey that was administered to approximately 1,000 residents in Nicollet County. They managed the data from the results of the survey and prepared a report that summarized their findings regarding attitudes and beliefs of water in Nicollet County.

MPCA provided project oversight and approval for invoices and reporting prepared by Nicollet County.

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### **Pictures**



## Attachment – Survey

# Your Perspectives on Local Water Resources

## A survey of landowners in Nicollet County



Department of Forest Resources  
University of Minnesota  
St. Paul, Minnesota



### **Before you begin:**

We are conducting this survey to **better understand landowner opinions and practices** and to improve conservation programming. **This survey is voluntary and confidential.** It should take **about 20 minutes to complete** this questionnaire. Please answer the questions as completely as possible.

### **As you complete the survey, please keep in mind the following definitions:**

**Buffer/filter strip:** A strip of vegetation (grasses, trees, and shrubs) planted and maintained adjacent to streams, ditches and lakes that filters water, stabilizes the stream bank, and provides wildlife habitat.

**Conservation drainage management:** Technologies and practices that remove excess water from lands while reducing potential pollutants (includes controlled drainage, shallow drainage, bioreactors, saturated buffers, rock inlets, storage basins, and ditch designs).

**Conservation cover:** Converting environmentally sensitive areas to vegetative cover to reduce soil erosion, improve water quality, and enhance forest and wetland resources (includes Conservation Reserve Program and land retirement).

**Conservation tillage:** Soil cultivation that leaves the previous year's crop residue on fields before and after planting the next crop to reduce soil erosion and surface runoff (includes no, minimum, strip, ridge, mulch-till).

### **Once you've completed the survey:**

Please fold it in thirds and mail it back in the enclosed self-addressed stamped envelope.

***Thank you for your help!***

## I. Your Community

First, we would like to know your thoughts on your community.

1. Approximately how many years have you lived in your current community? \_\_\_\_\_

2. When you think of your community, what first comes to mind? (Please check one)

My neighborhood     My township     My city     My county     My watershed

3. How important are the following qualities of a community to you? (Circle one number in each row.)

	Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important
a. Strong family ties	-2	-1	0	1	2
b. Good relationships among neighbors	-2	-1	0	1	2
c. Opportunities to be involved in community projects	-2	-1	0	1	2
d. Opportunities to express my culture and traditions	-2	-1	0	1	2
e. Clean streams, rivers and lakes	-2	-1	0	1	2
f. Access to natural areas/views	-2	-1	0	1	2
g. Opportunities for outdoor recreation	-2	-1	0	1	2

4. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. If there is someone I want to meet in my community, I can usually arrange it.	-2	-1	0	1	2
b. When I need assistance with something on my farm/land, I often <u>find it difficult</u> to get others to help.	-2	-1	0	1	2
c. I find it easy to play an important role in most group situations within my community.	-2	-1	0	1	2
d. The average farmer/landowner can have an influence on rural community life in the region.	-2	-1	0	1	2

## II. Water (Streams, Lakes, Wetlands and Groundwater)

In the next section, we ask more specific questions related to your perspectives on water.

5. How familiar are you with water issues in your watershed? [see enclosed watershed map]

Not at all familiar     Slightly familiar     Moderately familiar     Very familiar

6. Before this survey, did you know your property is in the watershed shaded on the map?

Yes     No     My property is not in the shaded watershed

**7. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Water resources in Nicollet County are adequately protected.	-2	-1	0	1	2
b. Water resources in Minnesota need better protection.	-2	-1	0	1	2
c. Water resource protection will threaten jobs for people like me.	-2	-1	0	1	2
d. Laws to protect the environment limit my choices and personal freedom.	-2	-1	0	1	2
e. Water pollution affects human health.	-2	-1	0	1	2
f. Excessive water runoff causes soil and nutrient loss.	-2	-1	0	1	2
g. Conservation practices protect aquatic life.	-2	-1	0	1	2
h. Conservation practices contribute to quality of life in my community.	-2	-1	0	1	2
i. Conservation drainage management reduces water runoff from farmland.	-2	-1	0	1	2
j. Drainage tiling increases crop yield.	-2	-1	0	1	2
k. Drainage tiling contributes to higher water flows downstream.	-2	-1	0	1	2
l. Conservation tillage decreases crop yield.	-2	-1	0	1	2

**8. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. It is my personal responsibility to help protect water.	-2	-1	0	1	2
b. It is my personal responsibility to make sure that what I do on the land doesn't contribute to water resource problems.	-2	-1	0	1	2
c. Landowners upstream should be responsible for protecting water downstream.	-2	-1	0	1	2
d. The state government should be responsible for protecting water.	-2	-1	0	1	2
e. Local government should be responsible for protecting water.	-2	-1	0	1	2
f. Urban residents in Nicollet County should be responsible for protecting water.	-2	-1	0	1	2
g. Farmers in Nicollet County should be responsible for protecting water.	-2	-1	0	1	2

**9. In your opinion, how much of a problem are the following water pollutants/issues in your watershed [see map]? (Please circle one number for each row)**

	Not a problem	Slight problem	Moderate problem	Severe problem	Don't know
a. Sediment (cloudiness)	1	2	3	4	DK
b. Phosphorus	1	2	3	4	DK
c. Nitrogen in surface water	1	2	3	4	DK
d. Nitrogen in drinking water	1	2	3	4	DK
e. Flooding	1	2	3	4	DK
f. Drought	1	2	3	4	DK
g. <i>E. coli</i> (bacteria)	1	2	3	4	DK
h. Pesticides	1	2	3	4	DK
i. Herbicides	1	2	3	4	DK
j. Soil erosion	1	2	3	4	DK

**10. In your opinion, how much of a problem are the following potential sources of water pollutants/issues in your watershed [see map]? (Please circle one number for each row)**

	Not a problem	Slight problem	Moderate problem	Severe problem
a. Industrial discharge to streams, rivers, and lakes	1	2	3	4
b. Urban land development	1	2	3	4
c. Improperly sized/maintained septic systems	1	2	3	4
d. Soil erosion from farmland	1	2	3	4
e. Wind erosion	1	2	3	4
f. Stream bank erosion	1	2	3	4
g. Fertilizer management for lawn/turf care	1	2	3	4
h. Fertilizer management for crop production	1	2	3	4
i. Livestock operations	1	2	3	4
j. Tile drainage	1	2	3	4
k. Surface ditch drainage	1	2	3	4
l. Grass clippings and leaves entering storm drains	1	2	3	4
m. Urban/suburban water runoff	1	2	3	4
n. Unregulated contaminants (e.g., pharmaceuticals, personal care products)	1	2	3	4
o. Natural causes (e.g., natural erosion, wildlife)	1	2	3	4
p. Increased frequency or intensity of storms	1	2	3	4

**11. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

<b>I am concerned about the consequences of water pollution for...</b>	<b>Strongly disagree</b>	<b>Somewhat disagree</b>	<b>Neither agree nor disagree</b>	<b>Somewhat agree</b>	<b>Strongly agree</b>
a. My or my family's health	-2	-1	0	1	2
b. Future generations	-2	-1	0	1	2
c. Wildlife	-2	-1	0	1	2
d. Farmland	-2	-1	0	1	2
e. Aquatic life	-2	-1	0	1	2
f. People in my community	-2	-1	0	1	2

**12. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	<b>Strongly disagree</b>	<b>Somewhat disagree</b>	<b>Neither agree nor disagree</b>	<b>Somewhat agree</b>	<b>Strongly agree</b>
a. My use of a conservation practice contributes to healthy water resources.	-2	-1	0	1	2
b. By taking an active part in conservation, people can keep water clean in Minnesota	-2	-1	0	1	2
c. I have the knowledge and skills I need to use conservation practices on the land.	-2	-1	0	1	2
d. I can learn almost anything about natural resource stewardship if I set my mind to it.	-2	-1	0	1	2
e. I have the financial resources I need to use conservation practices on the land.	-2	-1	0	1	2
f. I have the equipment I need to adopt a new conservation practice.	-2	-1	0	1	2
g. I <u>do not</u> have the time to use conservation practices	-2	-1	0	1	2
h. Farmers in my community have the ability to work together to change land use practices.	-2	-1	0	1	2
i. My community has the financial resources it needs to protect water resources.	-2	-1	0	1	2
j. My community has the leadership it needs to protect water resources.	-2	-1	0	1	2
k. Weather has a big impact on my decisions about conservation practices on the land.	-2	-1	0	1	2

**13. How much influence do you think people like you have over the following? (Please circle one number for each row)**

	Not at all	Little	Some	A lot
a. Protecting clean water in the area.	0	1	2	3
b. Preserving farms and farmland in the area.	0	1	2	3
c. Inspiring or organizing others to take action in the community.	0	1	2	3

**14. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. There is <u>nothing</u> that we can do to keep the costs of farm/land management from going up.	-2	-1	0	1	2
b. I can usually achieve what I want on my farm/land when I work hard for it.	-2	-1	0	1	2
c. Most of what happens on my farm/land is <u>beyond my control</u> .	-2	-1	0	1	2
d. It is <u>difficult</u> for us to have much control over policies that affect our farms/lands.	-2	-1	0	1	2
e. I can usually rely on weather forecasts to manage my farm/land.	-2	-1	0	1	2
f. The weather is so variable that <u>it is difficult</u> to make decisions on my farm/land.	-2	-1	0	1	2
g. By adapting my farm/land management practices, people can become more resilient to changes in weather patterns.	-2	-1	0	1	2

**15. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. People who are important to me expect me to talk to others about conservation practices.	-2	-1	0	1	2
b. People who are important to me talk to others about conservation practices.	-2	-1	0	1	2
c. People who are important to me expect me to attend meetings or public hearings about water.	-2	-1	0	1	2
d. People who are important to me attend meetings or public hearings about water.	-2	-1	0	1	2
e. People who are important to me expect me to work with other community members to protect water.	-2	-1	0	1	2
f. People who are important to me work with other community members to protect water.	-2	-1	0	1	2

### III. Conservation Practices and Community Engagement

Now, we have a few questions about your conservation practices and community engagement. Remember, your responses to all of the survey questions are confidential.

**16. Do you use the following practices on your land/property? Do you intend to use these practices on your land/property in the future? (Please check yes/no for each)**

	Do you use the practice on your land/property now?		Do you intend to use the practice on your land/property in the future?		Not Applicable
	Yes	No	Yes	No	
a. Buffer/filter strip along streams and ditches or field edges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conservation drainage management practices (e.g., controlled drainage, storage basins)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conservation tillage practices (e.g., no till, minimum till)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Land in conservation cover (e.g., Conservation Reserve Program)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Drainage tiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Terraces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Vertical drop side inlets (adjacent to ditches)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Water and sediment control basins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Agriculture waste management facility or system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Rotation grazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Cover crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Drainage water management planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Protect wetlands on the land/property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Plant trees as a windbreak on the land/property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Follow a nutrient management plan on the farm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. Rain barrel or cistern to store water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q. Rain garden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r. Native plants or shrubs in my yard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s. Minimizing use of fertilizers/pesticides on lawns and gardens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**17. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

<b>I would be more likely to adopt new conservation practices or to continue to use practices if...</b>	<b>Strongly disagree</b>	<b>Somewhat disagree</b>	<b>Neither agree nor disagree</b>	<b>Somewhat agree</b>	<b>Strongly agree</b>
a. I knew more about how to implement and maintain conservation practices.	-2	-1	0	1	2
b. I knew more about the wildlife benefits of conservation practices.	-2	-1	0	1	2
c. I had help with the physical labor of implementing and maintaining conservation practices.	-2	-1	0	1	2
d. I had access to cost share resources to help me adopt conservation practices.	-2	-1	0	1	2
e. I could talk to other landowners or farmers who are using conservation practices.	-2	-1	0	1	2
f. I could attend a workshop or field day on conservation practices.	-2	-1	0	1	2
g. I could be enrolled in a program that recognizes local conservation stewards.	-2	-1	0	1	2
h. My neighbors maintained conservation practices.	-2	-1	0	1	2
i. There were regulations that mandated using a conservation practice.	-2	-1	0	1	2
j. Conservation programs were more flexible.	-2	-1	0	1	2
k. I could get higher payments for adopting conservation practices.	-2	-1	0	1	2
l. I could learn how to maintain conservation practices for soil conservation.	-2	-1	0	1	2
m. I had evidence that the conservation practice improved water resources.	-2	-1	0	1	2
n. I was compensated for lost crop production because of conservation practices.	-2	-1	0	1	2
o. Conservation program requirements were less complex.	-2	-1	0	1	2
p. I had evidence that conservation practices <u>did not</u> reduce crop yield.	-2	-1	0	1	2
q. A conservation assistance professional would visit my land to discuss conservation practice options.	-2	-1	0	1	2

**18. How often have you engaged in the following actions in the past 12 months? (Please circle one response for each row)**

In the <u>past 12 months</u> how often have you...	Never	Every few months	Every month	Every two weeks	Weekly or more
a. Volunteered for community organizations or events?	0	1	2	3	4
b. Heard about a water resource protection initiative?	0	1	2	3	4
c. Participated in a water resource protection initiative?	0	1	2	3	4
d. Worked with other community members to protect water?	0	1	2	3	4
e. Talked to others about conservation practices?	0	1	2	3	4
f. Attended a meeting or public hearing about water?	0	1	2	3	4
g. Taken a leadership role around water resource conservation in the community?	0	1	2	3	4

**19. Please rate your intentions to engage in the following actions in the next 12 months. (Please circle one number for each row)**

In the <u>next 12 months</u> , I intend to...	Most certainly not	Probably not	Uncertain	Probably will	Most certainly will
a. Learn more about water resource issues in my watershed.	-2	-1	0	1	2
b. Talk to others about conservation practices.	-2	-1	0	1	2
c. Work with other community members to protect water.	-2	-1	0	1	2
d. Attend a meeting or public hearing about water.	-2	-1	0	1	2
e. Contact conservation assistance professionals (e.g. my soil and water conservation district or the Natural Resources Conservation Service) about water resource initiatives.	-2	-1	0	1	2
f. Learn more about conservation practices.	-2	-1	0	1	2

**20. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

I feel a personal obligation to...	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Do whatever I can to prevent water pollution	-2	-1	0	1	2
b. Maintain my land/farm in a way that <u>does not</u> contribute to water resource problems.	-2	-1	0	1	2
c. Talk to others about conservation practices.	-2	-1	0	1	2
d. Use conservation practices on my land/property	-2	-1	0	1	2
e. Work with other community members to protect water resources.	-2	-1	0	1	2
f. Attend meetings or public hearings about water.	-2	-1	0	1	2

**21. To what extent do the following individuals or groups influence your decisions about conservation on your land? (Please circle one number for each row)**

	Not at all	Slightly	Moderately	A lot	Don't know/Not applicable
a. My family	1	2	3	4	DK/NA
b. Farmers	1	2	3	4	DK/NA
c. My neighbors	1	2	3	4	DK/NA
d. Environmental advocacy organizations	1	2	3	4	DK/NA
e. My county's Soil and Water Conservation District	1	2	3	4	DK/NA
f. My financial institution (e.g., financial advisor, loan officer, mortgage lender, etc.)	1	2	3	4	DK/NA
g. My local watershed district/ watershed management organization	1	2	3	4	DK/NA
h. University researchers	1	2	3	4	DK/NA
i. The MN Department of Natural Resources	1	2	3	4	DK/NA
j. The MN Pollution Control Agency	1	2	3	4	DK/NA
k. The MN Department of Agriculture	1	2	3	4	DK/NA
l. The Farm Service Agency (USDA)	1	2	3	4	DK/NA
m. The National Resource Conservation Service (NRCS)	1	2	3	4	DK/NA
n. My local extension agent	1	2	3	4	DK/NA
o. My county's Farm Bureau	1	2	3	4	DK/NA
p. Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	1	2	3	4	DK/NA
q. Certified crop advisors (CCA)	1	2	3	4	DK/NA
r. Seed/input dealer	1	2	3	4	DK/NA
s. Farmer's Union	1	2	3	4	DK/NA
t. My local co-op	1	2	3	4	DK/NA
u. My agronomist/agricultural advisor	1	2	3	4	DK/NA
v. Other (please specify): _____	1	2	3	4	DK/NA

**22. From the previous list (Question 21, a-v), what are your three most trusted sources of information regarding water quality issues and solutions? (Please list in order of first, second, and third most trusted)**

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_

#### IV. Information about You and Your Land/Farm

Finally, we want to know a little bit about you in order to better understand who responded to this survey. Remember, your responses to all of the survey questions are confidential.

**23. How do you use water resources in your watershed? (Check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> Drinking water                  | <input type="checkbox"/> Irrigation                                |
| <input type="checkbox"/> Canoeing/kayaking/other boating | <input type="checkbox"/> Picnicking and family gatherings          |
| <input type="checkbox"/> Fishing                         | <input type="checkbox"/> Observing wildlife                        |
| <input type="checkbox"/> Swimming                        | <input type="checkbox"/> Experiencing scenic beauty                |
| <input type="checkbox"/> Watering livestock              | <input type="checkbox"/> Storing excess water from drainage system |

**24. Does the land you own or rent touch a ditch, stream, lake, or river? (Please check yes or no)**

- Yes       No

**25. Do you use your land/property or rent land/property for agricultural production? (Please check yes or no)**

- Yes       No

**26. How would you characterize the quality of water in the ditch, stream, lake, or river closest to you? (Please check one box)**

- Very poor     Poor       Fair       Good       Very good     Don't know

**27. How would you characterize the quality of water in the Minnesota River? (Please check one box)**

- Very poor     Poor       Fair       Good       Very good     Don't know

**28. What is your experience with programs that offer financial incentives to farmers for conservation practices? (Please check one box)**

- Not relevant for my property     Never heard of any     Familiar but not enrolled     Currently enrolled

**29. Please describe the ownership arrangement and size of your property. (Please check all that apply and include acreage)**

- | Ownership   | Approximate Acreage |
|---|---------------------|
| <input type="checkbox"/> I own and manage my own land.          | _____               |
| <input type="checkbox"/> I rent land <u>to</u> another party.   | _____               |
| <input type="checkbox"/> I rent land <u>from</u> another party. | _____               |
| <input type="checkbox"/> Other (please specify): _____          | _____               |

**30. Who makes the management decisions on the land? (Please check one box)**

- I make my own decisions.  
 I leave it up to my renter.  
 I leave it up to the landowner/property owner.  
 I work together with the renter/landowners to make decisions.

**31. In what year were you born? \_\_\_\_\_**  Prefer not to respond

**32. Are you...**       Male       Female       Prefer not to respond

**33. What is the highest level of formal education you have completed? (Please check one box)**

- |  |   |
|--|---|
| <input type="checkbox"/> Did not finish high school            | <input type="checkbox"/> College bachelor's degree                  |
| <input type="checkbox"/> Completed high school                 | <input type="checkbox"/> Some college graduate work                 |
| <input type="checkbox"/> Some college but no degree            | <input type="checkbox"/> Completed graduate degree (Masters or PhD) |
| <input type="checkbox"/> Associate degree or vocational degree | <input type="checkbox"/> Prefer not to respond                      |

**34. What category best describes you? (Please check all that apply)**

- |  |   |
|--|---|
| <input type="checkbox"/> <b>White</b><br>For example, German, Irish, English, Italian, Polish, French, etc.  | <input type="checkbox"/> <b>American Indian or Alaska Native</b><br>For example, Minnesota Chippewa Tribe, Shakopee Mdewakanton Sioux, Navajo Nation, Mayan, Aztec, Nome Eskimo Community, etc. |
| <input type="checkbox"/> <b>Hispanic, Latino, or Spanish heritage</b><br>For example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc. | <input type="checkbox"/> <b>Middle Eastern or North African</b><br>For example, Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian etc.  |
| <input type="checkbox"/> <b>Black or African American</b><br>For example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc.                             | <input type="checkbox"/> <b>Native Hawaiian or Other Pacific Islander</b><br>For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese, etc.                                  |
| <input type="checkbox"/> <b>Asian</b><br>For example, Chinese, Filipino, Asian Indian, Vietnamese, Hmong, Korean, Japanese, etc.   | <input type="checkbox"/> <b>Some other race, ethnicity or heritage (Please specify):</b><br>_____   |
|  | <input type="checkbox"/> <b>Prefer not to respond</b>   |

**35. Which of the following best describes your total household income from all sources in 2015 before taxes?**

*(Please check one box)*

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Under \$20,000      | <input type="checkbox"/> \$75,000 - \$99,999   | <input type="checkbox"/> \$200,000 - \$249,999 |
| <input type="checkbox"/> \$20,000 - \$49,999 | <input type="checkbox"/> \$100,000 - \$149,999 | <input type="checkbox"/> \$250,000 - \$299,999 |
| <input type="checkbox"/> \$50,000 - \$74,999 | <input type="checkbox"/> \$150,000 - \$199,999 | <input type="checkbox"/> \$300,000 or more     |
|  |  | <input type="checkbox"/> Prefer not to respond |

**36. Approximately what percentage of your income is dependent on agricultural production? \_\_\_\_%**

**37. Do you have any other comments about your community or water management?**

***Thank you for your help!***

Please complete the survey, fold it in thirds, and mail it back in the enclosed self-addressed stamped envelope.

If you have questions please contact Dr. Amit Pradhananga, Department of Forest Resources, 115 Green Hall, 1530 Cleveland Avenue N., St. Paul, MN 55108. Phone: (612) 624-6726 or by email at prad0047@umn.edu. Cover Photo: Amy Linnerooth, Nicollet County.

**Attachment – Survey Results: An Assessment of Landowner Conservation Behavior in Nicollet County, Minnesota**

# AN ASSESSMENT OF LANDOWNER CONSERVATION BEHAVIOR IN NICOLLET COUNTY, MINNESOTA

Amit K. Pradhananga, Ph.D.  
and  
Mae A. Davenport, Ph.D.

May 15, 2017



Center for Changing Landscapes

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UNIVERSITY OF MINNESOTA

**Driven to Discover<sup>SM</sup>**

# AN ASSESSMENT OF LANDOWNER CONSERVATION BEHAVIOR IN NICOLLET COUNTY, MINNESOTA

A Final Technical Report  
Prepared  
for Nicollet County, Minnesota

Amit Pradhananga, Ph.D.  
and  
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May 15, 2017

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## Summary

This report describes a social science assessment of landowner conservation behavior in the Middle Minnesota watershed of Minnesota. The study was conducted by the Center for Changing Landscapes and the Department of Forest Resources in collaboration with Nicollet County. The purpose of this study was to understand landowner values, beliefs, norms and behaviors associated with water resources and conservation. Data for this study were gathered through a self-administered mail survey of a stratified, random sample of landowners who live within the Middle Minnesota watershed in Nicollet County.

### Landowner beliefs about water conservation:

- Overall, landowners are highly concerned about the consequences of water pollution and feel a sense of personal obligation to protect water resources.
- Most landowners also believe that water pollution affects human health and that excessive water runoff causes soil and nutrient loss.
- A majority of landowners also expressed the belief that water resources in Minnesota need better protection.
- There are significant differences between respondent subgroups in their beliefs, norms, and behaviors.

### Drivers of and constraints to conservation action:

- The biggest constraints to water resource conservation appear to be lack of personal financial resources, equipment, community financial resources, and community leadership.
- The biggest drivers of conservation action appear to be reducing the complexity of and increasing flexibility of conservation programs, availability of financial resources, and evidence that conservation practices improve water resources.
- There is a significant gap between private-sphere behavior (e.g., using conservation practices) and public-sphere behavior (e.g., civic engagement in water protection).

### Recommendations:

We recommend a tailored, multiple-strategy approach to conservation programming and offer four broad strategies:

1. Promote conservation as a community norm
2. Address individual and community-level constraints to conservation action
3. Support civic dialogue and community-building around water
4. Tailor civic engagement programs to particular communities

## Project Background

This report describes a social science assessment of landowner conservation behavior in the Middle Minnesota watershed of Minnesota. The study was conducted by the Center for Changing Landscapes and the Department of Forest Resources in collaboration with Nicollet County.

Water resource managers across Minnesota are increasingly investing scarce resources in outreach and education programs to promote landowner adoption of conservation practices. Landowner conservation behavior has the potential to make significant improvements in water quality outcomes. However, changing behavior is a difficult task. Programs that aim to change behavior must appeal to the values, beliefs, and norms of their target audience. The purpose of this study was to understand landowner values, beliefs, norms and behaviors associated with water resources and conservation. For this study, conservation behavior includes both private-sphere behaviors (e.g., maintenance of streamside buffers, rain garden installation) and public-sphere behaviors (e.g., attending a meeting about water resource conservation). Data were gathered through a self-administered mail survey to answer four overarching research questions:

1. What are landowners' values, beliefs and norms associated with water resources and water resource management and how do these vary by subpopulations (e.g., geographically, demographically, socially)?
2. What conservation behaviors do landowners currently engage in and what factors drive future conservation behavior?
3. What are landowners' perceptions of existing water resource programs?
4. How can policy-makers and resource managers best design and promote conservation programs that are ecologically and socially relevant?

Understanding landowner motivations and attitudes toward conservation and water management will help develop strategies to promote landowner adoption of conservation practices and encourage landowner engagement in conservation initiatives. The information provided in this report is intended to inform and enhance future water resource planning and management initiatives in the Middle Minnesota watershed. Study findings will be useful in developing targeted conservation programs and outreach programs that respond to the needs and concerns of landowners in the area.

## Study design and methods

The study was conducted through a self-administered mail survey of a stratified, random sample of landowners who live within the Middle Minnesota watershed in Nicollet County. The Middle Minnesota watershed contains portions of Renville, Redwood, Sibley, Nicollet, Le Sueur, Blue Earth, Cottonwood, and Brown counties. Approximately 24% of the watershed area is within Nicollet County. Major resource concerns in the watershed include erosion control, drainage management, and surface water quality (USDA NRCS, n.d.).

A list of property owners within the Middle Minnesota watershed was obtained from Nicollet County. The list was based on publicly available county tax records and was restricted to property owners who live within Nicollet County and own 10 or more acres. Property owners who live within city limits were also excluded from the list. A total of 1000 surveys were distributed by U.S. mail. The surveys were administered from March through August 2016.

Survey instruments were designed based on extensive literature review and feedback from project partners and a pilot test of the instrument. The survey questionnaire included a variety of fixed-choice and scale questions. Several questions were adapted from survey instruments used in previous studies of attitudes, beliefs and values of conservation behaviors (Davenport & Pradhananga, 2012; Davenport, Pradhananga, & Olson, 2014; Pradhananga, Perry, & Davenport, 2014; Prokopy et al., 2009). Each questionnaire was labeled with a unique identification number to track responses for subsequent mailings.

An adapted Dillman's (2014) Tailored Design Method was used to increase response rates. The survey was administered in three waves: (1) the questionnaire (Appendix A) with a cover letter (Appendix B), watershed map (Appendix C), and a self-addressed, business reply envelope; (2) a replacement questionnaire with a reminder letter (Appendix D), watershed map and envelope; and (3) a third replacement questionnaire with cover letter, watershed map and envelope.

Returned questionnaires were logged into the respondent database. Response data were numerically coded and entered into a database using Microsoft Excel 2010. Statistical analyses were conducted using Statistical Package for Social Sciences (SPSS release 21.0). Basic descriptive statistics were conducted to determine frequency distributions and central tendency of individual variables. Inferential statistics were conducted to test for significant differences between respondent subgroups. Subgroup comparisons were conducted between farmers and non-farmers, and size of property ownership (i.e., small, including respondents owning fewer than 150 acres, and large, including respondents owning 150 acres or more). Respondent subgroups were compared for differences in their socio-demographic (survey questions 1, 31, 32, 33, 34, 35, and 36) and property characteristics (survey question 30), perceived ability (survey question 12), concern about water pollution (survey questions 9, 10, and 11), motivators of conservation (survey question 17), individual or group influence on conservation decisions

(survey question 21), current and future use of practices (survey question 16), and past and future civic engagement (survey questions 18 and 19).

To examine the factors that influence respondents' clean water actions and engagement in community activities, subgroup comparisons were conducted between respondents with varying levels of clean water action (i.e., high action, low action) and levels of civic engagement (i.e., high engagement, low engagement). Respondent subgroups were compared for differences in their socio-demographic and property characteristics, social influences, awareness of water issues, perceived ability, social norms of conservation action, and neighborhood and water resource beliefs.

## Findings

Overall, 329 landowners completed and returned the survey for a response rate of 34% (adjusted for 16 surveys returned undeliverable). The study findings are organized into five sub-sections that respond to 14 unique research questions. Complete statistics for all survey questions in aggregate are presented in tabular form in Appendix E. Findings from subgroup comparisons are presented in tabular form in Appendix F.

### I. Survey respondent profile

#### *1. Who are respondents and what are their property ownership characteristics?*

Respondents were asked a series of questions about their socio-demographic background and property ownership characteristics.

A majority of respondents were male (83%). The respondents ranged in age from 28 to 94 with a median age of 64. A vast majority of respondents characterized their race and ethnicity as white (99%). Almost one-third of respondents (30%) had attained at least a college bachelor's degree. More than half of the respondents (64%) reported an annual household income of \$75,000 or more (Table 1).

Over three-fourths of respondents (79%) reported that their property borders a ditch, stream, lake, or river. A majority of respondents (67%) used their land for agricultural production. Over one-third of respondents (39%) reported that 50% or more of their income is dependent on agricultural production. Almost three-fourths of respondents (73%) own and manage their land, and a majority of respondents (68%) make their own management decisions. Less than a quarter of respondents (23%) are currently enrolled in a program that offers financial incentives for conservation practices (Table 2). A majority of respondents (58%) own 40 or more acres of land. Among the respondents who rent their land to others, over three-fourths (78%) rent out 40 or more acres. Among respondents who reported using their land for agricultural production, a majority (54%) have 151 or more acres in agricultural production (Table 3).

Table 1. Respondents' sociodemographic characteristics

<b>Socio-Demographic Characteristics</b>		<b>N</b>	<b>Percent</b>
Gender	Male	235	83.0
	Female	48	17.0
Race*	White	312	99.0
	Hispanic, Latino or Spanish Heritage	0	0.0
	Black or African American	0	0.0
	Asian	0	0.0
	American Indian or Alaska Native	3	1.0
	Middle Eastern or North African	0	0.0
	Native Hawaiian or Other Pacific Islander	1	0.3
	Other (e.g., American, mixed)	2	0.6
Age	Median	64	-
	Minimum	28	-
	Maximum	94	-
Years lived in community	Median	50	-
	Minimum	0	-
	Maximum	95	-
Formal education	Did not finish high school	16	5.1
	Completed high school	91	29.0
	Some college but no degree	37	11.8
	Associate or vocational degree	75	23.9
	College bachelor's degree	53	16.9
	Some college graduate work	8	2.5
	Completed graduate degree (MS or PhD)	34	10.8
Household income	Under \$20,000	8	3.2
	\$20,000-\$49,999	39	15.5
	\$50,000-\$74,999	43	17.1
	\$75,000-\$99,999	65	25.9
	\$100,000-\$149,999	42	16.7
	\$150,000-\$199,999	21	8.4
	\$200,000-\$249,999	8	3.2
	\$250,000-\$299,999	4	1.6
	\$300,000 or more	21	8.4

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Questions 1, 31, 32, 33, 34, and 35

\*Respondents could give more than one response.

Table 2. Respondents' property characteristics

Property Characteristics		N	Percent
Land/property borders a ditch, stream, lake, or river	Yes	249	78.5
	No	68	21.5
Property used for agricultural production	Yes	210	67.1
	No	103	32.9
Percent income dependent on land/property	0-49.9%	179	61.5
	50% or more	112	38.5
Ownership arrangement*	I own and manage my own land	230	73.2
	I rent my land <u>to</u> another party	110	35.0
	I rent my land <u>from</u> another party	55	17.5
	Other	13	4.1
Management decisions on land/property	I make own decisions	213	68.1
	I leave it up to my renter	51	16.3
	I leave it up to the landowner/property owner	0	0.0
	I work together with renter/landowner to make decisions	49	15.7
Experience with programs that offer financial incentives to farmers for conservation practices	Not relevant for my property	86	28.1
	Never heard of any	51	16.7
	Familiar but not enrolled	99	32.4
	Currently enrolled	70	22.9

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Questions 26, 27, 29, 30 and 36

\*Respondents could give more than one response.

Table 3. Respondents' property size and acres of land in agricultural production

	N	Median	Under 40 acres <sup>a</sup>	40 –150 acres	151 –500 acres	501 acres or more
Size of property owned	209	60.0	42.1	23.4	27.8	6.7
Size of property rented out	92	147.5	21.7	32.6	41.3	4.3
Size of property rented	47	200.0	10.6	29.8	46.8	12.8
Other (e.g., absentee, lease)	10	13.5	70.0	10.0	20.0	0.0
Acres in agricultural production*	209	180.0	23.9	22.0	41.1	12.9

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Questions 27 and 29a

<sup>a</sup>Percent

\*Acres in agricultural production among respondents that use their land for agricultural production

## ***2. How do respondents view their community?***

Survey respondents were asked to identify what comes to mind first when they think of their community. Several choices were provided including neighborhood, county, city, and watershed. Respondents were also asked to rate the importance of several community qualities on a 5-point scale from very unimportant (-2) to very important (+2). Over one-third of respondents (40%) defined their community as their neighborhood. A small minority of respondents (3%) defined their community as their watershed (Appendix E, Table 1). Water appears to be highly valued amenity for respondents. A vast majority of respondents (93%) rated clean streams, rivers, and lakes as somewhat to very important. A majority of respondents also rated good relationships among neighbors (91%), strong family ties (86%), and access to natural areas/views (79%) as important qualities of a community (Appendix E, Table 2).

## **II. Beliefs about water issues**

### ***3. What are respondents' beliefs about water resources?***

Respondents were asked to report how they use water resources in their watershed. Most respondents reported using water for drinking (78%), observing wildlife (66%), and experiencing scenic beauty (63%) (Appendix E, Table 3).

Respondents were asked to report their familiarity with water issues in their watershed on a 4-point scale from not at all familiar (1) to very familiar (4). Respondents were also asked to rate the quality of water in the stream, lake or river closest to them and in the Minnesota River on a 5-point scale from very poor (1) to very good (5). A majority of respondents (61%) reported that they are moderately to very familiar with water issues in their watershed (Appendix E, Table 4). About two-thirds of respondents (66%) rated the quality of water in the stream, lake or river closest to them as fair to very good. Almost one half of the respondents (45%) rated the quality of water in the Minnesota River as very poor to poor (Appendix E, Table 5).

Respondents were asked to rate a series of statements regarding their beliefs about water pollution, water resource protection, and conservation practices on a 5-point scale from strongly disagree (-2) to strongly agree (+2). An overwhelming majority of respondents (95%) agreed that water pollution affects human health. A majority of respondents (85%) also agreed that excessive water runoff causes soil and nutrient loss. Over three-fourths of respondents agreed that conservation practices protect aquatic life (83%) and that conservation practices contribute to quality of life in their community (76%). While a majority of respondents agreed that drainage tiling contributes to higher water flows downstream (68%), most respondents also agreed that drainage tiling increases crop yield (80%). Just over half (52%) of the respondents agreed that water resources in Nicollet County are adequately protected. About two-thirds of respondents (67%) agreed that water resources in Minnesota need better protection (Appendix E, Table 7, Figure 1).

Respondents were asked to rate the extent to which they agreed or disagreed with a series of statements identifying parties (e.g., farmers, local government, urban residents) responsible for protecting water resources on a 5-point scale from strongly disagree (-2) to strongly agree (+2). A vast majority of respondents (92%) agreed that it is their personal responsibility to make sure that what they do on their land does not contribute to water resource problems. A majority of respondents also agreed that landowners upstream (84%), farmers in Nicollet County (88%), and urban residents in Nicollet County (82%) should be responsible for protecting water. Similarly, a majority of respondents agreed that local (72%) and state government (56%) should be responsible for protecting water (Appendix E, Table 8).

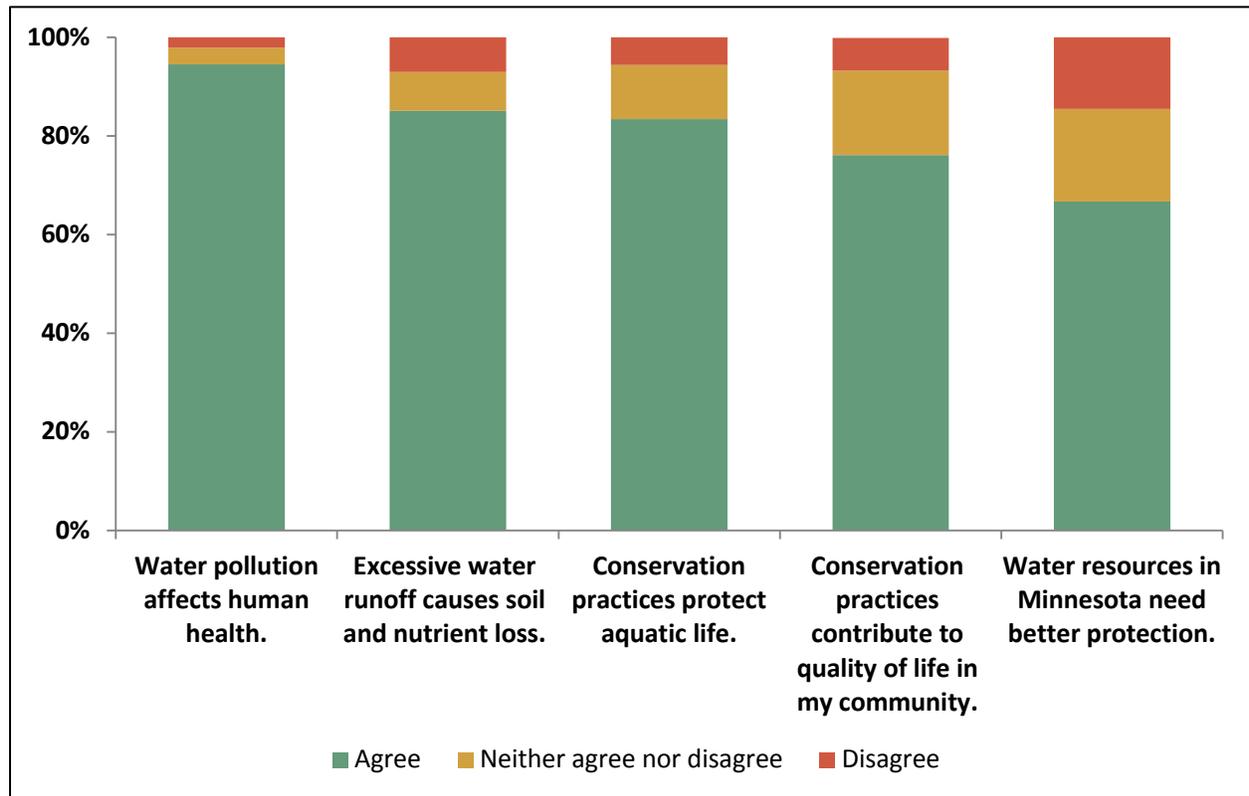


Figure 1. Respondents' beliefs about water pollution and conservation

#### 4. Are respondents concerned about the consequences of water pollution?

Respondents were asked to indicate the extent to which they perceive a series of water pollutants/issues and sources of water pollutants/issues as a problem, on a four-point scale from not a problem (1) to severe problem (4). On average, the five pollutants/issues in the watershed rated on average as the biggest problems include sediment (cloudiness), phosphorus, flooding, nitrogen in surface water, and pesticides (Appendix E, Table 9). On average, respondents rated fertilizer management for lawn/turf care, stream bank erosion, urban/suburban water runoff, urban land development, and soil erosion from farmland as the five biggest sources of pollutants/issues in their watershed

(Appendix E, Table 10).

The survey also inquired about respondents' concerns related to the consequences of water pollution for various uses or purposes.

Respondents were asked to rate the extent to which they agreed with the statement "I am concerned

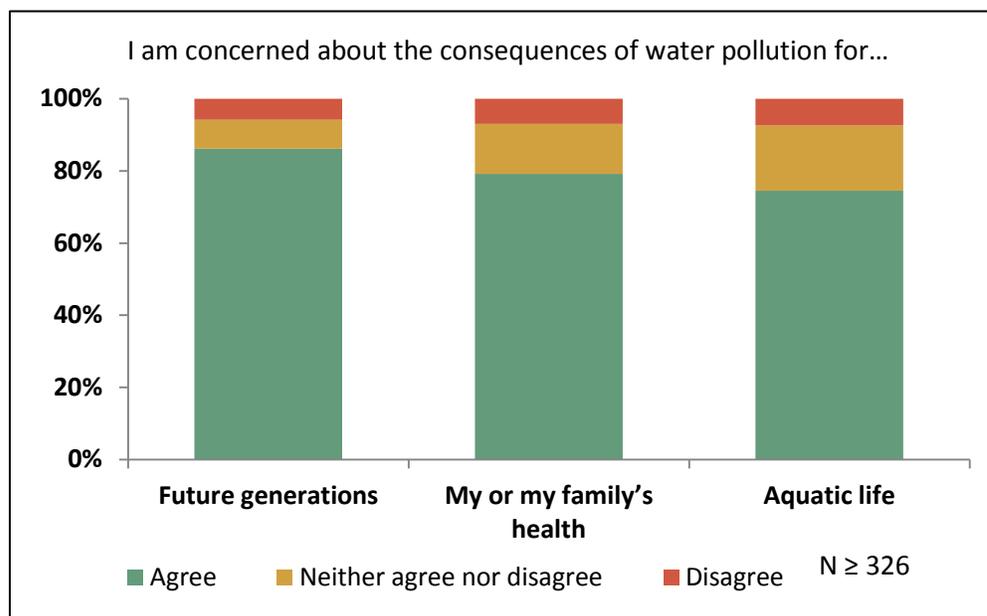


Figure 2. Respondents' concern about the consequences of water pollution

about the consequences of water pollution for future generations," as well as the consequences of water pollution for five other object items, on a five-point scale from strongly disagree (-2) to strongly agree (+2). A vast majority of respondents were concerned about the consequences of water pollution for future generations (86%), people in their community (80%), and their or their family's health (79%) (Appendix E, Table 11, Figure 2).

#### 5. Do respondents and their communities have the ability to protect water resources?

Respondents were asked to rate the extent to which they agreed with a series of statements about their own ability and their community's ability to protect water resources on a 5-point scale from strongly disagree (-2) to strongly agree (+2). Most respondents (84%) agreed that their use of conservation practices contributes to healthy water resources. A majority of respondents also agreed that they can learn almost anything about natural resource stewardship if they set their mind to it (82%) and that they have the knowledge and skills to use conservation practices on their land (73%). However, a majority of respondents either disagreed or were unsure that they have the financial resources needed to use conservation practices on their land (62%) and that they have the equipment to adopt a new

conservation practice (75%). About two-thirds of respondents (67%) agreed that farmers in their community have the ability to work together to change land use practices. However, a majority of respondents either disagreed or were unsure that their community has the financial resources (64%) and leadership (66%) it needs to protect water resources (Appendix E, Table 12, Figure 3).

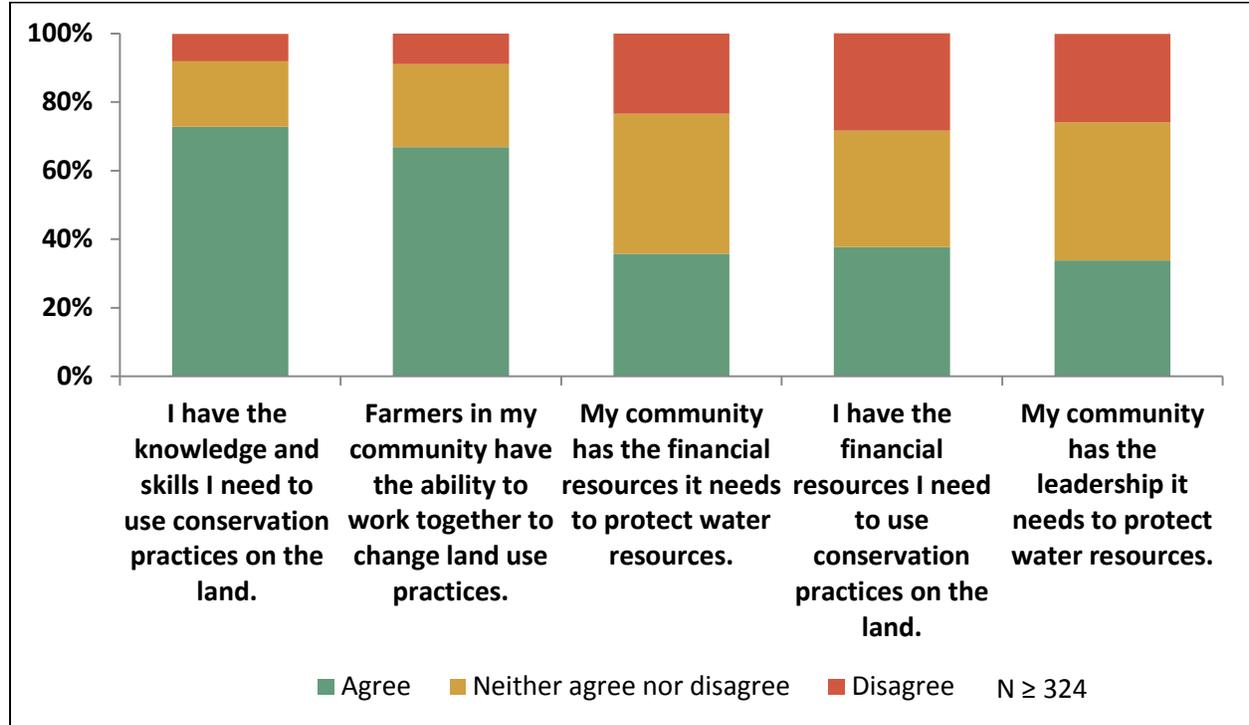


Figure 3. Respondents' perceptions about their and their community's ability to protect water resources

## 6. Do respondents feel personally obligated to protect water resources?

The survey asked respondents if they felt a personal obligation to engage in various actions to protect water resources. Respondents were asked to rate the extent to which they agreed or disagreed with a series of statements on a 5-point scale from strongly disagree (-2) to strongly agree (+2). A vast majority of respondents reported feeling a personal obligation to maintain their land/farm in a way that does not contribute to water resource problems (89%), do whatever they can to prevent water pollution (86%), and use conservation practices on their land/property (81%). However, fewer respondents felt a personal obligation to work with other community members to protect water resources (47%), talk to others about conservation practices (46%), and attend meetings or public hearing about water (42%) (Appendix E, Table 13, Figure 4).

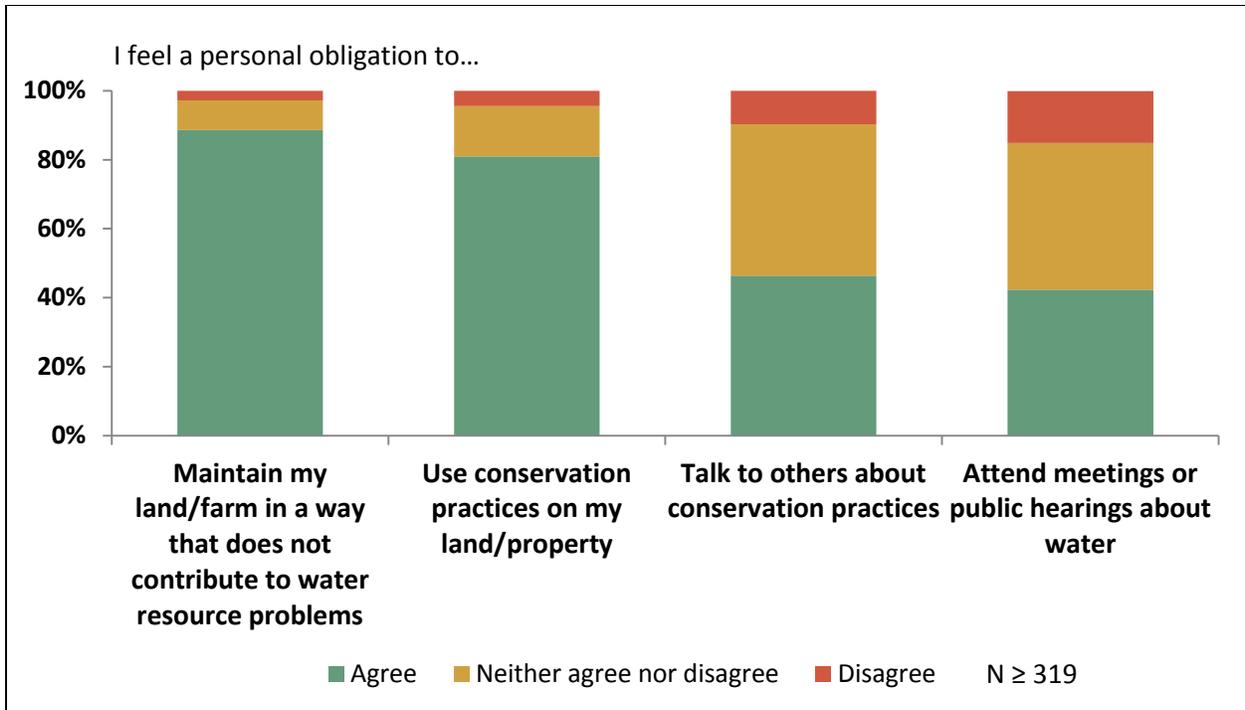


Figure 4. Respondents' personal obligation to protect water resources

### 7. What are respondents' beliefs about their influence on land and water management?

The survey also inquired about respondents' beliefs about their level of influence and control over land/farm and water management. Respondents were asked to rate their level of influence over water protection, farmland preservation, and civic action in their community on a 4-point scale from not at all (0) to a lot (3). Respondents were also asked to rate the extent to which they agreed or disagreed with a series of statements regarding their feelings of control over land/farm management.

Almost two-thirds of respondents (64%) reported that they have some to a lot of influence over protecting clean water in the area. Most respondents (60%) also believed that they have some to a lot of influence over preserving farms and farmland in the area. However, a majority of respondents (58%) believed that they have not at all to little influence over inspiring or organizing others to take action in their community (Appendix E, Table 14).

A vast majority of respondents (89%) agreed that by taking an active part in conservation, people can keep water clean in Minnesota. Most respondents (70%) also agreed that the average farmer/landowner can have an influence on rural community life in the region. Most respondents either disagreed or were unsure (79%) that most of what happens on their farm/land is beyond their control. However, most respondents (65%) agreed that it is difficult to have much control over policies that affect their farms/lands and 40% of respondents agreed that there is nothing they can do to keep the costs of farm/land management from going up (Appendix E, Table 15).

### III. Current and future conservation and civic behaviors

#### 8. What practices do respondents currently use and what practices are they likely to use in the future?

Respondents were asked to indicate if they currently use 19 different practices on their properties. A majority of respondents use practices such as “minimizing use of fertilizers/pesticides on lawns and gardens” (88%), “protect wetlands on the land/property” (81%), drainage tiles (78%), “plant trees as a windbreak on the land/property” (75%), and “follow a nutrient management plan on the farm” (75%). Most respondents also reported using conservation tillage practices (68%), buffer/filter strips along stream and ditches or field edges (66%). Smaller proportions of respondents use practices such as rain garden (14%), vertical drop side inlets (23%), and rotation grazing (24%) (Appendix E, Table 16, Figure 5).

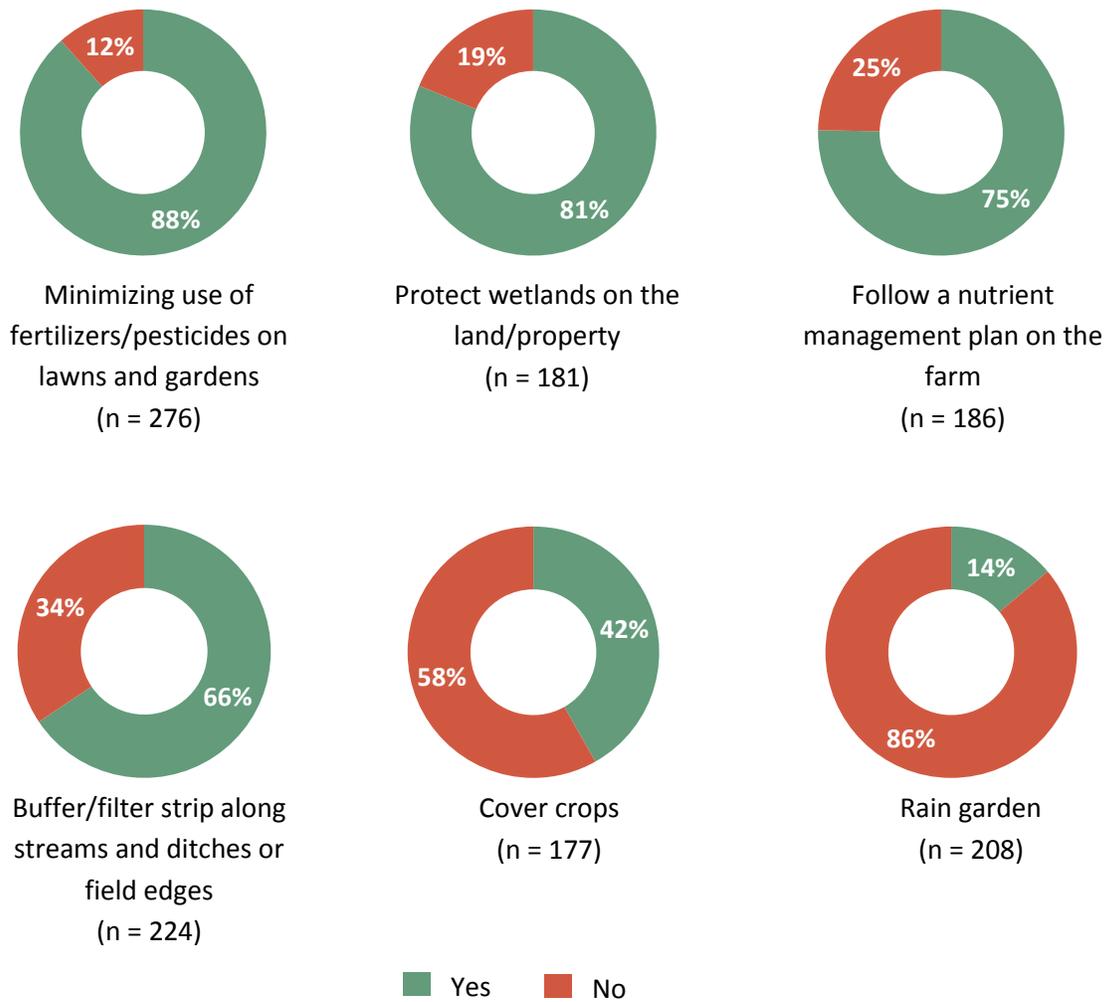


Figure 5. Respondents' current use of conservation practices

Respondents were also asked to indicate if they intend to use 19 different practices on their properties in the future. A majority of respondents intend to use practices such as “minimizing use of fertilizers/pesticides on lawns and gardens” (89%), protect wetlands on the land/property” (84%), drainage tiles (76%), “plant trees as a windbreak on the land/property” (77%), and “follow a nutrient management plan on the farm” (78%). Smaller proportions of respondents intend to use practices such as rain garden (26%), vertical drop side inlets (26%), and rotation grazing (24%) (Appendix E, Table 16).

### ***9. How engaged are respondents in their community?***

Respondents were asked to indicate the extent to which they had engaged in 7 civic actions in the past 12 months on a 5-point scale from never (0) to weekly or more (4). On average, volunteering for community events was the most popular action with 58% of respondents engaging in this action. Over one-third of respondents had heard about a water resource initiative (43%) or talked to others about conservation practices (45%). A vast majority of respondents had never attended a meeting or public hearing about water (71%), participated in a water resource protection initiative (76%), or taken a leadership role around water resource conservation in the community (88%) (Appendix E, Table 17).

### ***10. How likely are respondents to be engaged in civic actions in the future?***

Respondents were asked to indicate the extent to which they intend to engage in 6 civic actions in the next 12 months on a 5-point scale from most certainly not (-2) to most certainly will (+2). Most respondents were either unsure or did not intend to engage in civic actions such as contacting conservation assistance professionals about water resource initiatives (76%), working with other community members to protect water (78%), or attending a meeting or public hearing about water (67%) (Appendix E, Table 18).

## **IV. Influences on conservation behavior**

### ***11. Who influences respondents' decisions about conservation?***

Respondents were asked to rate the extent to which individuals or groups influence their decisions about conservation on a 4-point scale from not at all (1) to a lot (4). On average, the five individuals or groups with the biggest influence on respondents' conservation decision making are family, county's soil and water conservation district, farmers, neighbors, and the farm service agency. County's farm bureau and farmer's union were least likely to have an influence on respondents' conservation decision making (Appendix E, Table 19).

Respondents were also asked to list their three most trusted sources of information regarding water quality issues and solutions. Overall, respondents' three most trusted sources of information were their county's soil and water conservation district (26%), Minnesota Department of Natural Resources (25%), and their family (21%) (Appendix E, Table 20).

## ***12. What would increase the likelihood that respondents would adopt or maintain conservation practices?***

Respondents were asked to rate a series of statements about conditions or actions that might influence their adoption or continued use of conservation practices on a 5-point scale from strongly disagree (-2) to strongly agree (+2). A majority of respondents (58%) agreed that they would be more likely to adopt new conservation practices or continue to use practices if conservation program requirements were less complex. Financial resources appeared to be an important condition for adoption for many respondents. A majority of respondents agreed that they would be more likely to adopt new conservation practices or continue to use practice if they could get higher payments for adopting conservation practices (57%) and if they had access to financial resources to help them adopt conservation practices (60%). A majority of respondents (54%) also agreed that they would be more likely to adopt new conservation practices or continue to use practice if they had evidence that conservation practice improved water resources. Most respondents either disagreed or were unsure (73%) that they would be more likely to adopt new conservation practices or continue to use practice if there were regulations that mandated using a conservation practice (Appendix E, Table 21).

## ***13. To what extent is there a perceived social norm of civic action?***

Respondents were asked to rate a series of statements regarding social norms of civic action on a 5-point scale from strongly disagree (-2) to strongly agree (+2). A majority of respondents (55%) were uncertain or neutral in their beliefs about whether important others expect them to talk to others about conservation practices. Similarly, about half the respondents (50%) were uncertain or neutral in the beliefs about whether important others expect them to attend meetings or public hearings about water. A majority of respondents were either unsure or disagreed that important others work with other community members to protect water (64%) and that important others talk to others about conservation practices (68%) (Appendix E, Table 22).

## **V. Subgroup comparisons**

### ***14. What are important differences between subgroups of respondents?***

#### ***Farmers vs non-farmers***

There were significant differences between respondents who use their land for agricultural production (i.e., farmers) and respondents who do not use their land for agricultural production (i.e., non-farmers) in age and years lived in the community. On average, farmers (Mean = 64.55) were slightly older than non-farmers (Mean = 59.73). On average, farmers (Mean = 52.08 years) also reported having lived in the community longer than non-farmers (Mean = 34.24 years) (Appendix F, Table 2). A greater proportion of non-farmers (94%) also make their own management decisions on their land than farmers (56%) (Appendix F, Table 3).

Some notable difference emerged between farmers and non-farmers in their use of practices on their land/property. A greater proportion of farmers reported using practices such as drainage tiles (Farmers = 87%, Non-farmers = 32%) and following a nutrient management plan on the farm (Farmers = 82%, Non-farmers = 24%) than non-farmers. A greater proportion of non-farmers currently use practices such as “land in conservation cover” (Farmers = 41%, Non-farmers = 72%) and “native plants or shrubs in my yard” (Farmers = 65%, Non-farmers = 85%) than farmers (Appendix F, Table 4). On average, farmers (Mean = 0.45) are also more likely to attend meetings or public hearing about water than non-farmers (Mean = 0.23) (Appendix F, Table 5).

Farmers and non-farmers also differed in their motivations for adoption or continued use of conservation practices. Farmers were more likely to adopt or continue to use conservation practices than non-farmers if: 1) they could get higher payments for adopting conservation practices (Farmers mean = 0.83, Non-farmers mean = 0.48), 2) they were compensated for lost crop production because of conservation practices (Farmers mean = 0.78, Non-farmers mean = -0.03), 3) conservation program requirements were less complex (Farmers mean = 0.86, Non-farmers mean = 0.47), and 4) they had evidence that conservation practices did not reduce crop yield (Farmers mean = 0.68, Non-farmers mean = 0.16). Non-farmers were more likely to adopt or continue to use conservation practices if: 1) they knew more about how to implement and maintain conservation practices (Farmers mean = 0.32, Non-farmers mean = 0.63), 2) they knew more about the wildlife benefits of conservation practices (Farmers mean = 0.25, Non-farmers mean = 0.81), 3) their neighbors maintained conservation practices (Farmers mean = 0.33, Non-farmers mean = 0.65), and 4) there were regulations that mandated using a conservation practice (Farmers mean = -0.35, Non-farmers mean = 0.22) (Appendix F, Table 6).

Farmers and non-farmers also differed in their rating of water quality. On average, farmers rated the water quality in the ditch, stream, lake, or river closest to them (Farmers mean = 3.49, Non-farmers mean = 2.70) and in the Minnesota River (Farmers mean = 2.74, Non-farmers mean = 2.13) higher than non-farmers (Appendix F, Table 7). Farmers also differed from non-farmers in terms of individuals or groups that influence their conservation decision-making. Farmers were influenced to a greater extent than non-farmers by other farmers (Farmers mean = 2.59, Non-farmers mean = 2.16), the farm service agency (Farmers mean = 2.29, Non-farmers mean = 1.89), agricultural commodity associations (Farmers mean = 1.82, Non-farmers mean = 1.27), certified crop advisors (Farmers mean = 1.76, Non-farmers mean = 1.19), seed/input dealers (Farmers mean = 1.72, Non-farmers mean = 1.17), farmer’s union (Farmers mean = 1.45, Non-farmers mean = 1.15), local co-op (Farmers mean = 1.85, Non-farmers mean = 1.26), and agronomist/agricultural advisors (Farmers mean = 2.10, Non-farmers mean = 1.30). Non-farmers are influenced to a greater extent than farmers by the Minnesota Department of Natural Resources (Farmers mean = 1.99, Non-farmers mean = 2.41) (Appendix F, Table 8).

Farmers and non-farmers also differed in their perceived ability to protect water resources. On average, non-farmers (Mean = 1.52) agreed to a greater extent than farmers (Mean = 1.22) that by taking an active part in conservation people can keep water clean in Minnesota. Non-farmers also agreed to a greater extent than farmers that farmers in their community have the ability to work together to change land use practices (Farmers mean = 0.63, Non-farmers mean = 1.25) and that their community has the

financial resources it needs to protect water resources (Farmers mean = 0.06, Non-farmers mean = 0.39)  
(Appendix F, Table 9, Figure 6).

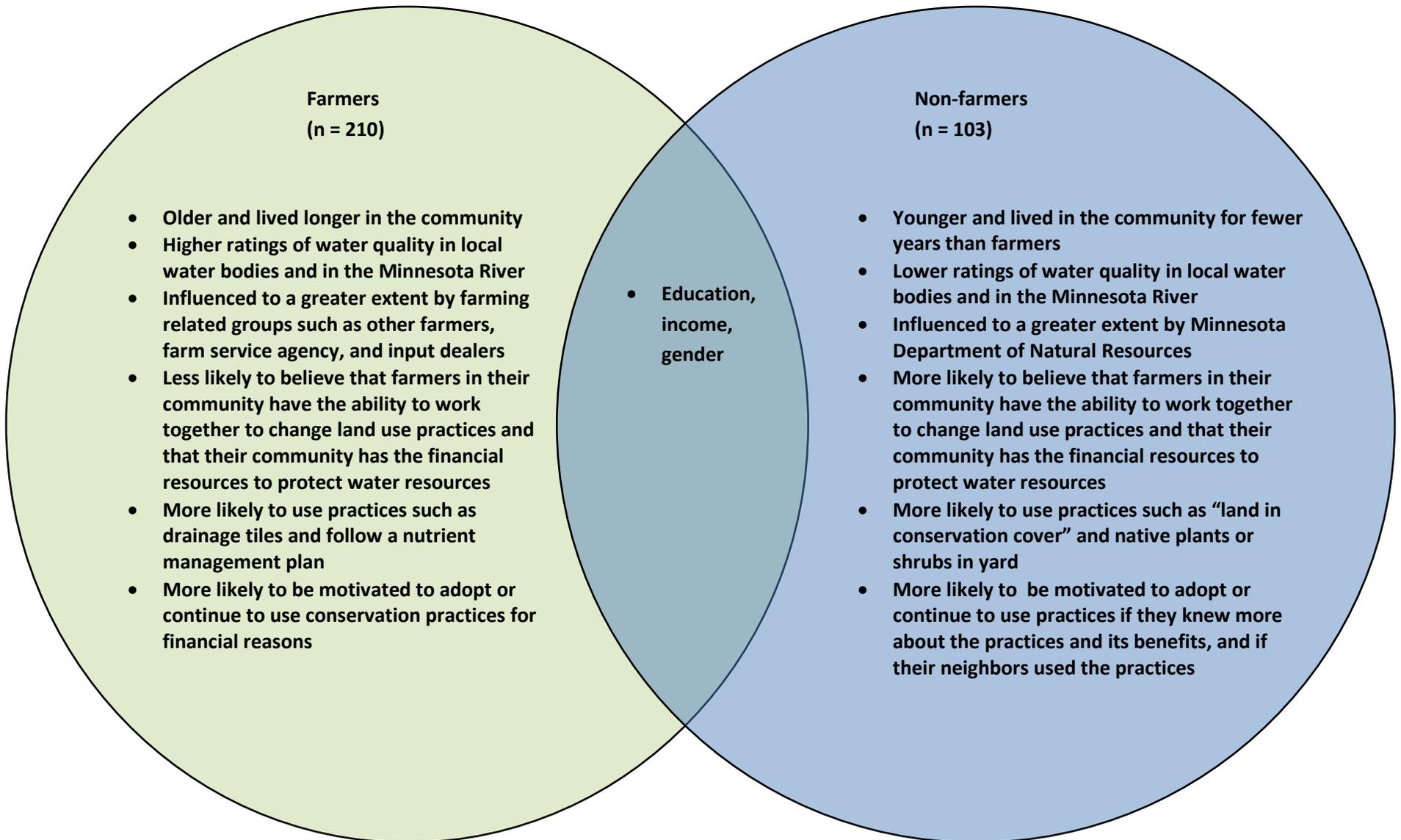


Figure 6. Differences and commonalities between farmers and non-farmers

### *Property size*

There was a significant difference between small (i.e., fewer than 150 acres) and large (i.e., 150 acres or more) landowners in the number of years lived in the community. On average, large landowners (Mean = 55.33 years) have lived in the community longer than small landowners (Mean = 36.85 years) (Appendix F, Table 11). A greater proportion of small landowners (77%) reported that they make their own management decisions on their land than large landowners (59%) (Appendix F, Table 12). A greater proportion of large landowners (95%) use their land for agricultural production than small landowners (43%) (Appendix F, Table 13). On average, higher percent of large landowners' (65%) income is dependent on agricultural production than small landowners (8%) (Appendix F, Table 14).

Large and small landowners also differed in the types of practices currently used on their property. A greater proportion of large landowners use practices such as drainage tiles (Large = 96%, Small = 54%), agriculture waste management facility or system (Large = 54%, Small = 22%), and "follow a nutrient management plan on the farm" (Large = 87%, Small = 50%) than small landowners. A greater proportion of small landowners use practices such as water and sediment control basins (Small = 38%, Large = 17%) and native plants or shrubs on their yard (Small = 81%, Large = 58%) (Appendix F, Table 15). Overall, large landowners (Mean = 0.26) also reported attending meetings or public hearings about water more frequently than small landowners (Mean = 0.14) (Appendix F, Table 16).

There were significant differences between large and small landowners in their motivations for the adoption or continued use of conservation practices. Large landowners were more likely to adopt new conservation practices or continue to use practices than small landowners if: 1) they were compensated for lost crop production because of conservation practices (Large mean = 0.81, Small mean = 0.20), and 2) they had evidence that conservation practices did not reduce crop yield (Large mean = 0.71, Small mean = 0.31). Small landowners were more likely to adopt new conservation practices or continue to use practices than large landowners if: 1) they knew about the wildlife benefits of conservation practices (Large mean = 0.13, Small mean = 0.72), 2) they had help with the physical labor of implementing and maintaining conservation practices (Large mean = 0.16, Small mean = 0.56), 3) they could be enrolled in a program that recognizes local conservation stewards (Large mean = -0.04, Small mean = 0.29), and 4) there were regulations that mandated using a conservation practice (Large mean = -0.50, Small mean = 0.19) (Appendix F, Table 17).

Large landowners (Mean = 2.89) reported that they are more familiar with water issues in their watershed than small landowners (Mean = 2.60) (Appendix F, Table 18). On average, large landowners rated the water quality in the ditch, stream, lake, or river closest to them (Large mean = 3.61, Small mean = 2.83) and in the Minnesota River (Large mean = 2.85, Small mean = 2.32) higher than small landowners (Appendix F, Table 18). Large and small landowners also differed in the extent to which individuals or groups influence their decision making. Large landowners are influenced to a greater extent than small landowners by their family (Large mean = 3.03, Small mean = 2.64), the farm service agency (Large mean = 2.39, Small mean = 1.96), county's farm bureau (Large mean = 1.69, Small mean = 1.37), agricultural commodity associations (Large mean = 1.93, Small mean = 1.37), certified crop advisors (Large mean = 1.89, Small mean = 1.35), seed/input dealers (Large mean = 1.84, Small mean =

1.31), local co-op (Large mean = 1.93, Small mean = 1.44), and agronomist/agricultural advisor (Large mean = 2.19, Small mean = 1.52). Small landowners are influenced to a greater extent than large landowners by environmental advocacy organizations (Large mean = 1.85, Small mean = 2.19) and Minnesota Department of Natural Resources (Large mean = 1.89, Small mean = 2.42) (Appendix F, Table 19).

Some notable differences were identified in large and small landowners' perceived ability to protect water resources. Small landowners (Mean = 1.48) agreed to a greater extent than large landowners (Mean = 1.09) that by taking an active part in conservation people can keep water clean in Minnesota. Small landowners (Mean = 1.05) also agreed to a greater extent than large landowners (Mean = 0.60) that farmers in their community have the ability to work together to change land use practices. Large landowners (Mean = -0.01) agreed to a greater extent than small landowners (Mean = -0.38) that they have the equipment they need to adopt a new conservation practices (Appendix F, Table 20, Figure 7).

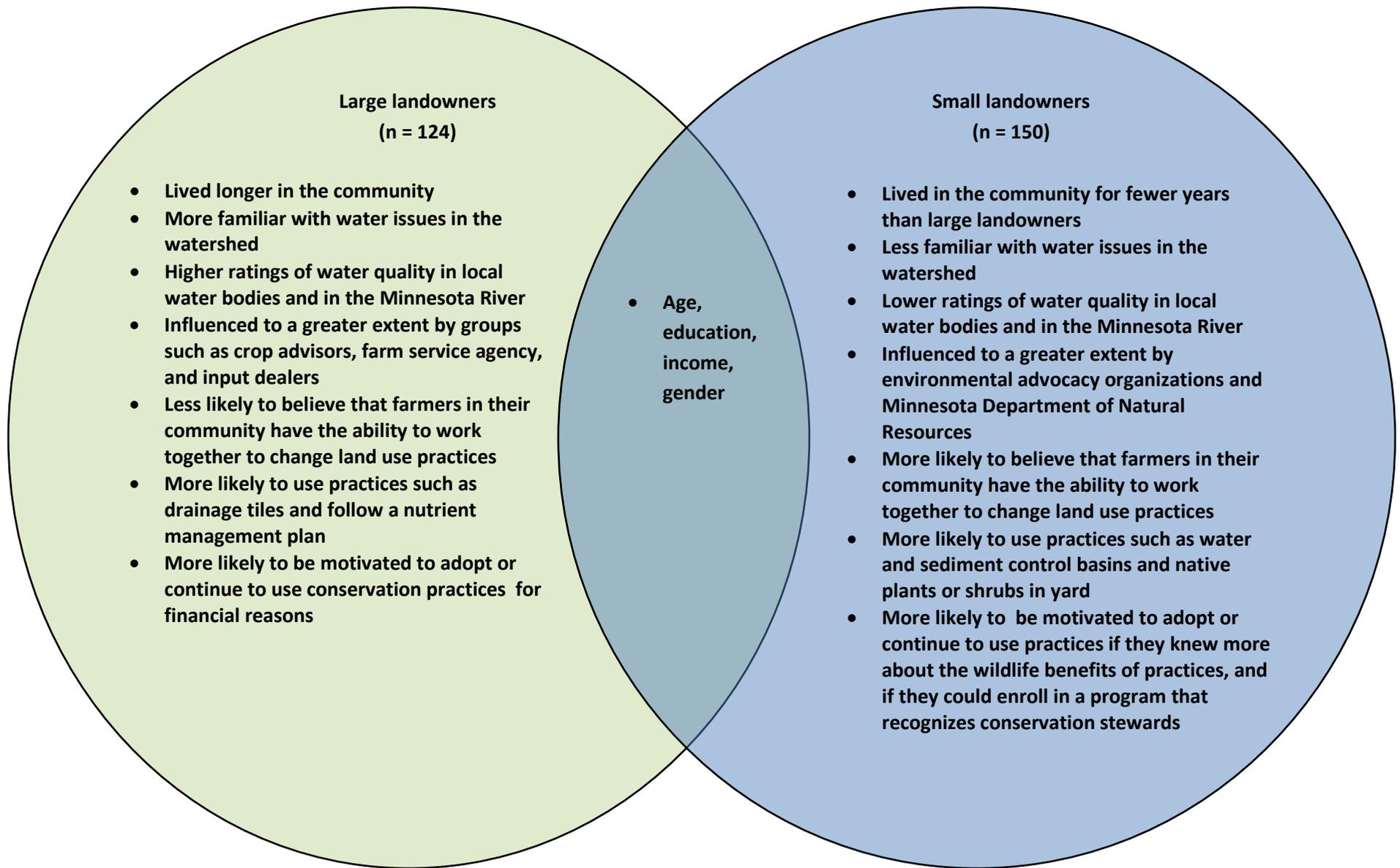


Figure 7. Differences and commonalities between large and small landowners

### *Levels of clean water action*

There were no significant differences between low clean water action (LA) respondents (respondents who have used 5 or fewer of the 19 clean water actions listed) and high clean water action (HA) respondents (respondents who have used 6 or more of the 19 clean water actions listed) except in the number of years lived in the community. On average, HA respondents (Mean = 49.95 years) have lived in the community longer than LA respondents (Mean = 42.78 years) (Appendix F, Table 22). A greater proportion of HA respondents (86%) use their land for agricultural production than LA respondents (55%) (Appendix F, Table 23). On average, a higher percent of HA respondents' (49%) income is dependent on agricultural production than LA respondents (22%) (Appendix F, Table 24). HA and LA respondents also differed in their levels of civic engagement in community and water activities. HA respondents reported being more engaged in activities such as participating in a water resource protection initiative (HA mean = 0.55, LA mean = 0.20), working with other community members to protect water (HA mean = 0.53, LA mean = 0.12), talking to others about conservation practices (HA mean = 1.14, LA mean = 0.54), and attending a meeting or public hearing about water (HA mean = 0.61, LA mean = 0.20) than LA respondents (Appendix F, Table 25).

Some notable differences were identified between HA and LA respondents in the extent to which their conservation decisions are influenced by individuals or groups. HA respondents are influenced to a greater extent than LA respondents by farmers (HA mean = 2.65, LA mean = 2.32), county's soil and water conservation district (HA mean = 2.58, LA mean = 2.32), farm service agency (HA mean = 2.36, LA mean = 2.02), local co-op (HA mean = 1.51, LA mean = 1.91), and agronomist/agricultural advisor (HA mean = 1.69, LA mean = 2.10) (Appendix F, Table 26).

HA and LA respondents also differed in their water resource beliefs, perceived ability, social and personal norms, and motivations for practice adoption. HA respondents (Mean = 2.99) reported being more familiar with water issues in their watershed than LA respondents (Mean = 2.56). HA respondents (0.47) also agreed to a greater extent that water resources in Nicollet County are adequately protected than LA respondents (Mean = 0.11). HA respondents (Mean = 1.09) agreed to a greater extent that they have the knowledge and skills they need to use conservation practices on the land than LA respondents (Mean = 0.76). Overall, HA respondents also reported feeling greater social pressure to be engaged in water resource issues. HA respondents agreed to a greater extent than LA respondents that people who are important to them talk to others about conservation practices (HA mean = 0.33, LA mean = -0.08), and that people who are important to them expect them to work with other community members to protect water (HA mean = 0.23, LA mean = -0.07). HA respondents also reported feeling a greater sense of personal obligation than LA respondents. HA respondents agreed to a greater extent than LA respondents that they feel a personal obligation to talk to others about conservation practices (HA mean = 0.59, LA mean = 0.31), use conservation practices on their land/property (HA mean = 1.26, LA mean = 0.98), and attend meetings or public hearings about water (HA mean = 0.45, LA mean = 0.17). Finally, HA respondents (Mean = 0.75) are more likely to adopt a new conservation practice or continue to use practices than LA respondents (Mean = 0.39) if conservation programs were more flexible (Appendix F, Table 27, Figure 8).



Figure 8. Differences and commonalities between high clean water action and low clean water action respondents  
 High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

### *Levels of civic engagement*

There were no significant differences between respondents with high level of civic engagement (HCE) (i.e., respondents who have participated in 1 or more of the 7 community activities in the past 12 months) and low level of civic engagement (LCE) (i.e., respondents who have not participated in any of the 7 listed community activities in the past 12 months) except age. LCE respondents (Mean = 64.9) are slightly older than HCE respondents (Mean = 60.12) (Appendix F, Table 29).

HCE respondents placed greater importance on neighborhood qualities than LCE respondents including “opportunities to be involved in community projects” (HCE mean = 0.90, LCE mean = 0.55) and “opportunities to express my culture and traditions” (HCE mean = 0.71, LCE mean = 0.38) (Appendix XX, Table 30).

HCE respondents (Mean = 3.04) reported being more familiar with water issues in their watershed than LCE respondents (Mean = 2.49). HCE respondents (Mean = 2.77) also rated the water quality in the Minnesota River higher than LCE respondents (Mean = 2.37) (Appendix F, Table 31). HCE and LCE respondents also differed in the extent to which their conservation decisions are influenced by individuals or groups. HCE respondents are influenced to a greater extent than LCE respondents by farmers (HCE mean = 2.64, LCE mean = 2.28), agricultural commodity associations (HCE mean = 1.83, LCE mean = 1.50), local co-op (HCE mean = 1.84, LCE mean = 1.54), and agronomist/agricultural advisor (HCE mean = 2.05, LCE mean = 1.71) (Appendix F, Table 32).

Some notable differences were also identified between HCE and LCE respondents in their water resource beliefs, sense of responsibility, perceived ability, and personal and social norms for conservation action. HCE respondents (Mean = 0.56) agreed to a greater extent than LCE respondents (Mean = 0.18) that they find it easy to play an important role in most group situations in their community. LCE respondents (Mean = 0.66) agreed to a greater extent than HCE respondents (Mean = 0.27) that the state government should be responsible for protecting water quality. HCE respondents (Mean = 1.09) agreed to a greater extent than LCE respondents (Mean = 0.71) that they have the knowledge and skills they need to use conservation practices on the land (Appendix F, Table 33). Overall, HCE respondents feel greater social pressures to be more engaged in water resource protection. HCE respondents agreed to a greater extent than LCE respondents that people who are important to them expect them to talk to others about conservation (HCE mean = 0.05, LCE mean = -0.24), attend meetings or public hearings about water (HCE mean = 0.06, LCE mean = -0.24), and work with other community members to protect water (HCE mean = 0.21, LCE mean = -0.09). HCE respondents also agreed to a greater extent than LCE respondents that people who are important to them talk to others about conservation practices (HCE mean = 0.30, LCE mean = -0.05), and attend meetings or public hearings about water (HCE mean = 0.23, LCE mean = -0.08). HCE respondents also reported feeling a greater sense of personal obligation to protect water than LCE respondents. HCE respondents agreed to a greater extent than LCE respondents that they feel a personal obligation to maintain their land/farm in a way that does not contribute to water resource problems (HCE mean = 1.48, LCE mean = 1.21), talk to others about conservation practices (HCE mean = 0.58, LCE mean = 0.28), and work with other

community members to protect water resources (HCE mean = 0.62, LCE mean = 0.32) (Appendix F, Table 33, Figure 9).

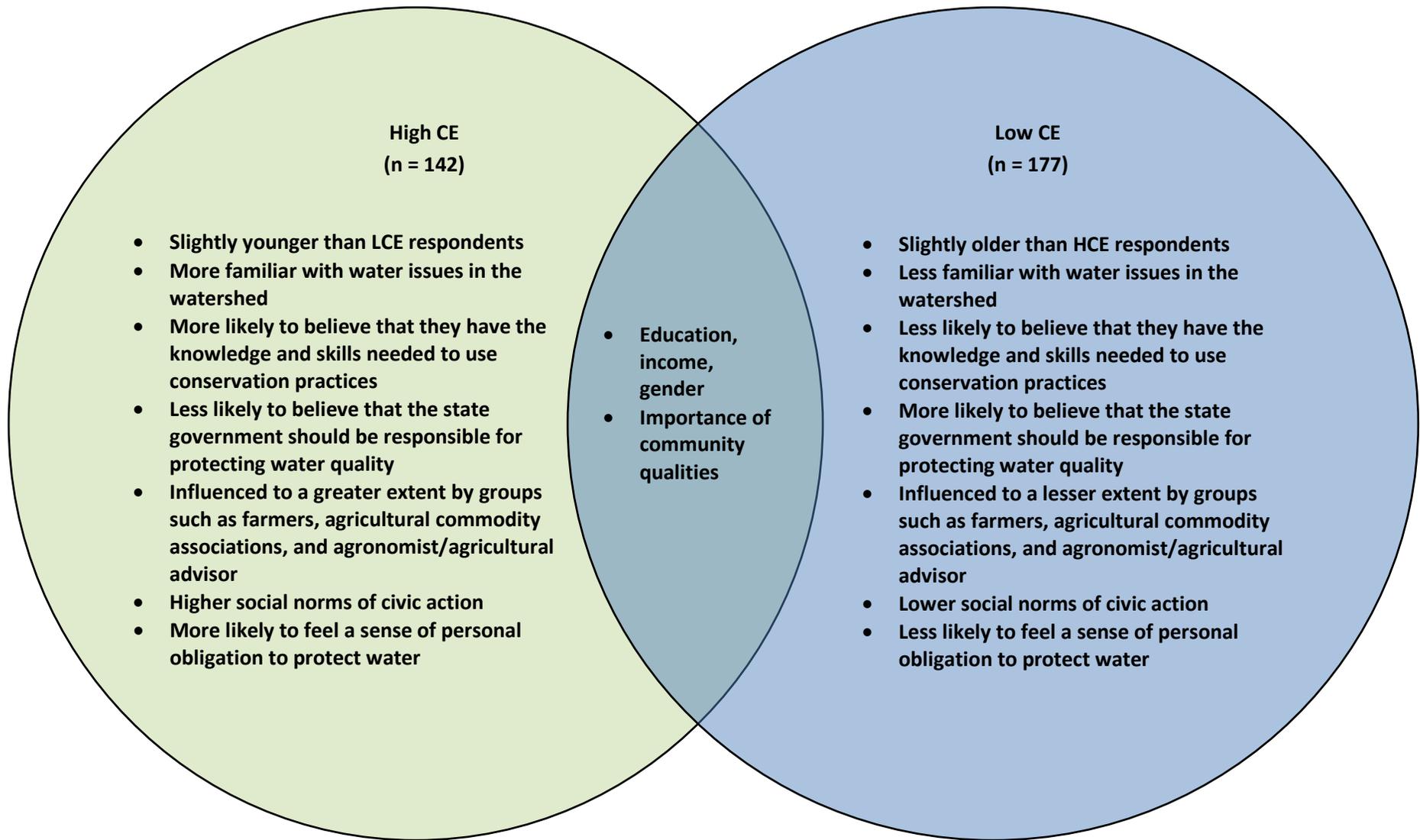


Figure 9. Differences and commonalities between respondents with varying levels of civic engagement

High CE = respondents who have participated in 1 or more of the 7 community activities in the past 12 months, low CE = respondents who have not participated in any of the 7 community activities in the past 12 months

## Discussion and recommendations

This project's aim was to provide a social science-based assessment of landowner conservation behavior. Specifically, we documented landowner beliefs, norms and behaviors associated with water resources and conservation. We believe the study findings will inform and enhance future water resource programming and management in Nicollet County, Minnesota. We encourage resource professionals and community leaders to incorporate the four recommendations highlighted below into the design and implementation of conservation programs.

In sum, a tailored, multiple-strategy approach is recommended in conservation programming that encourages personal commitment to conservation, addresses constraints to conservation action through tailored conservation programs, and promotes civic dialogue and community building around water.

### *1. Promote conservation as a community norm*

Study findings suggest that landowners generally have a high level of concern about the consequences of water pollution for future generations, their family's health, and aquatic life. Most landowners also believe that water pollution affects human health and that excessive water runoff causes soil and nutrient loss. A majority of landowners also expressed the belief that water resources in Minnesota need better protection. Landowners also feel a sense of personal obligation to protect water resources. Strategies that appeal to landowners' personal norms, or feelings of personal obligation, are likely to be successful. Requesting personal commitments, setting goals, and providing feedback has been shown to increase conservation behavior (Abrahamse, Steg, Vlek, & Rothengatter, 2005). Personal commitment in the form of a written or verbal pledge establishes personal norms. This strategy can be especially successful when matched with a commitment to a specific plan of action (e.g., I promise to install a streamside buffer in the next 12 months planting native grasses). Commitment is frequently used with benchmarking (i.e., tailored feedback) to prompt behavior change (Abrahamse et al., 2005; De Snoo, Lokhorst, Van Dijk, Staats, & Musters, 2010). Benchmarking or providing feedback about behaviors compared to others leads to normative pressure to keep up with others and encourages social learning (De Snoo et al., 2013). For example, local resource professionals might set streamside buffer goals of 75% of streamside landowners with buffers, or 25% of farmland in cover crops. Providing frequent feedback to landowners and farmers about farm conditions, local water quality, and the extent to which goals are being met can reinforce conservation as a community norm. Similar studies of farmer conservation behavior have found that benchmarking along with commitment improves farmer engagement in conservation (e.g., De Snoo et al., 2013).

## *2. Address individual and community-level constraints to conservation action*

The biggest constraints to water resource conservation appear to be lack of personal financial resources, equipment, community financial resources, and community leadership. The biggest drivers of conservation action appear to be reducing the complexity and increasing flexibility of conservation programs, increasing availability of financial resources, and providing evidence that conservation practices improve water resources.

Most landowners believe that they have the knowledge and skills needed to use conservation practices. However, perceptions of knowledge and skills varied by landowners' current engagement in conservation. Landowners who are already engaged in conservation either through their private actions (e.g., adoption of conservation practices) or civic actions (e.g., civic engagement in water protection) are more likely to believe that they have the knowledge and skills needed to use conservation practices than those who are not as engaged. Education and technical assistance programs, particularly those that are targeted at landowners that are not highly engaged in conservation have the potential to enhance landowner knowledge and skills to use conservation practices. Learning about the wildlife benefits of conservation practices and how to use and maintain practices is a key motivator for small landowners. Thus, education and technical assistance programs should also help enhance small landowners' ability to use conservation practices. Further, education and outreach programs should also emphasize the wildlife benefits of conservation practices.

Lack of financial resources and equipment is a significant constraint for landowners. Availability of financial resources, particularly for farmers and large landowners, is a key driver for practice adoption. Finance related motivations for farmers and larger landowners include higher payments for adopting conservation practices and compensation for lost crop production. Study findings also indicate that most landowners feel that they do not have much control over policies that affect their farms and that there is nothing they can do to keep the costs of farm/land management from going up. Programs that provide payments and cost share resources to landowners help reduce the uncertainty and risk associated with adopting a new practice. This is especially important in a decision making context where most landowners perceive a lack of control over farm/land management. Support is also needed in making equipment available through rental agreements or reduced rate trial periods.

Most landowners also perceive that their community lacks the financial resources and leadership to address water issues. In particular, farmers and large landowners believe that farmers in their community do not have the ability to change land use practices. Leadership development programs, training, and information-exchange forums that bring farmers and larger landowners together appear to be useful strategies. Highlighting and promoting local success stories of water conservation can demonstrate to landowners that others in their community including farmers and local decision makers are taking actions to address water pollution. Conservation success stories, demonstration sites, and field days are also ways of highlighting the effectiveness of conservation practices in improving water resources.

Overall, the biggest motivator for landowners was reducing the complexity of conservation programs. Resource managers should streamline programs, simplify program requirements, and provide more flexibility and consistency in water-related conservation programs.

### ***3. Support civic dialogue and community-building around water***

While most landowners felt individually responsible for protecting water resources, they also believed that it is the responsibility of landowners and farmers within the community and local and state government to protect water resources, clearly perceiving the need for collective action to protect water resources. Yet, this study also highlights a significant gap between private-sphere behavior (e.g., using conservation practices) and public-sphere behavior (e.g., civic engagement in water protection). While many landowners intend to use conservation practices on their land, fewer landowners have intentions to engage in civic actions (e.g., talk to others about conservation, attend meetings or hearings about water). Further, while most landowners feel a sense of personal obligation to use conservation practices on their land, fewer landowners feel an obligation to be civically engaged. As a result, many landowners may not know what others are doing in regards to water conservation. Further, this gap in private and public-sphere action can also stymie the diffusion of knowledge and innovations (Rogers, 1995). Study findings also suggest that social norms related to expectations of civic action are generally low.

Morton and Brown (2011) suggest that landowner commitment to water protection can be significantly influenced by the “citizen effect” or social norms that favor certain actions. Success stories of coordinated conservation action have the effect of reducing perceptions of risk and uncertainty associated with conservation practice adoption (Rogers, 1995). Strategies that build social support for conservation through community events, demonstration areas, and landowner recognition programs build the notion that others in the community are actively engaged in conservation. Community events that bring people together demonstrate the value of people working together on conservation and build the notion that being an active member of the community means taking actions to protect local water resources. Landowner recognition programs that show appreciation for conservation action helps reinforce conservation as a community norm. Most landowners surveyed in this study highly value clean streams, rivers, and lakes as a quality of their community. Opportunities exist to foster community building around water.

### ***4. Tailor civic engagement programs to particular communities***

Previous research on personal norms of conservation, or personal moral obligation to take pro-environmental action indicates that personal norms are activated by four sets of beliefs: awareness of consequences of environmental problems, ascription of responsibility to address environmental problems, social norms of conservation action, and ability to alleviate problems (Harland, Staats, & Wilke, 2007; Pradhananga, Davenport, & Olson, 2015; Schwartz, 1977; Stern, 2000). Landowners are more likely to feel a personal obligation to protect water resources if they are aware of the consequences of water pollution, believe that they and their community are responsible for protecting

water resources, and perceive that they have the ability to protect water resources. This line of research suggests that personal norms, once activated, leads to conservation action, including civic engagement.

Comparisons between respondent subgroups with varying levels of civic engagement reveal significant differences in activators of personal norms. LCE landowners are less likely to believe that they have the knowledge and skills needed to use conservation practices. Further, LCE landowners are also more likely to assign responsibility for water resource protection to the state government than HCE landowners. HCE landowners are more familiar with water issues in their watershed than LCE landowners. HCE landowners perceive more social pressure and feel a greater sense of personal obligation to be civically engaged in water resource protection than LCE landowners. We recommend that water resource managers continue to build momentum with HCE landowners. Programs that appeal to their sense of personal obligation should be well-received. HCE landowners are likely to be drivers of shifting social norms of conservation. HCE landowners are also more likely to be influenced by farming related groups such as other farmers, agricultural commodity associations, and agronomists. Civic engagement programs should bring these individuals and organizations into the fold. Education and outreach programs that aim to enhance LCE landowners' knowledge and skills to use conservation practices are likely to activate their sense of personal obligation to be civically engaged.

The scale of community engagement strategies is also an important consideration. Study findings reveal that when landowners think of their community, they primarily think of their neighborhood, city or township, more so than their county or watershed. This is a challenge for large scale watershed-based planning. Civic engagement strategies around water should focus on smaller scales. Programs targeted at smaller areas such as neighborhood blocks may be more successful at building social networks and promoting civic engagement in water, than county or watershed-wide programs.

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# Appendices

## Appendix A: Survey Questionnaire

## Your Perspectives on Local Water Resources

### A survey of landowners in Nicollet County



Department of Forest Resources  
University of Minnesota  
St. Paul, Minnesota



#### **Before you begin:**

We are conducting this survey **to better understand landowner opinions and practices** and to improve conservation programming. **This survey is voluntary and confidential.** It should take **about 20 minutes to complete** this questionnaire. Please answer the questions as completely as possible.

#### **As you complete the survey, please keep in mind the following definitions:**

**Buffer/filter strip:** A strip of vegetation (grasses, trees, and shrubs) planted and maintained adjacent to streams, ditches and lakes that filters water, stabilizes the stream bank, and provides wildlife habitat.

**Conservation drainage management:** Technologies and practices that remove excess water from lands while reducing potential pollutants (includes controlled drainage, shallow drainage, bioreactors, saturated buffers, rock inlets, storage basins, and ditch designs).

**Conservation cover:** Converting environmentally sensitive areas to vegetative cover to reduce soil erosion, improve water quality, and enhance forest and wetland resources (includes Conservation Reserve Program and land retirement).

**Conservation tillage:** Soil cultivation that leaves the previous year's crop residue on fields before and after planting the next crop to reduce soil erosion and surface runoff (includes no, minimum, strip, ridge, mulch-till).

#### **Once you've completed the survey:**

Please fold it in thirds and mail it back in the enclosed self-addressed stamped envelope.

***Thank you for your help!***

## I. Your Community

First, we would like to know your thoughts on your community.

1. Approximately how many years have you lived in your current community? \_\_\_\_\_

2. When you think of **your community**, what first comes to mind? (Please check one)

My neighborhood     My township     My city     My county     My watershed

3. How important are the following qualities of **a community** to you? (Circle one number in each row.)

	Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important
a. Strong family ties	-2	-1	0	1	2
b. Good relationships among neighbors	-2	-1	0	1	2
c. Opportunities to be involved in community projects	-2	-1	0	1	2
d. Opportunities to express my culture and traditions	-2	-1	0	1	2
e. Clean streams, rivers and lakes	-2	-1	0	1	2
f. Access to natural areas/views	-2	-1	0	1	2
g. Opportunities for outdoor recreation	-2	-1	0	1	2

4. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. If there is someone I want to meet in my community, I can usually arrange it.	-2	-1	0	1	2
b. When I need assistance with something on my farm/land, I often find it difficult to get others to help.	-2	-1	0	1	2
c. I find it easy to play an important role in most group situations within my community.	-2	-1	0	1	2
d. The average farmer/landowner can have an influence on rural community life in the region.	-2	-1	0	1	2

## II. Water (Streams, Lakes, Wetlands and Groundwater)

In the next section, we ask more specific questions related to your perspectives on water.

5. How familiar are you with water issues in your watershed? [see enclosed watershed map]

Not at all familiar     Slightly familiar     Moderately familiar     Very familiar

6. Before this survey, did you know your property is in the watershed shaded on the map?

Yes     No     My property is not in the shaded watershed

**7. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Water resources in Nicollet County are adequately protected.	-2	-1	0	1	2
b. Water resources in Minnesota need better protection.	-2	-1	0	1	2
c. Water resource protection will threaten jobs for people like me.	-2	-1	0	1	2
d. Laws to protect the environment limit my choices and personal freedom.	-2	-1	0	1	2
e. Water pollution affects human health.	-2	-1	0	1	2
f. Excessive water runoff causes soil and nutrient loss.	-2	-1	0	1	2
g. Conservation practices protect aquatic life.	-2	-1	0	1	2
h. Conservation practices contribute to quality of life in my community.	-2	-1	0	1	2
i. Conservation drainage management reduces water runoff from farmland.	-2	-1	0	1	2
j. Drainage tiling increases crop yield.	-2	-1	0	1	2
k. Drainage tiling contributes to higher water flows downstream.	-2	-1	0	1	2
l. Conservation tillage decreases crop yield.	-2	-1	0	1	2

**8. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. It is my personal responsibility to help protect water.	-2	-1	0	1	2
b. It is my personal responsibility to make sure that what I do on the land doesn't contribute to water resource problems.	-2	-1	0	1	2
c. Landowners upstream should be responsible for protecting water downstream.	-2	-1	0	1	2
d. The state government should be responsible for protecting water.	-2	-1	0	1	2
e. Local government should be responsible for protecting water.	-2	-1	0	1	2
f. Urban residents in Nicollet County should be responsible for protecting water.	-2	-1	0	1	2
g. Farmers in Nicollet County should be responsible for protecting water.	-2	-1	0	1	2

**9. In your opinion, how much of a problem are the following water pollutants/issues in your watershed [see map]? (Please circle one number for each row)**

	Not a problem	Slight problem	Moderate problem	Severe problem	Don't know
a. Sediment (cloudiness)	1	2	3	4	DK
b. Phosphorus	1	2	3	4	DK
c. Nitrogen in surface water	1	2	3	4	DK
d. Nitrogen in drinking water	1	2	3	4	DK
e. Algae	1	2	3	4	DK
f. Flooding	1	2	3	4	DK
g. Drought	1	2	3	4	DK
h. <i>E. coli</i> (bacteria)	1	2	3	4	DK
i. Pesticides	1	2	3	4	DK

**10. In your opinion, how much of a problem are the following potential sources of water pollutants/issues in your watershed [see map]? (Please circle one number for each row)**

	Not a problem	Slight problem	Moderate problem	Severe problem	Don't know
a. Industrial discharge to streams, rivers, and lakes	1	2	3	4	DK
b. Urban land development	1	2	3	4	DK
c. Improperly sized/maintained septic systems	1	2	3	4	DK
d. Soil erosion from farmland	1	2	3	4	DK
e. Wind erosion	1	2	3	4	DK
f. Stream bank erosion	1	2	3	4	DK
g. Fertilizer management for lawn/turf care	1	2	3	4	DK
h. Fertilizer management for crop production	1	2	3	4	DK
i. Livestock operations	1	2	3	4	DK
j. Tile drainage	1	2	3	4	DK
k. Surface ditch drainage	1	2	3	4	DK
l. Grass clippings and leaves entering storm drains	1	2	3	4	DK
m. Urban/suburban water runoff	1	2	3	4	DK
n. Unregulated contaminants (e.g., pharmaceuticals, personal care products)	1	2	3	4	DK
o. Natural causes (e.g., natural erosion, wildlife)	1	2	3	4	DK
p. Increased frequency or intensity of storms	1	2	3	4	DK

**11. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

<b>I am concerned about the consequences of water pollution for...</b>	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. My or my family's health	-2	-1	0	1	2
b. Future generations	-2	-1	0	1	2
c. Wildlife	-2	-1	0	1	2
d. Farmland	-2	-1	0	1	2
e. Aquatic life	-2	-1	0	1	2
f. People in my community	-2	-1	0	1	2

**12. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. My use of a conservation practice contributes to healthy water resources.	-2	-1	0	1	2
b. By taking an active part in conservation, people can keep water clean in Minnesota	-2	-1	0	1	2
c. I have the knowledge and skills I need to use conservation practices on the land.	-2	-1	0	1	2
d. I can learn almost anything about natural resource stewardship if I set my mind to it.	-2	-1	0	1	2
e. I have the financial resources I need to use conservation practices on the land.	-2	-1	0	1	2
f. I have the equipment I need to adopt a new conservation practice.	-2	-1	0	1	2
g. I <u>do not</u> have the time to use conservation practices	-2	-1	0	1	2
h. Farmers in my community have the ability to work together to change land use practices.	-2	-1	0	1	2
i. My community has the financial resources it needs to protect water resources.	-2	-1	0	1	2
j. My community has the leadership it needs to protect water resources.	-2	-1	0	1	2
k. Weather has a big impact on my decisions about conservation practices on the land.	-2	-1	0	1	2

**13. How much influence do you think people like you have over the following? (Please circle one number for each row)**

	Not at all	Little	Some	A lot
a. Protecting clean water in the area	0	1	2	3
b. Preserving farms and farmland in the area	0	1	2	3
c. Inspiring or organizing others to take action in the community	0	1	2	3

**14. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. There is <u>nothing</u> that we can do to keep the costs of farm/land management from going up.	-2	-1	0	1	2
b. I can usually achieve what I want on my farm/land when I work hard for it.	-2	-1	0	1	2
c. Most of what happens on my farm/land is <u>beyond my control</u> .	-2	-1	0	1	2
d. It is <u>difficult</u> for us to have much control over policies that affect our farms/lands.	-2	-1	0	1	2
e. I can usually rely on weather forecasts to manage my farm/land.	-2	-1	0	1	2
f. The weather is so variable that <u>it is difficult</u> to make decisions on my farm/land.	-2	-1	0	1	2
g. By adapting farm/land management practices, people can become more resilient to changes in weather patterns.	-2	-1	0	1	2

**15. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. People who are important to me expect me to talk to others about conservation practices.	-2	-1	0	1	2
b. People who are important to me talk to others about conservation practices.	-2	-1	0	1	2
c. People who are important to me expect me to attend meetings or public hearings about water.	-2	-1	0	1	2
d. People who are important to me attend meetings or public hearings about water.	-2	-1	0	1	2
e. People who are important to me expect me to work with other community members to protect water.	-2	-1	0	1	2
f. People who are important to me work with other community members to protect water.	-2	-1	0	1	2

### III. Conservation Practices and Community Engagement

Now, we have a few questions about your conservation practices and community engagement. Remember, your responses to all of the survey questions are confidential.

**16. Do you use the following practices on your land/property? Do you intend to use these practices on your land/property in the future? (Please check yes/no for each)**

	Do you use the practice on your land/property now?		Do you intend to use the practice on your land/property in the future?		Not Applicable
	Yes	No	Yes	No	
a. Buffer/filter strip along streams and ditches or field edges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conservation drainage management practices (e.g., controlled drainage, storage basins)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Conservation tillage practices (e.g., no till, minimum till)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Land in conservation cover (e.g., Conservation Reserve Program)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Drainage tiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Terraces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Vertical drop side inlets (adjacent to ditches)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Water and sediment control basins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Agriculture waste management facility or system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Rotation grazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Cover crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Drainage water management planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Protect wetlands on the land/property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Plant trees as a windbreak on the land/property	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Follow a nutrient management plan on the farm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p. Rain barrel or cistern to store water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q. Rain garden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r. Native plants or shrubs in my yard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s. Minimizing use of fertilizers/pesticides on lawns and gardens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**17. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

<b>I would be more likely to adopt new conservation practices or to continue to use practices if...</b>	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. I knew more about how to implement and maintain conservation practices.	-2	-1	0	1	2
b. I knew more about the wildlife benefits of conservation practices.	-2	-1	0	1	2
c. I had help with the physical labor of implementing and maintaining conservation practices.	-2	-1	0	1	2
d. I had access to financial resources to help me adopt conservation practices.	-2	-1	0	1	2
e. I could talk to other landowners or farmers who are using conservation practices.	-2	-1	0	1	2
f. I could attend a workshop or field day on conservation practices.	-2	-1	0	1	2
g. I could be enrolled in a program that recognizes local conservation stewards.	-2	-1	0	1	2
h. My neighbors maintained conservation practices.	-2	-1	0	1	2
i. There were regulations that mandated using a conservation practice.	-2	-1	0	1	2
j. Conservation programs were more flexible.	-2	-1	0	1	2
k. I could get higher payments for adopting conservation practices.	-2	-1	0	1	2
l. I could learn how to maintain conservation practices for soil conservation.	-2	-1	0	1	2
m. I had evidence that the conservation practice improved water resources.	-2	-1	0	1	2
n. I was compensated for lost crop production because of conservation practices.	-2	-1	0	1	2
o. Conservation program requirements were less complex.	-2	-1	0	1	2
p. I had evidence that conservation practices <u>did not</u> reduce crop yield.	-2	-1	0	1	2
q. A conservation assistance professional would visit my land to discuss conservation practice options.	-2	-1	0	1	2

**18. How often have you engaged in the following actions in the past 12 months? (Please circle one response for each row)**

In the <u>past 12 months</u> how often have you...	Never	Every few months	Every month	Every two weeks	Weekly or more
a. Volunteered for community organizations or events?	0	1	2	3	4
b. Heard about a water resource protection initiative?	0	1	2	3	4
c. Participated in a water resource protection initiative?	0	1	2	3	4
d. Worked with other community members to protect water?	0	1	2	3	4
e. Talked to others about conservation practices?	0	1	2	3	4
f. Attended a meeting or public hearing about water?	0	1	2	3	4
g. Taken a leadership role around water resource conservation in the community?	0	1	2	3	4

**19. Please rate your intentions to engage in the following actions in the next 12 months. (Please circle one number for each row)**

In the <u>next 12 months</u> , I intend to...	Most certainly not	Probably not	Uncertain	Probably will	Most certainly will
a. Learn more about water resource issues in my watershed	-2	-1	0	1	2
b. Talk to others about conservation practices	-2	-1	0	1	2
c. Work with other community members to protect water	-2	-1	0	1	2
d. Attend a meeting or public hearing about water	-2	-1	0	1	2
e. Contact conservation assistance professionals (e.g. my soil and water conservation district or the Natural Resources Conservation Service) about water resource initiatives	-2	-1	0	1	2
f. Learn more about conservation practices	-2	-1	0	1	2

**20. To what extent do you agree or disagree with the following statements? (Please circle one number for each row)**

I feel a personal obligation to...	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
a. Do whatever I can to prevent water pollution	-2	-1	0	1	2
b. Maintain my land/farm in a way that <u>does not</u> contribute to water resource problems	-2	-1	0	1	2
c. Talk to others about conservation practices	-2	-1	0	1	2
d. Use conservation practices on my land/property	-2	-1	0	1	2
e. Work with other community members to protect water resources	-2	-1	0	1	2
f. Attend meetings or public hearings about water	-2	-1	0	1	2

**21. To what extent do the following individuals or groups influence your decisions about conservation on your land? (Please circle one number for each row)**

	Not at all	Slightly	Moderately	A lot	Don't know/Not applicable
a. My family	1	2	3	4	DK/NA
b. Farmers	1	2	3	4	DK/NA
c. My neighbors	1	2	3	4	DK/NA
d. Environmental advocacy organizations	1	2	3	4	DK/NA
e. My county's Soil and Water Conservation District	1	2	3	4	DK/NA
f. My financial institution (e.g., financial advisor, loan officer, mortgage lender, etc.)	1	2	3	4	DK/NA
g. University researchers	1	2	3	4	DK/NA
h. The MN Department of Natural Resources	1	2	3	4	DK/NA
i. The MN Pollution Control Agency	1	2	3	4	DK/NA
j. The MN Department of Agriculture	1	2	3	4	DK/NA
k. The Farm Service Agency (USDA)	1	2	3	4	DK/NA
l. The National Resource Conservation Service (NRCS)	1	2	3	4	DK/NA
m. My local extension agent	1	2	3	4	DK/NA
n. My county's Farm Bureau	1	2	3	4	DK/NA
o. Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	1	2	3	4	DK/NA
p. Certified crop advisors (CCA)	1	2	3	4	DK/NA
q. Seed/input dealer	1	2	3	4	DK/NA
r. Farmer's Union	1	2	3	4	DK/NA
s. My local co-op	1	2	3	4	DK/NA
t. My agronomist/agricultural advisor	1	2	3	4	DK/NA
u. Other (please specify): _____	1	2	3	4	DK/NA

**22. From the previous list (Question 21, a-u), what are your three most trusted sources of information regarding water quality issues and solutions? (Please list in order of first, second, and third most trusted)**

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_

#### IV. Information about You and Your Land/Farm

Finally, we want to know a little bit about you in order to better understand who responded to this survey. Remember, your responses to all of the survey questions are confidential.

**23. How do you use water resources in your watershed? (Check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> Drinking water                  | <input type="checkbox"/> Irrigation                                |
| <input type="checkbox"/> Canoeing/kayaking/other boating | <input type="checkbox"/> Picnicking and family gatherings          |
| <input type="checkbox"/> Fishing                         | <input type="checkbox"/> Observing wildlife                        |
| <input type="checkbox"/> Swimming                        | <input type="checkbox"/> Experiencing scenic beauty                |
| <input type="checkbox"/> Hunting                         | <input type="checkbox"/> Storing excess water from drainage system |
| <input type="checkbox"/> Watering livestock              |  |

**24. How would you characterize the quality of water in the ditch, stream, lake, or river closest to you? (Please check one box)**

- Very poor     Poor     Fair     Good     Very good     Don't know

**25. How would you characterize the quality of water in the Minnesota River? (Please check one box)**

- Very poor     Poor     Fair     Good     Very good     Don't know

**26. Does the land you own or rent touch a ditch, stream, lake, or river? (Please check yes or no)**

- Yes     No

**27. Do you use your land/property for agricultural production? (Please check yes or no)**

- Yes (If yes, answer question 27a)     No (If no, skip to question 28)

**Q27a. How many acres are in agricultural production? \_\_\_\_\_ acres**

**28. What is your experience with programs that offer financial incentives to farmers for conservation practices? (Please check one box)**

- Not relevant for my property     Never heard of any     Familiar but not enrolled     Currently enrolled

**29. Please describe the ownership arrangement and size of your property. (Please check all that apply and include acreage)**

Ownership	Approximate Acreage
<input type="checkbox"/> I own and manage my own land.	_____
<input type="checkbox"/> I rent land to another party.	_____
<input type="checkbox"/> I rent land from another party.	_____
<input type="checkbox"/> Other (please specify): _____	_____

**30. Who makes the management decisions on the land? (Please check one box)**

- I make my own decisions.  
 I leave it up to my renter.  
 I leave it up to the landowner/property owner.  
 I work together with the renter/landowners to make decisions.

**31. In what year were you born? \_\_\_\_\_**

- Prefer not to respond

32. Are you...       Male       Female       Prefer not to respond

33. What is the highest level of formal education you have completed? (Please check one box)

- |  |   |
|--|---|
| <input type="checkbox"/> Did not finish high school            | <input type="checkbox"/> College bachelor's degree                  |
| <input type="checkbox"/> Completed high school                 | <input type="checkbox"/> Some college graduate work                 |
| <input type="checkbox"/> Some college but no degree            | <input type="checkbox"/> Completed graduate degree (Masters or PhD) |
| <input type="checkbox"/> Associate degree or vocational degree | <input type="checkbox"/> Prefer not to respond                      |

34. What category best describes you? (Please check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> <b>White</b><br>For example, German, Irish, English, Italian, Polish, French, etc.  | <input type="checkbox"/> <b>American Indian or Alaska Native</b><br>For example, Minnesota Chippewa Tribe, Shakopee Mdewakanton Sioux, Navajo Nation, Mayan, Aztec, Nome Eskimo Community, etc. |
| <input type="checkbox"/> <b>Hispanic, Latino, or Spanish heritage</b><br>For example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc. | <input type="checkbox"/> <b>Middle Eastern or North African</b><br>For example, Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian etc.  |
| <input type="checkbox"/> <b>Black or African American</b><br>For example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc.                             | <input type="checkbox"/> <b>Native Hawaiian or Other Pacific Islander</b><br>For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese, etc.                                  |
| <input type="checkbox"/> <b>Asian</b><br>For example, Chinese, Filipino, Asian Indian, Vietnamese, Hmong, Korean, Japanese, etc.   | <input type="checkbox"/> <b>Some other race, ethnicity or heritage (Please specify):</b><br>_____   |
| <input type="checkbox"/> <b>Prefer not to respond</b>  |   |

35. Which of the following best describes your total household income from all sources in 2015 before taxes?

(Please check one box)

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Under \$20,000        | <input type="checkbox"/> \$75,000 - \$99,999   | <input type="checkbox"/> \$200,000 - \$249,999 |
| <input type="checkbox"/> \$20,000 - \$49,999   | <input type="checkbox"/> \$100,000 - \$149,999 | <input type="checkbox"/> \$250,000 - \$299,999 |
| <input type="checkbox"/> \$50,000 - \$74,999   | <input type="checkbox"/> \$150,000 - \$199,999 | <input type="checkbox"/> \$300,000 or more     |
| <input type="checkbox"/> Prefer not to respond |  |  |

36. Approximately what percentage of your income is dependent on agricultural production? \_\_\_\_%

37. Do you have any other comments about your community or water management?

***Thank you for your help!***

Please complete the survey, fold it in thirds, and mail it back in the enclosed self-addressed stamped envelope.

If you have questions please contact Dr. Amit Pradhananga, Department of Forest Resources, 115 Green Hall, 1530 Cleveland Avenue N., St. Paul, MN 55108. Phone: (612) 624-6726 or by email at prad0047@umn.edu. Cover Photo: Amy Linnerooth, Nicollet County.

## Appendix B: Cover Letter

[Date]

[First Name] [Last Name]

[Street Address]

[City] [State] [Zip code]

**Nicollet County Landowner Survey**  
Information and Consent Form

Dear [First Name] [Last Name],

I am writing to ask for your help in a study about landowners and water resources. The study is being conducted by the Department of Forest Resources, University of Minnesota in partnership with Nicollet County, Nicollet Soil and Water Conservation District, Great River Greening and Minnesota Pollution Control Agency. I am contacting you because you are a landowner in the Middle Minnesota watershed and we want to know what you think about water.

The findings from this study will be used to help resource managers and community leaders better understand landowners' views and to facilitate communication and outreach programs in the area. We really appreciate you taking the time to help us with this study. It should take you only about 20 minutes to complete the questionnaire.

For your reference, a map is enclosed displaying the major municipalities within the Middle Minnesota watershed.

This survey is voluntary and completely confidential. The risks of participating in this study are minimal. There are no direct benefits to you for participating in this study. You are free to withdraw at any time. Completion of this survey indicates your voluntary consent to participate. Your decision to participate will not affect your current or future relationship with the University of Minnesota. The ID # on the front page of your survey is used to help us track mailings, ensuring that your name is never affiliated with your responses. Please answer the questions as completely as possible. Once you have **completed the questionnaire, fold it in thirds and mail it back in the enclosed self-addressed, postage-paid envelope.**

We would be happy to answer any questions or listen to any comments you may have about this study. Please feel free to contact me by phone at 612-624-6726, or by email at [prad0047@umn.edu](mailto:prad0047@umn.edu). If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects' Advocate Line, D-528 Mayo, 420 Delaware Street S.E., Minneapolis, Minnesota, 55455; telephone [\(612\) 625-1650](tel:612-625-1650).

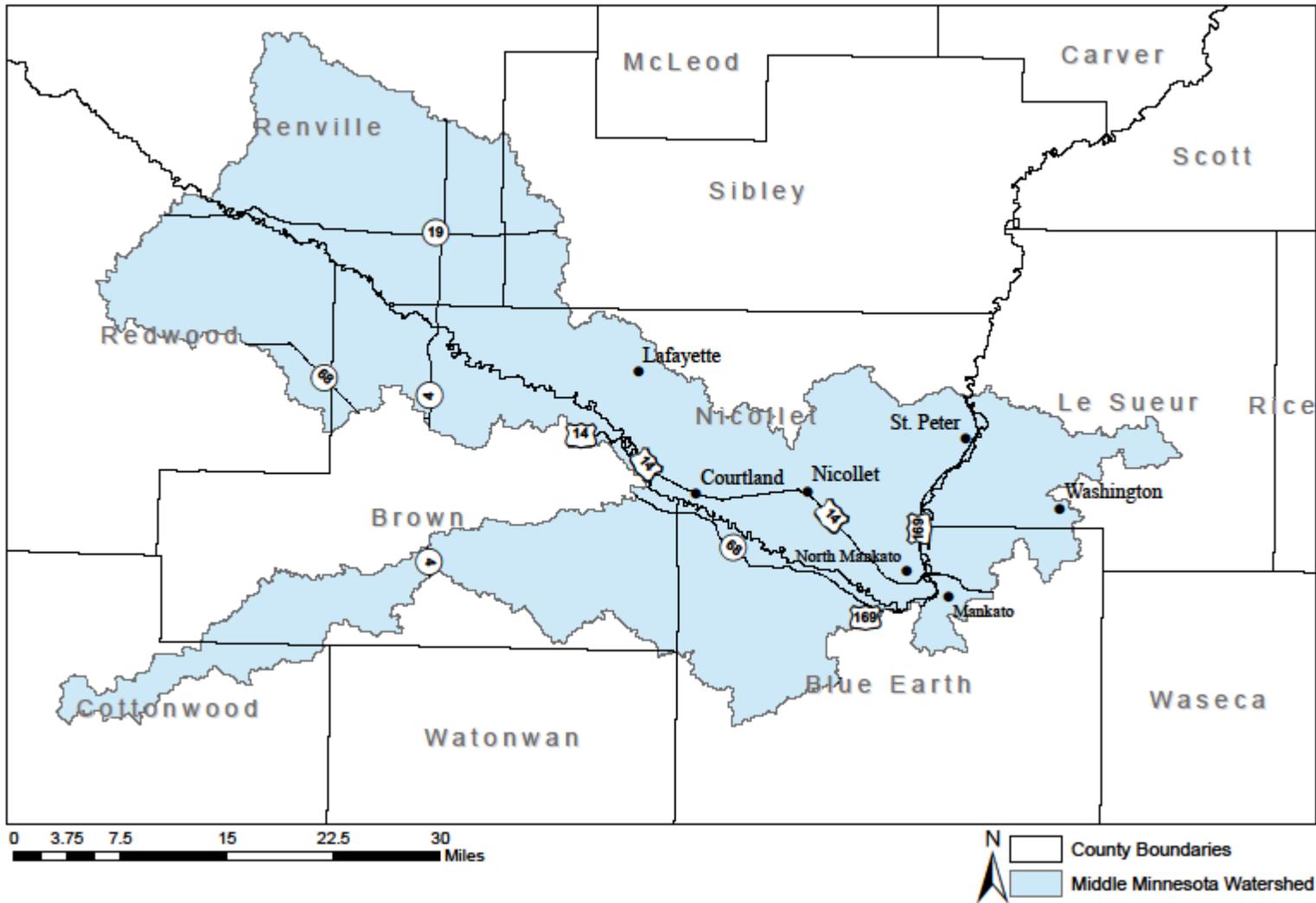
I hope you enjoy completing the questionnaire and I look forward to receiving your response.

Sincerely,

Amit Pradhananga  
Department of Forest Resources  
University of Minnesota

## Appendix C: Study Watershed Map

# Middle Minnesota Watershed



## Appendix D: Reminder Letter

[Date]

[First Name] [Last Name]

[Street Address]

[City] [State] [Zip code]

Dear [First Name] [Last Name],

A few weeks ago I sent you a questionnaire that asked about your perspectives on your community and its water resources. If you have already returned your questionnaire, thank you for your response. We sincerely appreciate your input!

If you have not yet responded, I am writing again because of the importance of your participation to the study and its intended outcomes. We understand that this may be a busy time of the year for you; so we really appreciate you taking the time to help us with this study. It should take you only about 20 minutes to complete the questionnaire. The responses we have already received from other landowners in your watershed show a range of beliefs about community and water resources. We want to ensure that your opinions are represented too!

The study is being conducted by the Department of Forest Resources, University of Minnesota in partnership with Nicollet County, Nicollet Soil and Water Conservation District, Great River Greening and Minnesota Pollution Control Agency. The findings from this study will be used to help resource managers and community leaders better understand landowners' views and to facilitate communication and outreach programs in the area.

For your reference, a map is enclosed displaying the major municipalities within the Middle Minnesota watershed.

This survey is voluntary and completely confidential. The ID # on the front page of your survey is used to help us track mailings, ensuring that your name is never affiliated with your responses. Please answer the questions as completely as possible. Once you have **completed the questionnaire, fold it in thirds and mail it back in the enclosed self-addressed, postage-paid envelope.**

We would be happy to answer any questions or listen to any comments you may have about this study. Please feel free to contact me by phone at 612-624-6726, or by email at [prad0047@umn.edu](mailto:prad0047@umn.edu). If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects' Advocate Line, D-528 Mayo, 420 Delaware Street S.E., Minneapolis, Minnesota, 55455; telephone [\(612\) 625-1650](tel:612-625-1650).

I hope you enjoy completing the questionnaire and I look forward to receiving your response.

Sincerely,

Amit Pradhananga  
Research Associate  
Department of Forest Resources  
University of Minnesota

## Appendix E: Study Findings- Descriptive Statistics

Table 1. Respondents' perception of their community

	<b>N</b>	<b>Percent</b>
My neighborhood	127	40.1
My township	71	22.4
My city	69	21.8
My county	40	12.6
My watershed	10	3.2

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 2

Table 2. Respondents' perceived importance of the qualities of a community

	<b>N</b>	<b>Mean*</b>	<b>SD<sup>a</sup></b>	<b>Very unimportant<sup>b</sup></b>	<b>Somewhat unimportant</b>	<b>Neither important nor unimportant</b>	<b>Somewhat important</b>	<b>Very important</b>
Clean streams, rivers and lakes	325	1.48	0.95	4.6	1.2	1.5	26.8	65.8
Good relationships among neighbors	322	1.42	0.95	4.0	1.6	3.7	29.5	61.2
Strong family ties	323	1.37	1.06	5.3	1.9	7.1	22.3	63.5
Access to natural areas/views	323	1.13	1.05	4.0	4.0	13.0	32.8	46.1
Opportunities for outdoor recreation	324	1.11	1.11	5.2	4.0	12.7	30.2	47.8
Opportunities to be involved in community projects	322	0.70	0.99	3.4	8.1	23.6	45.0	19.9
Opportunities to express my culture and traditions	324	0.53	1.04	5.2	8.6	30.9	38.0	17.3

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 3

\*Responses based on a 5-point scale from very unimportant (-2) to very important (2)

<sup>a</sup> SD=Standard deviation

<sup>b</sup> Percent

Table 3. Respondents' uses of water resources in their watershed

	N	Percent <sup>a</sup>
Drinking water	241	78.2%
Observing wildlife	202	65.6%
Experiencing scenic beauty	195	63.3%
Hunting	140	45.5%
Fishing	104	33.8%
Picknicking and family gatherings	104	33.8%
Watering livestock	91	29.5%
Canoeing/kayaking/other boating	84	27.3%
Swimming	47	15.3%
Storing excess water from drainage system	28	9.1%
Irrigation	17	5.5%

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 23

<sup>a</sup>Percentages based on the number of respondents that responded to the survey question; Respondents could give more than one response; Rank ordered by percent.

Table 4. Respondents' familiarity with water resource issues in their watershed

Response	N	Percent
Not at all familiar	23	7.1
Slightly familiar	104	32.0
Moderately familiar	134	41.2
Very familiar	64	19.7
<b>Total</b>	<b>325</b>	<b>100.0</b>

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 5

Table 5. Respondents' perceptions about water quality in the stream, lake, or river water closest to them and in the Minnesota River

	N	Mean*	SD <sup>a</sup>	Very poor <sup>b</sup>	Poor	Fair	Good	Very good	Don't know
Water quality in ditch, stream, lake, or river closest to them	284	3.24	1.13	6.9	16.4	26.2	28.1	12.0	10.4
Water quality in the Minnesota River	298	2.54	1.02	15.7	29.5	33.5	11.6	3.1	6.6

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Questions 24 and 25

\*Responses based on a 5-point scale from very poor (1) to very good (5)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 6. Respondents' perception about the location of their property in the watershed before the survey

Response	N	Percent
Yes	266	82.4
No	56	17.3
Property not in watershed	1	0.3
<b>Total</b>	<b>323</b>	<b>100.0</b>

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 6

Table 7. Respondents' beliefs about water pollution and conservation practices

	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Water pollution affects human health.	328	1.55	0.67	0.0	2.1	3.4	31.4	63.1
Excessive water runoff causes soil and nutrient loss.	328	1.35	0.94	1.2	5.8	7.9	27.1	57.9
Drainage tiling increases crop yield.	327	1.28	0.93	2.1	.9	17.1	26.0	53.8
Conservation practices protect aquatic life.	326	1.25	0.94	2.5	3.1	11.0	33.4	50.0
Conservation drainage management reduces water runoff from farmland.	328	1.09	1.00	3.0	4.6	13.7	38.1	40.5
Conservation practices contribute to quality of life in my community.	327	1.07	1.00	3.1	3.7	17.1	35.8	40.4
Drainage tiling contributes to higher water flows downstream.	328	0.85	1.29	8.8	7.9	15.2	25.3	42.7
Water resources in Minnesota need better protection.	324	0.79	1.15	5.6	9.0	18.8	34.6	32.1
Water resources in Nicollet County are adequately protected.	328	0.28	1.17	8.8	18.9	20.1	39.3	12.8
Laws to protect the environment limit my choices and personal freedom.	328	0.13	1.29	15.5	17.1	20.4	33.2	13.7
Conservation tillage decreases crop yield.	327	-0.29	1.02	14.7	24.2	39.8	18.7	2.8
Water resource protection will threaten jobs for people like me.	328	-0.34	1.18	22.3	18.9	35.7	17.1	6.1

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 7

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 8. Respondents' beliefs about responsibility for water resource protection

	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is my personal responsibility to make sure that what I do on the land doesn't contribute to water resource problems.	327	1.43	0.76	1.2	1.2	5.5	37.3	54.7
It is my personal responsibility to help protect water.	327	1.39	0.77	1.5	.9	5.5	41.0	51.1
Landowners upstream should be responsible for protecting water downstream.	327	1.27	0.87	1.2	2.8	12.2	35.2	48.6
Farmers in Nicollet County should be responsible for protecting water.	328	1.27	0.88	2.7	1.8	7.0	42.4	46.0
Urban residents in Nicollet County should be responsible for protecting water.	328	1.17	0.94	3.4	1.2	13.1	39.3	43.0
Local government should be responsible for protecting water.	328	0.88	1.07	4.6	6.1	17.7	39.6	32.0
The state government should be responsible for protecting water.	327	0.49	1.30	11.6	10.4	21.7	30.3	26.0

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 8

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 9. Respondents' perceptions about pollutants/issues in their watershed

	<b>N</b>	<b>Mean*</b>	<b>SD<sup>a</sup></b>	<b>Not a problem<sup>b</sup></b>	<b>Slight problem</b>	<b>Moderate problem</b>	<b>Severe problem</b>	<b>Don't know</b>
Sediment (cloudiness)	266	2.73	0.95	9.6	22.5	30.6	19.4	17.9
Phosphorus	214	2.65	0.99	9.3	20.1	21.1	15.8	33.7
Flooding	294	2.62	1.00	13.8	27.4	28.3	20.9	9.5
Nitrogen in surface water	207	2.60	1.02	9.9	21.3	17.0	15.7	36.1
Pesticides	239	2.59	1.10	14.8	21.2	16.9	20.6	26.5
Algae	229	2.48	1.09	17.8	17.1	20.6	15.9	28.7
Nitrogen in drinking water	207	2.14	1.07	22.6	19.2	12.7	9.6	35.9
<i>E. coli</i> (bacteria)	188	2.10	1.01	20.4	17.6	13.9	6.2	42.0
Drought	280	2.05	0.91	27.6	32.8	20.4	5.9	13.3

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 9

\*Responses based on a 4-point scale from not a problem (1) to severe problem (4)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 10. Respondents' perceptions about potential sources of water pollutants/issues in their watershed

	N	Mean*	SD <sup>a</sup>	Not a problem <sup>b</sup>	Slight problem	Moderate problem	Severe problem	Don't know
Fertilizer management for lawn/turf care	299	2.86	1.01	11.7	18.8	32.0	29.5	8.0
Stream bank erosion	298	2.74	0.97	11.1	24.7	32.7	23.5	8.0
Urban/suburban water runoff	281	2.69	0.97	11.8	23.2	32.5	19.5	13.0
Urban land development	284	2.66	0.95	11.8	24.5	33.4	18.3	12.1
Soil erosion from farmland	301	2.55	0.94	13.3	31.8	31.5	16.4	7.1
Fertilizer management for crop production	300	2.50	0.98	13.8	36.9	22.8	18.8	7.7
Industrial discharge to streams, rivers, and lakes	256	2.46	0.96	14.8	24.4	28.1	11.7	21.0
Tile drainage	299	2.42	1.08	23.1	26.2	23.4	19.4	8.0
Unregulated contaminants (e.g., pharmaceuticals, personal care products)	241	2.41	1.05	18.2	21.3	21.3	13.6	25.6
Increased frequency or intensity of storms	283	2.39	0.96	18.2	28.6	28.9	11.4	12.9
Livestock operations	297	2.37	1.01	20.9	30.5	25.5	14.5	8.6
Wind erosion	300	2.29	0.88	17.3	39.8	26.5	9.0	7.4
Surface ditch drainage	290	2.26	0.99	24.0	30.5	24.0	11.8	9.7
Improperly sized/maintained septic systems	264	2.23	0.92	19.2	32.8	21.4	8.4	18.3
Grass clippings and leaves entering storm drains	266	2.21	0.93	21.7	28.2	25.7	6.8	17.6
Natural causes (e.g., natural erosion, wildlife)	283	2.03	0.88	27.4	35.1	19.4	5.2	12.9

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 10

\*Responses based on a 4-point scale from not a problem (1) to severe problem (4)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 11. Respondents' concern about the consequences of water pollution for the following

I am concerned about the consequences of water pollution for...	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Future generations	327	1.30	0.95	3.1	2.8	8.0	33.3	52.9
People in my community	326	1.12	0.98	3.4	3.1	13.5	38.0	42.0
My or my family's health	327	1.12	1.03	4.3	2.8	13.8	34.9	44.3
Aquatic life	326	1.09	1.04	3.1	4.3	18.1	29.4	45.1
Wildlife	327	1.01	1.06	3.4	5.5	19.0	30.9	41.3
Farmland	326	0.89	1.11	5.8	4.6	19.0	35.6	35.0

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 11

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 12. Respondents' perceptions about their and their community's ability to protect water resources.

	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
My use of a conservation practice contributes to healthy water resources.	324	1.22	0.82	1.2	1.2	13.6	42.3	41.7
I can learn almost anything about natural resource stewardship if I set my mind to it.	325	1.18	0.78	0.0	2.5	16.0	42.8	38.8
I have the knowledge and skills I need to use conservation practices on the land.	324	0.88	0.90	1.2	6.8	19.1	48.5	24.4
Farmers in my community have the ability to work together to change land use practices.	325	0.82	0.99	2.8	6.2	24.3	40.0	26.8
My community has the financial resources it needs to protect water resources.	325	0.18	1.05	6.2	17.2	40.9	24.0	11.7
I have the financial resources I need to use conservation practices on the land.	324	0.10	1.15	10.8	17.6	34.0	25.9	11.7
My community has the leadership it needs to protect water resources.	325	0.08	1.05	8.6	17.2	40.3	25.2	8.6
I have the equipment I need to adopt a new conservation practice.	324	-0.22	1.12	17.0	19.1	39.2	18.5	6.2
I <u>do not</u> have the time to use conservation practices	324	-0.48	1.00	19.8	23.1	45.4	9.0	2.8

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 12

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 13. Respondents' feelings of personal obligation

	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Maintain my land/farm in a way that <u>does not</u> contribute to water resource problems	318	1.33	0.79	0.9	1.9	8.5	40.6	48.1
Do whatever I can to prevent water pollution	321	1.22	0.84	1.9	1.6	10.6	44.9	41.1
Use conservation practices on my land/property	321	1.07	0.89	2.8	1.6	14.6	47.7	33.3
Work with other community members to protect water resources	321	0.46	0.93	3.7	6.9	42.1	34.6	12.8
Talk to others about conservation practices	321	0.42	0.85	2.8	6.9	43.9	38.0	8.4
Attend meetings or public hearings about water	319	0.27	0.98	7.5	7.5	42.6	34.8	7.5

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 20

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup> SD=Standard deviation

<sup>b</sup> Percent

Table 14. Respondents' beliefs about their level of influence over the following

	N	Mean*	SD <sup>a</sup>	None <sup>b</sup>	Little	Some	A lot
Protecting clean water in the area	325	1.77	0.82	6.2	29.8	45.2	18.8
Preserving farms and farmland in the area	324	1.72	0.97	12.3	28.1	34.6	25.0
Inspiring or organizing others to take action in the community	324	1.42	0.84	11.1	47.2	29.9	11.7

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 13

\*Responses based on a 4-point scale from not at all (0) to a lot (3)

<sup>b</sup> Percent

Table 15. Respondents' perceptions of control over farm/land management

	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
By taking an active part in conservation, people can keep water clean in Minnesota	323	1.30	0.82	1.9	1.5	7.4	42.7	46.4
If there is someone I want to meet in my community, I can usually arrange it.	325	1.01	0.92	2.8	3.4	15.4	47.1	31.4
The average farmer/landowner can have an influence on rural community life in the region.	324	0.82	1.14	6.2	7.1	16.7	38.9	31.2
I can usually achieve what I want on my farm/land when I work hard for it.	323	0.75	0.82	.6	6.2	26.6	50.5	16.1
It is <u>difficult</u> for us to have much control over policies that affect our farms/lands.	323	0.68	1.09	5.0	10.2	19.5	42.1	23.2
Weather has a big impact on my decisions about conservation practices on the land.	324	0.44	1.02	5.9	8.6	35.2	36.7	13.6
By adapting farm/land management practices, people can become more resilient to changes in weather patterns.	320	0.42	0.97	4.7	8.4	38.8	36.3	11.9
I find it easy to play an important role in most group situations within my community.	325	0.33	0.92	3.1	11.4	44.9	30.5	10.2
I can usually rely on weather forecasts to manage my farm/land.	322	0.18	0.92	5.0	14.0	45.7	29.2	6.2
There is <u>nothing</u> that we can do to keep the costs of farm/land management from going up.	325	0.10	1.16	8.9	24.0	26.2	29.5	11.4
The weather is so variable that <u>it is difficult</u> to make decisions on my farm/land.	322	-0.06	0.92	5.3	23.9	47.8	17.4	5.6
When I need assistance with something on my farm/land, I often find it <u>difficult</u> to get others to help.	325	-0.32	1.11	18.2	24.3	32.9	20.6	4.0
Most of what happens on my farm/land is <u>beyond my control</u> .	323	-0.41	1.07	16.4	32.5	30.3	16.7	4.0

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Questions 4 and 14

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup> SD=Standard deviation

<sup>b</sup> Percent

Table 16. Respondents' current use and intentions for future use of conservation practices

	Current use of practice			Intentions to use practice in the future		
	N	Yes <sup>a</sup>	No	N	Yes	No
Minimizing use of fertilizers/pesticides on lawns and gardens	276	88.4	11.6	200	89.0	11.0
Protect wetlands on the land/property	181	81.2	18.8	132	84.1	15.9
Drainage tiles	232	78.0	22.0	176	75.6	24.4
Plant trees as a windbreak on the land/property	255	75.3	24.7	191	77.0	23.0
Follow a nutrient management plan on the farm	186	75.3	24.7	134	78.4	21.6
Native plants or shrubs in my yard	258	71.3	28.7	187	71.7	28.3
Conservation tillage practices (e.g., no till, minimum till)	209	67.9	32.1	151	69.5	30.5
Buffer/filter strip along streams and ditches or field edges	224	65.6	34.4	168	73.8	26.2
Land in conservation cover (e.g., Conservation Reserve Program)	208	47.1	52.9	159	50.9	49.1
Agriculture waste management facility or system	127	43.3	56.7	92	40.2	59.8
Drainage water management planning	180	42.8	57.2	141	41.1	48.9
Cover crops	177	41.8	58.2	138	50.7	49.3
Conservation drainage management practices (e.g., controlled drainage, storage basins)	201	40.8	59.2	163	44.2	55.8
Rain barrel or cistern to store water	227	29.5	70.5	178	40.4	59.6
Terraces	176	25.0	75.0	135	25.9	74.1
Water and sediment control basins	175	24.6	75.4	134	27.6	72.4
Rotation grazing	104	24.0	76.0	75	24.0	76.0
Vertical drop side inlets (adjacent to ditches)	154	23.4	76.6	122	26.2	73.8
Rain garden	208	13.9	86.1	163	25.8	74.2

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 16

<sup>a</sup>Percent

Table 17. Respondents' engagement in civic actions in the past 12 months

	N	Mean*	SD <sup>a</sup>	Never <sup>b</sup>	Every few months	Every month	Every two weeks	Weekly or more
Volunteered for community organizations or events?	318	1.11	1.28	42.5	29.6	12.6	5.7	9.7
Heard about a water resource protection initiative?	317	0.87	1.02	42.6	39.7	9.8	3.5	4.4
Talked to others about conservation practices?	318	0.79	0.95	45.3	39.6	9.7	1.6	3.8
Attended a meeting or public hearing about water?	318	0.37	0.70	71.4	23.9	2.5	0.9	1.3
Participated in a water resource protection initiative?	313	0.35	0.78	76.4	18.5	1.9	0.6	2.6
Worked with other community members to protect water?	318	0.29	0.71	80.2	14.8	2.5	0.9	1.6
Taken a leadership role around water resource conservation in the community?	318	0.18	0.61	88.4	8.2	1.6	0.6	1.3

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 18

\*Responses based on a 5-point scale from never (0) to weekly or more (4)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 18. Respondents' intentions to engage in civic actions in the next 12 months

	<b>N</b>	<b>Mean*</b>	<b>SD<sup>a</sup></b>	<b>Most certainly not<sup>b</sup></b>	<b>Probably not</b>	<b>Uncertain</b>	<b>Probably will</b>	<b>Most certainly will</b>
Learn more about conservation practices	315	0.36	0.96	4.4	13.0	33.0	41.6	7.9
Talk to others about conservation practices	320	0.16	0.93	3.8	20.6	36.6	34.4	4.7
Learn more about water resource issues in my watershed	320	0.11	0.87	2.5	21.3	42.5	30.0	3.8
Attend a meeting or public hearing about water	319	0.04	0.95	5.0	23.8	37.6	29.2	4.4
Work with other community members to protect water	319	-0.09	0.85	3.8	27.0	47.0	19.1	3.1
Contact conservation assistance professionals (e.g. my soil and water conservation district or the Natural Resources Conservation Service) about water resource initiatives	319	-0.13	0.96	6.9	28.5	40.4	19.4	4.7

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 19

\*Responses based on a 5-point scale from most certainly not (-2) to most certainly will (+2)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 19. Individuals or groups that influence respondents' decisions about conservation on their land

	N	Mean*	SD <sup>a</sup>	Not at all <sup>a</sup>	Slightly	Moderately	A lot	Don't know/Not applicable
My family	292	2.87	1.02	10.5	23.2	27.0	32.1	7.3
My county's Soil and Water Conservation District	287	2.46	0.86	10.8	38.9	30.6	11.1	8.6
Farmers	293	2.45	1.00	17.5	33.0	25.4	17.1	7.0
My neighbors	296	2.45	0.97	16.9	33.2	29.1	15.3	5.4
The Farm Service Agency (USDA)	282	2.18	0.91	24.2	31.2	28.3	6.1	10.2
The MN Department of Agriculture	286	2.17	0.88	22.8	36.7	26.4	6.1	8.0
The National Resource Conservation Service (NRCS)	271	2.16	0.95	25.6	29.2	24.7	7.4	13.1
The MN Department of Natural Resources	291	2.13	0.94	27.6	34.0	23.4	8.3	6.7
The MN Pollution Control Agency	290	2.07	0.95	30.9	32.2	21.3	8.0	7.6
Other (e.g., private advisors, media)	32	2.06	1.13	14.7	7.4	6.3	5.3	66.3
University researchers	278	2.03	0.95	31.5	30.3	19.7	7.0	11.5
Environmental advocacy organizations	282	2.02	0.91	30.9	32.8	21.2	5.8	9.3
My agronomist/agricultural advisor	251	1.89	1.00	39.3	16.0	19.5	5.4	19.8
My local extension agent	277	1.82	0.89	39.6	29.7	14.4	4.8	11.5
My local co-op	258	1.70	0.88	44.9	19.4	15.3	2.5	17.8
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	266	1.67	0.85	46.3	21.6	14.3	2.2	15.6
My financial institution (e.g., financial advisor, loan officer, mortgage lender, etc.)	267	1.63	0.89	50.8	19.0	10.5	4.4	15.2
Certified crop advisors (CCA)	257	1.63	0.84	47.8	18.8	13.4	1.9	18.2
Seed/input dealer	254	1.59	0.84	49.5	16.5	12.7	1.9	19.4
My county's Farm Bureau	270	1.56	0.81	54.1	17.8	12.1	1.9	14.0
Farmer's Union	253	1.38	0.69	59.9	12.5	8.0	0.6	18.9
My family	292	2.87	1.02	10.5	23.2	27.0	32.1	7.3

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 21

\*Responses based on a 4-point scale from not at all (1) to a lot (4)

<sup>a</sup> SD=Standard deviation

<sup>b</sup> Percent

Table 20. Respondents' most trusted sources of information

	N	Percent*
My county's Soil and Water Conservation District	86	26.1%
The MN Department of Natural Resources	82	24.9%
My family	70	21.3%
University researchers	59	17.9%
The MN Pollution Control Agency	52	15.8%
Farmers	41	12.5%
The MN Department of Agriculture	40	12.2%
My neighbors	39	11.9%
The National Resource Conservation Service (NRCS)	37	11.2%
The Farm Service Agency (USDA)	35	10.6%
My local extension agent	35	10.6%
My agronomist/agricultural advisor	29	8.8%
Environmental advocacy organizations	23	7.0%
My local co-op	21	6.4%
Other (e.g., private advisors, EPA, farm magazines)	20	6.1%
My county's Farm Bureau	17	5.2%
Certified crop advisors (CCA)	15	4.6%
Seed/input dealer	10	3.0%
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	7	2.1%
My financial institution (e.g., financial advisor, loan officer, mortgage lender, etc.)	6	1.8%
Farmer's Union	4	1.2%

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 22

\*Percent of all survey respondents (N = 329)

Table 21. Respondents' views about factors that would enhance their use of conservation practices

	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Conservation program requirements were less complex.	310	0.74	0.99	3.9	2.3	35.5	33.2	25.2
I could get higher payments for adopting conservation practices.	312	0.71	1.07	5.1	3.2	34.9	28.8	27.9
I had access to financial resources to help me adopt conservation practices.	312	0.66	1.10	5.1	8.3	26.9	34.3	25.3
I had evidence that the conservation practice improved water resources.	311	0.60	0.93	2.6	6.1	37.3	36.3	17.7
Conservation programs were more flexible.	312	0.54	0.93	3.5	4.2	43.6	32.7	16.0
I had evidence that conservation practices <u>did not</u> reduce crop yield.	312	0.52	0.98	3.8	4.8	45.5	26.9	18.9
I was compensated for lost crop production because of conservation practices.	311	0.51	1.13	7.1	6.1	39.2	23.5	24.1
I could learn how to maintain conservation practices for soil conservation.	311	0.46	0.85	3.2	4.5	44.4	38.6	9.3
My neighbors maintained conservation practices.	311	0.41	0.92	4.2	6.1	45.0	33.4	11.3
I knew more about the wildlife benefits of conservation practices.	313	0.41	1.02	5.4	9.9	36.4	34.5	13.7
I knew more about how to implement and maintain conservation practices.	313	0.40	0.90	3.5	7.3	45.7	32.6	10.9
I could attend a workshop or field day on conservation practices.	311	0.40	0.92	4.8	6.8	41.8	37.3	9.3
I had help with the physical labor of implementing and maintaining conservation practices.	313	0.38	1.06	6.4	9.6	39.0	30.0	15.0
I could talk to other landowners or farmers who are using conservation practices.	313	0.34	0.85	3.8	6.7	47.9	34.8	6.7
A conservation assistance professional would visit my land to discuss conservation practice options.	311	0.25	1.13	11.3	6.4	41.5	27.3	13.5
I could be enrolled in a program that recognizes local conservation stewards.	312	0.13	0.95	7.1	11.2	51.3	23.1	7.4
There were regulations that mandated using a conservation practice.	312	-0.17	1.21	20.2	13.5	39.1	17.9	9.3

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 17

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

Table 22. Respondents' perceived social norms of conservation action

	N	Mean*	SD <sup>a</sup>	Strongly disagree <sup>b</sup>	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
People who are important to me work with other community members to protect water.	323	0.14	0.92	7.4	10.5	46.4	32.2	3.4
People who are important to me talk to others about conservation practices.	323	0.10	0.90	7.1	11.5	48.9	29.1	3.4
People who are important to me attend meetings or public hearings about water.	322	0.06	0.91	6.5	15.8	45.7	28.9	3.1
People who are important to me expect me to work with other community members to protect water.	323	0.05	0.93	7.4	14.6	48.0	26.0	4.0
People who are important to me expect me to attend meetings or public hearings about water.	323	-0.11	0.95	10.8	15.8	49.5	21.1	2.8
People who are important to me expect me to talk to others about conservation practices.	323	-0.12	0.91	10.5	14.2	54.5	18.3	2.5

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 15

\*Responses based on a 5-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>a</sup>SD=Standard deviation

<sup>b</sup>Percent

**Appendix F: Study Findings- Subgroup Comparisons**

**Subgroup comparisons: Farmer vs. non-farmer**

Table 1. Number of respondents that use their land for agricultural production

	<b>N</b>	<b>Percent</b>
Farmer	210	67.1
Non-farmer	103	32.9
Total	313	100.0

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 27

Table 2. Difference between farmers and non-farmers in their age and years lived in the community

	<b>Respondent type</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t<sup>a</sup></b>
Age	Farmer	196	64.55	13.64	2.930
	Non-farmer	97	59.73	12.36	
Years lived in community	Farmer	202	52.08	19.79	7.050
	Non-farmer	99	34.24	22.21	

<sup>a</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 3. Difference between farmers and non-farmers in their decision making on the land

	<b>Make own decisions on the land (%)</b>	<b><math>\chi^2</math></b>
Farmers	55.6	46.389
Non-farmers	94.1	

$\chi^2$  Chi-square statistic for testing differences in proportions;  $p \leq 0.01$

Table 4. Difference between farmers and non-farmers in their use of practices on their land/property

<b>Practice</b>	<b>Respondent type</b>	<b>Current use of practice (%)</b>	<b><math>\chi^2</math></b>
Land in conservation cover	Farmer	40.9	14.247
	Non-farmer	72.3	
Drainage tiles	Farmer	87.1	56.091
	Non-farmer	31.6	
Follow a nutrient management plan on the farm	Farmer	81.5	32.667
	Non-farmer	23.8	
Native plants or shrubs in my yard	Farmer	64.7	11.234
	Non-farmer	85.2	

$\chi^2$  Chi-square statistic for testing differences in proportions;  $p \leq 0.01$

Table 5. Difference between farmers and non-farmers in their civic engagement

Survey item <sup>a</sup>	Respondent				
	type	N	Mean	SD	t <sup>b</sup>
Attended a meeting or public hearing about water?	Farmer	204	0.45	0.76	13.437
	Non-farmer	102	0.23	0.56	

<sup>a</sup>Items measured on a five-point scale from never (0) to weekly or more (4)

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

Table 6. Difference between farmers and non-farmers in their motivations for adoption or continued use of conservation practices

Survey item <sup>a</sup>	Respondent				
	type	N	Mean	SD	t <sup>b</sup>
I would be more likely to adopt new conservation practices or continue to use practices if...					
I knew more about how to implement and maintain conservation practices.	Farmer	201	0.32	0.87	-2.789
	Non-farmer	99	0.63	0.95	
I knew more about the wildlife benefits of conservation practices.	Farmer	201	0.25	0.96	-4.564
	Non-farmer	99	0.81	1.07	
My neighbors maintained conservation practices.	Farmer	200	0.33	0.95	-2.930
	Non-farmer	98	0.65	0.81	
There were regulations that mandated using a conservation practice.	Farmer	201	-0.35	1.19	-3.948
	Non-farmer	98	0.22	1.18	
I could get higher payments for adopting conservation practices.	Farmer	201	0.83	1.04	2.661
	Non-farmer	98	0.48	1.10	
I was compensated for lost crop production because of conservation practices.	Farmer	200	0.78	1.11	6.196
	Non-farmer	98	-0.03	0.95	
Conservation program requirements were less complex.	Farmer	200	0.86	0.97	3.234
	Non-farmer	97	0.47	0.96	
I had evidence that conservation practices did <u>not</u> reduce crop yield.	Farmer	201	0.68	1.01	4.408
	Non-farmer	98	0.16	0.80	

<sup>a</sup>Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

Table 7. Differences between farmers and non-farmers in their rating of water quality

Survey item <sup>a</sup>	Respondent				
	type	N	Mean	SD	t <sup>b</sup>
Rating of water quality in the ditch, stream, lake, or river closest to them	Farmer	192	3.49	1.06	5.776
	Non-farmer	90	2.70	1.11	
Rating of water quality in the Minnesota River	Farmer	195	2.74	1.00	5.026
	Non-farmer	98	2.13	0.95	

<sup>a</sup>Items measured on a five-point scale from very poor (1) to very good (5)

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

Table 8. Difference between farmers and non-farmers in the extent to which their conservation decisions are influenced by individuals or groups

Survey item <sup>a</sup>	Respondent		N	Mean	SD	t <sup>b</sup>
	type					
Farmers	Farmer		197	2.59	0.96	3.476
	Non-farmer		90	2.16	1.02	
The MN Department of Natural Resources	Farmer		195	1.99	0.91	-3.541
	Non-farmer		90	2.41	0.96	
The Farm Service Agency (USDA)	Farmer		192	2.29	0.87	3.427
	Non-farmer		83	1.89	0.92	
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	Farmer		186	1.82	0.89	5.019
	Non-farmer		75	1.27	0.58	
Certified crop advisors (CCA)	Farmer		184	1.76	0.88	5.115
	Non-farmer		68	1.19	0.43	
Seed/input dealer	Farmer		183	1.72	0.88	4.893
	Non-farmer		66	1.17	0.45	
Farmer's Union	Farmer		181	1.45	0.74	3.119
	Non-farmer		68	1.15	0.47	
My local co-op	Farmer		184	1.85	0.92	5.074
	Non-farmer		70	1.26	0.56	
My agronomist/agricultural advisor	Farmer		181	2.10	1.03	5.897
	Non-farmer		66	1.30	0.63	

<sup>a</sup>Items measured on a four-point scale from not at all (1) to a lot (4)

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 9. Difference between farmers and non-farmers in their perceived ability to protect water resources

Survey item <sup>a</sup>	Respondent		N	Mean	SD	t <sup>b</sup>
	type					
By taking an active part in conservation, people can keep water clean in Minnesota	Farmer		206	1.22	0.83	-3.158
	Non-farmer		103	1.52	0.70	
Farmers in my community have the ability to work together to change land use practices.	Farmer		208	0.63	0.96	-5.530
	Non-farmer		103	1.25	0.86	
My community has the financial resources it needs to protect water resources.	Farmer		209	0.06	1.03	-2.633
	Non-farmer		102	0.39	1.05	
Weather has a big impact on my decisions about conservation practices on the land.	Farmer		207	0.61	0.94	5.034
	Non-farmer		103	0.02	1.05	

<sup>a</sup>Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

**Subgroup comparisons: Property size**

Table 10. Number of respondents by size of property owned or rented

<b>Size of property owned/rented<sup>a</sup></b>	<b>N</b>	<b>Percent</b>
Small	150	54.7
Large	124	45.3
Total	274	100.0

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 29

<sup>a</sup>Small < 150 acres; Large = 150 acres or more

Table 11. Difference between small and large landowners in number of years lived in the community

	<b>Property size<sup>a</sup></b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t<sup>b</sup></b>
Years lived in community	Small	145	36.85	21.84	-7.395
	Large	122	55.33	18.41	

<sup>a</sup>Small < 150 acres; Large = 150 acres or more

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

Table 12. Difference between small and large landowners in their decision making on the land

<b>Property size<sup>a</sup></b>	<b>Make own decisions on the land (%)</b>	<b><math>\chi^2</math></b>
Small	77.2	14.494
Large	59.3	
Total	100.0	

<sup>a</sup>Small < 150 acres; Large = 150 acres or more

$\chi^2$  Chi-square statistic for testing differences in proportions;  $p \leq 0.01$

Table 13. Difference between small and large landowners in their use of land for agricultural production

<b>Property size<sup>a</sup></b>	<b>Use land for agricultural production (%)</b>	<b><math>\chi^2</math></b>
Small	43.0	81.726
Large	95.1	

<sup>a</sup>Small < 150 acres; Large = 150 acres or more

$\chi^2$  Chi-square statistic for testing differences in proportions;  $p \leq 0.01$

Table 14. Difference between small and large landowners in percent income dependent on agricultural production and experience with financial incentive programs

	Property size <sup>a</sup>	N	Mean	SD	t <sup>b</sup>
Percent income dependent on agricultural production	Small	140	7.97	19.35	-17.915
	Large	115	65.01	31.05	
Experience with programs that offer financial incentives to farmers for conservation practices <sup>c</sup>	Small	140	2.13	1.16	-7.302
	Large	123	3.05	0.84	

<sup>a</sup>Small < 150 acres; Large = 150 acres or more

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

<sup>c</sup>Item measured on a four-point scale from not relevant for my property (1) to currently enrolled (4)

Table 15. Difference between small and large landowners in their current use of practices

Practice	Property size <sup>a</sup>	Current use of practice (%)	$\chi^2$
Drainage tiles	Small	53.8	49.463
	Large	95.7	
Water and sediment control basins	Small	37.9	8.730
	Large	16.5	
Agriculture waste management facility or system	Small	22.2	9.977
	Large	54.1	
Follow a nutrient management plan on the farm	Small	50.0	26.485
	Large	87.4	
Native plants or shrubs in my yard	Small	80.7	13.284
	Large	58.3	

<sup>a</sup>Small < 150 acres; Large = 150 acres or more

$\chi^2$  Chi-square statistic for testing differences in proportions;  $p \leq 0.01$

Table 16. Difference between small and large landowners in their civic engagement

Survey item <sup>a</sup>	Property size <sup>b</sup>	N	Mean	SD	t <sup>c</sup>
In the past 12 months, how often have you...					
Attended a meeting or public hearing about water?	Small	148	0.14	0.47	16.165
	Large	121	0.26	0.80	

<sup>a</sup>Items measured on a five-point scale from never (0) to weekly or more (4)

<sup>b</sup>Small < 150 acres; Large = 150 acres or more

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

Table 17. Difference between large and small landowners in their barriers to adoption or continued use of conservation practices

Survey item <sup>a</sup>	Property size <sup>b</sup>	N	Mean	SD	t <sup>c</sup>
I would be more likely to adopt new conservation practices or continue to use practices if...					
I knew more about the wildlife benefits of conservation practices.	Small	144	0.72	1.05	4.859
	Large	119	0.13	0.91	
I had help with the physical labor of implementing and maintaining conservation practices.	Small	143	0.56	1.04	3.067
	Large	120	0.16	1.08	
I could be enrolled in a program that recognizes local conservation stewards.	Small	143	0.29	0.99	2.912
	Large	119	-0.04	0.85	
There were regulations that mandated using a conservation practice.	Small	143	0.19	1.15	4.844
	Large	119	-0.50	1.16	
I was compensated for lost crop production because of conservation practices.	Small	143	0.20	1.02	-4.511
	Large	118	0.81	1.16	
I had evidence that conservation practices <u>did not</u> reduce crop yield.	Small	143	0.31	0.91	-3.332
	Large	119	0.71	1.02	

<sup>a</sup>Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>b</sup>Small < 150 acres; Large = 150 acres or more

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

Table 18. Differences between small and large landowners in their familiarity with water issues and rating of water quality

Survey item <sup>a</sup>	Property size <sup>c</sup>	N	Mean	SD	t <sup>d</sup>
Familiarity with water issues in their watershed <sup>a</sup>	Small	148	2.60	0.83	-2.860
	Large	124	2.89	0.81	
Rating of water quality in the ditch, stream, lake, or river closest to them <sup>b</sup>	Small	131	2.83	1.07	-5.674
	Large	114	3.61	1.08	
Rating of water quality in the Minnesota River <sup>b</sup>	Small	142	2.32	0.96	-4.348
	Large	117	2.85	1.00	

<sup>a</sup>Items measured on a four-point scale from not at all familiar (1) to very familiar (4)

<sup>b</sup>Items measured on a five-point scale from very poor (5) to very good (5) five-point scale from very unimportant (-2) to very important (+2)

<sup>c</sup>Small < 150 acres; Large = 150 acres or more

<sup>d</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 19. Difference between small and large landowners in the extent to which their conservation decisions are influenced by individuals or groups

Survey item <sup>a</sup>	Property size <sup>b</sup>	N	Mean	SD	t <sup>c</sup>
My family	Small	134	3.03	1.00	3.056
	Large	121	2.64	1.02	
Environmental advocacy organizations	Small	131	2.19	0.95	2.965
	Large	114	1.85	0.82	
The MN Department of Natural Resources	Small	135	2.42	0.97	4.669
	Large	117	1.89	0.83	
The Farm Service Agency (USDA)	Small	125	1.96	0.92	-3.830
	Large	119	2.39	0.81	
My county's Farm Bureau	Small	117	1.37	0.69	-3.185
	Large	119	1.69	0.85	
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	Small	113	1.37	0.67	-5.345
	Large	117	1.93	0.90	
Certified crop advisors (CCA)	Small	107	1.35	0.66	-4.984
	Large	115	1.89	0.92	
Seed/input dealer	Small	105	1.31	0.68	-4.894
	Large	116	1.84	0.90	
My local co-op	Small	108	1.44	0.74	-4.424
	Large	116	1.93	0.92	
My agronomist/agricultural advisor	Small	103	1.52	0.85	-5.231
	Large	116	2.19	1.01	

<sup>a</sup>Items measured on a four-point scale from not at all (1) to a lot (4)

<sup>b</sup>Small < 150 acres; Large = 150 acres or more

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 20. Differences between small and large landowners in their and their community's perceived ability to protect water resources

Survey item	Property size <sup>c</sup>	N	Mean	SD	t <sup>d</sup>
Perceptions about their and their community's ability <sup>a</sup>					
By taking an active part in conservation, people can keep water clean in Minnesota	Small	149	1.48	0.62	4.059
	Large	122	1.09	0.96	
I have the equipment I need to adopt a new conservation practice	Small	149	-0.38	1.06	-2.711
	Large	122	-0.01	1.17	
Farmers in my community have the ability to work together to change land use practices.	Small	149	1.05	0.94	3.864
	Large	123	0.60	0.99	
Weather has a big impact on my decisions about conservation practices on the land.	Small	149	0.09	0.97	-5.646
	Large	122	0.76	0.97	

<sup>a</sup>Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>b</sup>Items measured on a four-point scale from not at all (0) to a lot (3)

<sup>c</sup>Small < 150 acres; Large = 150 acres or more

<sup>d</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here; SD = Standard deviation

**Subgroup comparisons: Levels of clean water action**

Table 21. Number of respondents by adoption of clean water actions

<b>Levels of clean water action<sup>a</sup></b>	<b>N</b>	<b>Percent</b>
Low action	170	54.7
High action	141	45.3
Total	311	100.0

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 16

<sup>a</sup>Based on an index of survey questions 16a through 16s. High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

Table 22. Difference between high and low adopters of clean water actions in the number of years lived in the community

	<b>Levels of clean water action<sup>a</sup></b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t<sup>b</sup></b>
Years lived in community	Low action	160	42.78	23.64	-2.880
	High action	140	49.95	18.79	

<sup>a</sup>Based on an index of survey questions 16a through 16s. High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 23. Difference between high and low adopters of clean water actions in the use of their land for agricultural production

<b>Levels of clean water action<sup>a</sup></b>	<b>Use land for agricultural production (%)</b>	<b><math>\chi^2</math></b>
Low action	55.0	37.720
High action	85.6	

<sup>a</sup>Based on an index of survey questions 16a through 16s. High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

$\chi^2$  Chi-square statistic for testing differences in proportions;  $p \leq 0.01$

Table 24. Difference between high and low adopters of clean water actions in percent income dependent on agricultural production

	Levels of clean water action <sup>a</sup>	N	Mean	SD	t <sup>b</sup>
Percent income dependent on agricultural production	Low action	148	22.08	34.32	-6.154
	High action	131	48.63	37.72	

<sup>a</sup>Based on an index of survey questions 16a through 16s. High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

Table 25. Differences between high and low adopters of clean water actions in their levels of civic engagement

Survey item <sup>a</sup>	Levels of clean water action <sup>b</sup>	N	Mean	SD	t <sup>c</sup>
Heard about a water resource protection initiative?	Low action	164	0.73	0.96	-3.457
	High action	138	1.13	1.07	
Participated in a water resource protection initiative?	Low action	161	0.20	0.62	-3.777
	High action	137	0.55	0.93	
Worked with other community members to protect water?	Low action	165	0.12	0.39	-5.165
	High action	138	0.53	0.94	
Talked to others about conservation practices?	Low action	165	0.54	0.81	-5.736
	High action	138	1.14	1.03	
Attended a meeting or public hearing about water?	Low action	165	0.20	0.52	-5.172
	High action	138	0.61	0.84	
Taken a leadership role around water resource conservation in the community?	Low action	165	0.07	0.34	-3.707
	High action	138	0.33	0.82	

<sup>a</sup>Items measured on a five-point scale from never (0) to weekly or more (4)

<sup>b</sup>Based on an index of survey questions 16a through 16s. High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 26. Differences between high and low adopters of clean water actions in the extent to which their conservation decisions are influenced by individuals or groups

<b>Survey item<sup>a</sup></b>	<b>Levels of clean water action<sup>b</sup></b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t<sup>c</sup></b>
Farmers	Low action	149	2.32	0.97	-2.911
	High action	136	2.65	0.99	
My county's Soil and Water Conservation District	Low action	142	2.32	0.85	-2.578
	High action	137	2.58	0.84	
The Farm Service Agency (USDA)	Low action	138	2.02	0.88	-3.128
	High action	136	2.36	0.92	
My local co-op	Low action	122	1.51	0.77	-3.739
	High action	129	1.91	0.94	
My agronomist/agricultural advisor	Low action	117	1.69	0.94	-3.264
	High action	127	2.10	1.01	

<sup>a</sup>Items measured on a four-point scale from not at all (1) to a lot (4)

<sup>b</sup>Based on an index of survey questions 16a through 16s. High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 27. Difference between high and low adopters of clean water actions in their awareness, perceived ability, social norms, personal norms, and motivators for practice adoption

Survey item	Levels of clean water action <sup>c</sup>	N	Mean	SD	t <sup>d</sup>
<b>Awareness of water issues</b>					
Water resources in Nicollet County are adequately protected <sup>a</sup>	Low action	170	0.11	1.16	-2.711
	High action	141	0.47	1.19	
Familiarity with water issues in their watershed <sup>b</sup>	Low action	168	2.56	0.86	-4.628
	High action	141	2.99	0.77	
<b>Perceived ability<sup>a</sup></b>					
I have the knowledge and skills I need to use conservation practices on the land.	Low action	168	0.76	0.92	-3.405
	High action	140	1.09	0.79	
<b>Social norms<sup>a</sup></b>					
People who are important to me talk to others about conservation practices.	Low action	168	-0.08	0.86	-4.142
	High action	141	0.33	0.90	
People who are important to me expect me to attend meetings or public hearings about water.	Low action	168	-0.23	0.97	-2.968
	High action	141	0.09	0.90	
People who are important to me attend meetings or public hearings about water.	Low action	167	-0.10	0.91	-3.641
	High action	141	0.28	0.88	
People who are important to me expect me to work with other community members to protect water.	Low action	168	-0.07	0.91	-2.850
	High action	141	0.23	0.93	
<b>Personal norms<sup>a</sup> (I feel a personal obligation to...)</b>					
Talk to others about conservation practices	Low action	166	0.31	0.79	-2.935
	High action	140	0.59	0.87	
Use conservation practices on my land/property	Low action	166	0.98	0.87	-2.960
	High action	140	1.26	0.82	
Attend meetings or public hearings about water	Low action	165	0.17	0.95	-2.578
	High action	139	0.45	0.96	
<b>Motivators of practice adoption<sup>a</sup> (I would be more likely to adopt new conservation practices or continue to use practices if...)</b>					
Conservation programs were more flexible.	Low action	163	0.39	0.91	-3.378
	High action	136	0.75	0.91	

<sup>a</sup>Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>b</sup>Item measured on a four-point scale from not at all familiar (1) to very familiar (4)

<sup>c</sup>Based on an index of survey questions 16a through 16s. High action = respondents who have used 6 or more of the 19 clean water actions, low action = respondents who have used 5 or fewer of the 19 clean water actions

<sup>d</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here

SD = Standard deviation

**Subgroup comparisons: Levels of civic engagement**

Table 28. Number of respondents by levels of civic engagement

Levels of civic engagement <sup>a</sup>	N	Percent
Low	177	55.5
High	142	44.5
Total	319	100.0

Source: Your Perspectives on Local Water Resources: A Survey of Landowners in Nicollet County, Question 18

<sup>a</sup>Based on an index of survey questions 18a through 18g. High = respondents who have participated in 1 or more of the 7 community activities in the past 12 months, low = respondents who have not participated in any of the 7 community activities in the past 12 months

Table 29. Difference between respondents with varying levels of civic engagement in their age

	Levels of civic engagement <sup>a</sup>	N	Mean	SD	t <sup>b</sup>
Age	Low	161	64.90	13.33	3.050
	High	131	60.12	13.29	

<sup>a</sup>Based on an index of survey questions 18a through 18g. High = respondents who have participated in 1 or more of the 7 community activities in the past 12 months, low = respondents who have not participated in any of the 7 community activities in the past 12 months

<sup>b</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here

SD = Standard deviation

Table 30. Difference between respondents with varying levels of civic engagement in their perceived importance of the qualities of a community

Survey item <sup>a</sup>	Levels of civic engagement <sup>b</sup>	N	Mean	SD	t <sup>c</sup>
Opportunities to be involved in community projects	Low	175	0.55	1.05	-3.115
	High	137	0.90	0.84	
Opportunities to express my culture and traditions	Low	175	0.38	1.08	-2.828
	High	139	0.71	0.95	

<sup>a</sup>Items measured on a five-point scale from very unimportant (-2) to very important (+2)

<sup>b</sup>Based on an index of survey questions 18a through 18g. High = respondents who have participated in 1 or more of the 7 community activities in the past 12 months, low = respondents who have not participated in any of the 7 community activities in the past 12 months

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 31. Difference between respondents with varying levels of civic engagement in their familiarity with water issues and rating of water quality

Survey item	Levels of civic engagement <sup>c</sup>	N	Mean	SD	t <sup>d</sup>
Familiarity with water issues in their watershed <sup>a</sup>	Low	174	2.49	0.83	-5.901
	High	142	3.04	0.78	
Rating of water quality in the Minnesota River <sup>b</sup>	Low	156	2.37	0.99	-3.382
	High	137	2.77	1.01	

<sup>a</sup>Items measured on a four-point scale from not at all familiar (1) to very familiar (4)

<sup>b</sup>Items measured on a five-point scale from very poor (5) to very good (5)

<sup>c</sup>Based on an index of survey questions 18a through 18g. High = respondents who have participated in 1 or more of the 7 community activities in the past 12 months, low = respondents who have not participated in any of the 7 community activities in the past 12 months

<sup>d</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 32. Difference between respondents with varying levels of civic engagement in the extent to which their conservation decisions are influenced by individuals or groups

Survey item <sup>a</sup>	Levels of civic engagement <sup>b</sup>	N	Mean	SD	t <sup>c</sup>
Farmers	Low	153	2.28	0.98	-3.113
	High	136	2.64	0.97	
Agricultural commodity associations (e.g., Minnesota Corn Growers Association)	Low	135	1.50	0.78	-3.372
	High	127	1.83	0.84	
My local co-op	Low	128	1.54	0.78	-2.844
	High	126	1.84	0.91	
My agronomist/agricultural advisor	Low	124	1.71	0.94	-2.743
	High	123	2.05	1.00	

<sup>a</sup>Items measured on a four-point scale from not at all (1) to a lot (4)

<sup>b</sup>Based on an index of survey questions 18a through 18g. High = respondents who have participated in 1 or more of the 7 community activities in the past 12 months, low = respondents who have not participated in any of the 7 community activities in the past 12 months

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here.

SD = Standard deviation

Table 33. Difference between respondents with varying levels of civic engagement in their beliefs, perceived ability, social norms, and personal norms

Survey item <sup>a</sup>	Levels of civic engagement <sup>b</sup>	N	Mean	SD	t <sup>c</sup>
<b>Beliefs</b>					
I find it easy to play an important role in most group situations within my community.	Low	175	0.18	0.86	-3.765
	High	140	0.56	0.92	
<b>Responsibility<sup>a</sup></b>					
The state government should be responsible for protecting water.	Low	175	0.66	1.22	2.672
	High	142	0.27	1.37	
<b>Perceived ability</b>					
I have the knowledge and skills I need to use conservation practices on the land.	Low	175	0.71	0.91	-3.869
	High	142	1.09	0.83	
<b>Social norms</b>					
People who are important to me expect me to talk to others about conservation practices.	Low	174	-0.24	0.90	-2.866
	High	142	0.05	0.89	
People who are important to me talk to others about conservation practices.	Low	174	-0.05	0.85	-3.434
	High	142	0.30	0.91	
People who are important to me expect me to attend meetings or public hearings about water.	Low	174	-0.24	0.97	-2.739
	High	142	0.06	0.91	
People who are important to me attend meetings or public hearings about water.	Low	173	-0.08	0.91	-2.964
	High	142	0.23	0.88	
People who are important to me expect me to work with other community members to protect water.	Low	174	-0.09	0.93	-2.923
	High	142	0.21	0.90	
<b>Personal norms (I feel a personal obligation to...)</b>					
Maintain my land/farm in a way that <u>does not</u> contribute to water resource problems	Low	175	1.21	0.85	-3.114
	High	142	1.48	0.68	
Talk to others about conservation practices	Low	177	0.28	0.80	-3.215
	High	142	0.58	0.88	
Work with other community members to protect water resources	Low	177	0.32	0.90	-2.930
	High	142	0.62	0.94	

<sup>a</sup>Items measured on a five-point scale from strongly disagree (-2) to strongly agree (+2)

<sup>b</sup>Based on an index of survey questions 18a through 18g. High = respondents who have participated in 1 or more of the 7 community activities in the past 12 months, low = respondents who have not participated in any of the 7 community activities in the past 12 months

<sup>c</sup>T-test statistic for testing differences in means. Only items with statistical differences at a significance level of  $p \leq 0.01$  reported here; SD = Standard deviation

## Attachment – Final Expenditures

Project Name: Middle Minnesota Watershed WRAPS Nicollet County

Date: 06/30/2017

Cost Category	Unit Cost	I.	II.A.	II.B.	II.C.	II.D.	II.E.	II.F.	II.G.	III.	IV.
		Total Budget	2015 Oct 1 - Dec 31 Expended	2016 Jan 1 - Mar 31 Expended	2016 Apr 1 - Jun 30 Expended	2016 Jul 1 - Sept 30 Expended	2016 Oct 1 - Dec 31 Expended	2017 Jan 1 - Mar 30 Expended	2017 Apr 1 - Jun 30 Expended	Cumulative Expend. (II.A. thr G.)	Budget Balance (I - III)
<b>OBJECTIVE 1A - PUBLIC PARTICIPATION ENGAGEMENT TEAM</b>											
Nicollet County Project Manager	33.47 /hr.	1,338.80	502.05	100.41	0.00	0.00	50.21	100.41	568.99	1,322.07	16.73
Great River Greening Technician	35.00 /hr.	350.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	350.00	0.00
U of Minnesota Research Assistant	30.00 /hr.	4,816.80	750.00	0.00	4,066.80	0.00	0.00	0.00	0.00	4,816.80	0.00
<b>OBJECTIVE 1 - TOTAL</b>		<b>6,505.60</b>	<b>1,252.05</b>	<b>450.41</b>	<b>4,066.80</b>	<b>0.00</b>	<b>50.21</b>	<b>100.41</b>	<b>568.99</b>	<b>6,488.87</b>	<b>16.73</b>
<b>OBJECTIVE 1B - PUBLIC PARTICIPATION IMPLEMENTATION</b>											
Nicollet County Project Manager	33.47 /hr.	2,677.60	0.00	0.00	0.00	0.00	0.00	0.00	2,677.60	2,677.60	0.00
Great River Greening Technician	35.00 /hr.	2,100.00	0.00	332.50	147.50	0.00	0.00	0.00	1,610.00	2,090.00	10.00
U of Minnesota Research Assistant	30.00 /hr.	21,675.60	0.00	0.00	10,472.25	8,973.24	2,230.11	0.00	0.00	21,675.60	0.00
Undergraduate RA	12.00 /hr.	1,680.00	0.00	0.00	0.00	0.00	296.07	1,383.93	0.00	1,680.00	0.00
<b>OBJECTIVE 1B - TOTAL</b>		<b>28,133.20</b>	<b>0.00</b>	<b>332.50</b>	<b>10,619.75</b>	<b>8,973.24</b>	<b>2,526.18</b>	<b>1,383.93</b>	<b>4,287.60</b>	<b>28,123.20</b>	<b>10.00</b>
<b>OBJECTIVE 1 - EQUIPMENT/SUPPLIES</b>											
Mileage	0.535 /mi.	1,250.00	0.00	0.00	0.00	0.00	0.00	0.00	143.30	143.30	1,106.70
Mailing		2,450.00	0.00	0.00	0.00	2,035.50	0.00	0.00	412.51	2,448.01	1.99
Printing		4,550.00	0.00	0.00	3,269.26	0.00	0.00	930.68	268.14	4,468.08	81.92
Supplies		3,531.76	0.00	0.00	2,031.76	0.00	0.00	0.00	81.28	2,113.04	1,418.72
Facility Fees		750.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	725.00
<b>OBJECTIVE 1 - TOTAL</b>		<b>12,531.76</b>	<b>0.00</b>	<b>0.00</b>	<b>5,301.02</b>	<b>2,035.50</b>	<b>0.00</b>	<b>930.68</b>	<b>930.23</b>	<b>9,197.43</b>	<b>3,334.33</b>
<b>OBJECTIVE 2A - ADMINISTRATION - PROGRESS TRACKING</b>											
Nicollet County Project Manager	33.47 /hr.	334.70	0.00	0.00	0.00	0.00	0.00	66.94	267.76	334.70	0.00
Great River Greening Technician	35.00 /hr.	350.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	140.00	210.00
U of Minnesota Research Assistant	30.00 /hr.	2,408.40	0.00	0.00	0.00	0.00	2,408.40	0.00	0.00	2,408.40	0.00
<b>OBJECTIVE 2A - TOTAL</b>		<b>3,093.10</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2,408.40</b>	<b>66.94</b>	<b>407.76</b>	<b>2,883.10</b>	<b>210.00</b>
<b>OBJECTIVE 2B - ADMINISTRATION - PROJECT MANAGEMENT</b>											
Nicollet County Project Manager	33.47 /hr.	736.34	0.00	33.47	66.94	0.00	0.00	66.94	568.99	736.34	0.00
Great River Greening Technician	35.00 /hr.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U of Minnesota Research Assistant	30.00 /hr.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>OBJECTIVE 2B - TOTAL</b>		<b>736.34</b>	<b>0.00</b>	<b>33.47</b>	<b>66.94</b>	<b>0.00</b>	<b>0.00</b>	<b>66.94</b>	<b>568.99</b>	<b>736.34</b>	<b>0.00</b>
<b>ITEMIZED BUDGET</b>											
OBJECTIVE 1A - TOTAL		6,505.60	1,252.05	450.41	4,066.80	0.00	50.21	100.41	568.99	6,488.87	16.73
OBJECTIVE 1B - TOTAL		28,133.20	0.00	332.50	10,619.75	8,973.24	2,526.18	1,383.93	4,287.60	28,123.20	10.00
OBJECTIVE 1 - TOTAL		12,531.76	0.00	0.00	5,301.02	2,035.50	0.00	930.68	930.23	9,197.43	3,334.33
OBJECTIVE 2A - TOTAL		3,093.10	0.00	0.00	0.00	0.00	2,408.40	66.94	407.76	2,883.10	210.00
OBJECTIVE 2B - TOTAL		736.34	0.00	33.47	66.94	0.00	0.00	66.94	568.99	736.34	0.00
<b>GRAND TOTAL</b>		<b>51,000.00</b>	<b>1,252.05</b>	<b>816.38</b>	<b>20,054.51</b>	<b>11,008.74</b>	<b>4,984.79</b>	<b>2,548.90</b>	<b>6,763.57</b>	<b>47,428.94</b>	<b>3,571.06</b>

### **Lake Hallett Civic Engagement Project**

In the summer of 2015, the MPCA was contacted regarding the degrading condition of Lake Hallett (aka Hallett's Pond) in St. Peter, Minnesota. Several severe nuisance algae blooms had occurred earlier that summer. Monitoring staff added Hallett into the Citizen Lake Monitoring Program plus (CLMP+) program to supplement the IWM monitoring that had just occurred in the watershed so that results would be available by the time the WRAPS report was published. MPCA staff met with a small group of citizens, who then decided to do community engagement work. To work towards transparency and with the goal to better connect state agency water quality staff with the City of St. Peter, MPCA staff organized an informational meeting with the city council.

A planning team of citizens, city council members, and an MPCA staff were convened to plan a community engagement meeting. Three questions were discussed at this meeting and eventually action groups were organized. Main visions for the Hallett Natural Area were identified which included: accessible trails, community caring for the space, educational use, clean water, and family friendly water activities. Unfortunately, the citizen who provided the leadership to these community organizing efforts moved out-of-state, but the Lake Hallett Association has continued to sponsor education and recreation events on Lake Hallett, local conservation groups have worked to secure funding for watershed improvements, and the city has worked to develop recreational opportunities and other outreach.

# Hallet Natural Area Community Conversation



On May 12th, 2016, 50 individuals from the Saint Peter community came together to discuss the future of the Hallett Natural Area by answering the question:  
*What can we envision as a community to make the Hallett Natural Area a place we can more fully utilize and enjoy?*

To do so, the group collectively answered three subsequent questions that solicited input on shared values of natural spaces, a vision for the Hallett Natural Area moving forward, and the actions that need to take place in order to achieve that vision.

## The three questions:

1. When have you had a positive experience of a natural area in a city/town?
2. How can the Hallett Natural Area serve as a place this community can more fully utilize and enjoy?
3. What actions are required of us, as a community, to best utilize this unique resource?

At the end of each question discussion, themes were identified to provide a "bigger picture" view of the specific points of information from each table. The subsequent pages in this report provide the themes as well as the detailed information taken from each table.

Additionally, once actions were identified, participants were asked to choose an identified action area where they could make the most impact and were willing to commit to action. "Action sheets" were collected from each action area that detailed which participants were present, what direct actions would take place, when they would take place, and who was responsible. More information on this piece of the conversation is provided at the end of the report.

# When have you had a positive experience with a natural area in a city/town?

The below notes the findings and specific statements in response to the above question. This question identified what the community *values* about natural areas in a city/town. \*



## Protected green/ natural space

- A. A natural space that was not over developed
- B. The city and citizens practiced caring for natural spaces
- C. The natural space was cared for
- D. It had Green/natural spaces
- E. The park was preserved as a natural space
- F. The park/area was clean



## Fun Activities

- A. There was fun activities for kids with water
- B. There was a restorative quality of nature
- C. It had a park and recreation area
- D. There was a walking pathway
- E. People could swim and enjoy the water
- F. There was easy access bike trails etc. (free and open to everyone)
- G. It was a place to get away/ oasis
- H. It inspired youth to love water
- I. A good place to go fishing
- J. It had access to canoeing and water sports
- K. It had a lakeside park



## An inclusive space (all are welcome)

- A. The park provided a place to escape
- B. It allowed for diverse people to access and enjoy the park
- C. The park was a safe place for everyone
- D. There was inclusion and outreach of diverse populations
- E. The park connected people to the space and to each other



## A place the community can gather

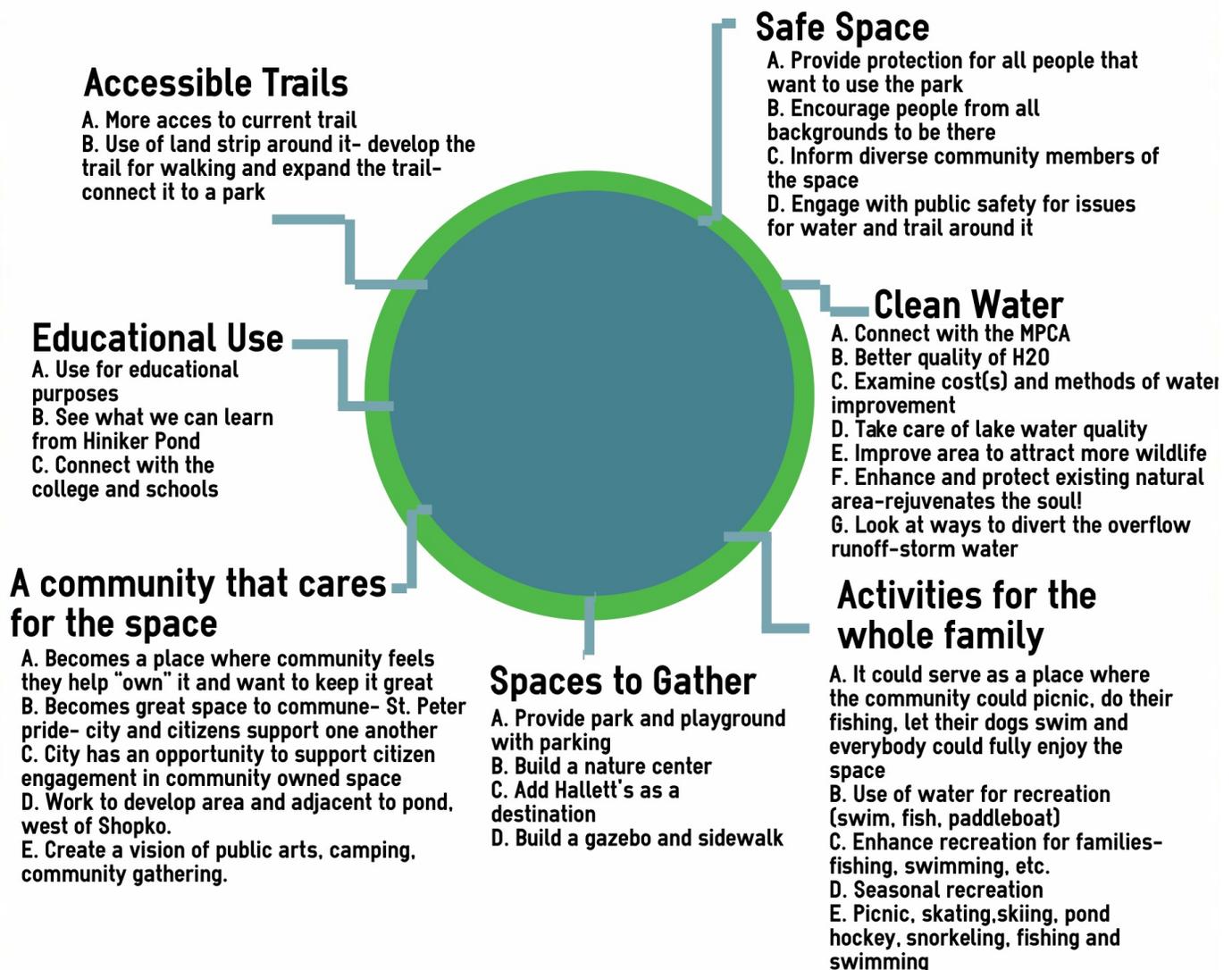
- A. The community and city had a cooperative relationship
- B. The space provided a place for people to be in community in beautiful natural spaces where all people felt welcome
- C. Families could utilize the space
- D. It provided a "community" space
- E. The park was inviting to community members

\*This document includes every point of data generated from the conversation. Each group was asked to identify themes from the conversation, and the list beneath the heading are the unfiltered information points identified at each table. Those points were used to identify the broader theme (the bold heading).

# How can the Hallett Natural Area serve as a place this community can more fully utilize and enjoy?

The below notes the findings and specific statements in response to the above question.\* This question identified what the community vision is for the Hallett Natural Area.

## Vision Areas



\*This document includes every point of data generated from the conversation. Each group was asked to identify themes from the conversation, and the list beneath the heading are the unfiltered information points identified at each table. Those points were used to identify the broader theme (the bold heading).

# What actions are required of us, as a community, to best utilize this unique resource?

The following are the actions identified by the community to achieve the vision for the Hallett Natural Area.\*

## Actions



### Increase water quality

Test water quality, fish quality, clarity of water, phosphorous quantification/control, toxic algae control, label storm drains, map of watershed, educate the public



### Expand Community Conversation

Research similar projects in other communities, educate on Hallett's ecosystem, continue the conversation, bring diverse perspectives and people together



### Seek Grants/Funding

Research funding opportunities and constraints, form a grant writing group to pursue available grants



### Explore Land Possibilities

Purchase adjoining land for public use, protect land from future development, create swimming area, build nature center/gazebo



### Work with Local Government

Create shared vision of public and city, get clear on city process, form local group with authority to track down funding and maintain vision, work with ConAg to explore land possibilities



### Provide Activities

Sponsor events, build a canoe/kayak launch, fishing opportunities

\*This document includes every point of data generated from the conversation. Each group was asked to identify themes from the conversation, and the list beneath the heading are the unfiltered information points identified at each table. Those points were used to identify the broader theme (the bold heading).

# Conclusions and Next Steps



To conclude the conversation, participants were asked to choose an action in which they could contribute. Each action item listed under question 3 had a breakout group. Each group determined next steps, which includes: Action items, who is responsible for the action item, and when the action item is anticipated to be concluded.

More than 35 participants engaged in a breakout group and committed to pursuing the actions identified by the group.

Over the course of the next 3 months, each of the aforementioned six action areas will be addressed by members of this community.



In conclusion, the community conversation for the Hallett Natural Area was a success, bringing together more than 50 citizens that represented the racial, socio-economic, and age diversity of the area to explore what the Hallett Natural can be for this community. The next steps include working with the City of Saint Peter to explore and begin movement on the ideas generated from the conversation and for the individuals who committed to actions to follow-through on their respective commitments.

To contribute ideas, thoughts, or to ask questions, please email Alicia Newell at [alicianewell17@gmail.com](mailto:alicianewell17@gmail.com).

Appendix A

Map showing Hallett Natural Area and neighboring properties



# MEMO

To: Honorable Mayor Zieman  
Members of the City Council  
City staff

From: Joanne Boettcher

Date: 3/30/2016

Re: 4/4/2016 Informational Meeting on the Watershed Approach



**Minnesota  
Pollution  
Control  
Agency**

This memo is to provide a high-level summary of the information and supplementary material (attached) that will be presented and discussed at the 4/4/2016 Informational Meeting. The intended outcomes of this meeting are improved communication and outreach by state agencies on the “Watershed Approach” to the City of St. Peter and clarification of issues and questions about Lake Hallett.

The “Watershed Approach” is the State of Minnesota’s means to restore and protect waterbodies statewide. This approach was directed by the legislature in 2008 and is substantially funded by the Clean Water Legacy Act. The MPCA Watershed Division and other divisions and agencies are tasked with applying the Watershed Approach to thousands of water bodies across the state. So while historically the City has demonstrated satisfactory completion and responsiveness to the MS4 (urban stormwater) program requirements, the Watershed Approach seeks to protect and restore water, in some cases, to a higher water quality than the MS4 program requirements produce.

As part of the Watershed Approach, Lake Hallett will be monitored in 2016-2017. The monitoring data, in addition to data collected over the last couple decades, will show where Lake Hallett is compared to the water quality standards. If the lake fails the standards, additional analysis and changes to the city’s MS4 permit requirements would likely happen. If it passes the standards, the lake will be considered high priority for protection due to the documented decline in water clarity (which is an indicator of the overall water quality). Protection efforts would encourage voluntary improvements to meet a (non-regulated) water quality goal that would be part of the PCA Watershed Restoration and Protection Strategies (WRAPS) report.

The Clean Water Council recommended that “Civic Engagement” be woven into Watershed Approach work. Furthermore, the different agencies and divisions within agencies are striving to provide improved and consistent messages to stakeholders and communities in the Watershed Approach. Additionally, the PCA and DNR have received (both solicited and un-solicited) questions from St. Peter residents, councilpersons, and staff on issues related to the Watershed Approach. Therefore, I requested the 4/4 Informational Meeting with the council and staff to help reduce confusion and encourage open dialog. Also, I have been working with a few St. Peter community members to organize a Community Conversation/Visioning meeting; I mention the Community Conversation effort (although separate from the 4/4 Informational Meeting) to be transparent. Both of these efforts: the 4/4 Informational Meeting and helping organize the Community Conversation are considered Civic Engagement work.

Because the Watershed Approach involves many agencies and divisions and because there was a wide array of questions and issues that arose around Lake Hallett, I have assembled a team to present and discuss Watershed Approach issues at the 4/4 Informational Meeting. The team members, including their agency, division, and area of expertise are included below. I have scheduled six short presentations, but requested additional staff be present to answer questions applicable to their area of expertise. There will be time for additional/follow-up Q&A after the presentations.

#### Presenters (in order):

- Joanne Boettcher, PCA Watershed Specialist – WRAPS report, civic engagement in the Watershed Approach
- Garry Bennett, DNR Area hydrologist – Public water law, water body rules, hydrology
- Pam Anderson, PCA Monitoring Unit Supervisor – Monitoring and assessment of lakes
- Rachel Stangl, PCA MS4 program – MS4 program/rules
- Taralee Latozke, DNR Lakes Specialist – Lake ecology and riparian vegetation
- Gene Jeseritz, DNR Fisheries – Fish survey

#### Also in attendance:

- Amy Linnerooth, Nicollet County Environmental Specialist – County Water Planning
- Bryan Spindler, PCA Watershed Project Manager – PCA watershed division
- Jenny Mocol-Johnson, BWSR Board Conservationist – Wetland Conservation Act rules

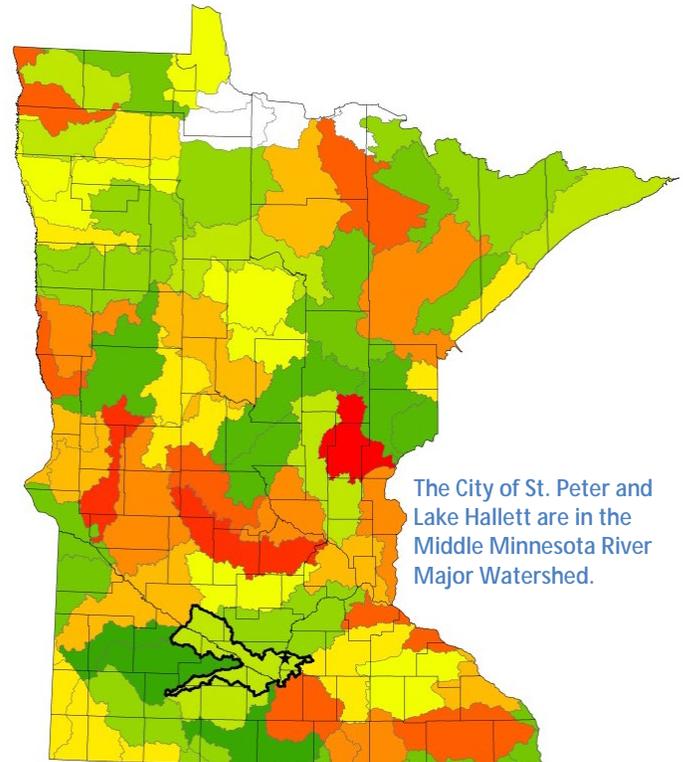
# Watershed Approach to restoring and protecting water quality

The State of Minnesota employs a Watershed Approach to restoring and protecting Minnesota's rivers, lakes, and wetlands. Money to accelerate efforts to monitor, assess, and restore impaired waters, and to protect unimpaired waters was funded by the Minnesota's Clean Water Legacy Act.

There are 80 major watersheds in Minnesota. Intensive water quality monitoring and assessments will be conducted in each of these watersheds every 10 years.

During the 10-year cycle, the MPCA and partner organizations work on each of the state's 80 major watersheds to evaluate water conditions, establish priorities and goals for improvement, and take actions designed to restore or protect water quality. When a watershed's 10-year cycle is completed, a new cycle begins.

The primary feature of the Watershed Approach is that it focuses on the watershed's condition as the starting point for water quality assessment, planning, implementation, and measurement of results. This approach may be modified to meet local conditions, based on factors such as watershed size, landscape diversity, and geographic complexity (e.g., Twin Cities metro area). Civic engagement and public participation are core elements of all steps throughout the process.



## Process for restoring and protecting water quality

### Step 1. Monitor water bodies and collect data

The cycle begins with a two-year intensive monitoring program of lakes and streams in which the MPCA determines their overall health and identifies impaired waters. Results of monitoring that other state, federal, and local organizations have performed for various purposes are included in the process. Additional information is collected on the watershed's physical characteristics, including land use, topography, soils, etc.

### Step 2. Assess the data

Based on the results of the monitoring in step one, MPCA water quality specialists evaluate the data to:

- determine whether or not water resources meet water quality standards and designated uses
- identify waters that do not meet water quality standards and list them as impaired waters
- identify waters that should be protected
- identify stressors affecting aquatic life in streams

Outcomes of steps 1 and 2 include the creation of a **Monitoring and Assessment Report** and a **Stressor Identification Report** on the watershed's biota (fish, bugs, etc.).

### Step 3. Develop strategies to restore and protect the watershed's water bodies

Based on the watershed assessment, a **Watershed Restoration and Protection Strategies (WRAPS) report** and a **Total Maximum Daily Load (TMDL) report** are completed. The two provide analysis and details on water quality issues and identify pollution and stressor sources. The WRAPS report identifies what needs to be done to clean up streams and lakes that are impaired and to protect those that are at risk of becoming impaired.

### Step 4. Conduct restoration and protection projects in the watershed

In this step, restoration and protection projects are implemented in the watershed. Various local units of government, including watershed districts, municipalities, and soil and water conservation districts, take the lead in developing and carrying out implementation plans based on what is learned during the earlier steps of the process.

## Benefits of the Watershed Approach

MPCA adopted the Watershed Approach in 2008, as recommended by the 2008 Biennial Report to the Legislature and directed by the Minnesota Legislature. A significant share of the funding for water quality management is provided by the Minnesota Clean Water Fund.

The improved system allows efficient and effective use of public resources in addressing water quality challenges across the state. Concentrating efforts at the major watershed scale ensures:

- an ongoing, predictable cycle for water quality management and evaluation
- a more efficient approach to addressing impairments
- a common framework for monitoring, TMDL studies, assessments, setting required pollutant reductions, and implementation strategies
- improved collaboration and innovation
- increased stakeholder interest and local support
- a reduction in the cost of improving the quality of waters

The water quality management cycles for the 80 major watersheds are staggered, with 8 to 10 watersheds beginning a new cycle each year. By 2017, all watersheds will have at least begun their first cycle, and those that began in 2008 will enter their next cycle.

# Civic engagement in the Watershed Approach

For many years, watershed assessment and planning has largely been a government agency activity, with limited citizen involvement. Too often, citizens and stakeholders were given opportunities to become involved too late in the process when they could do little to influence policy decisions and implementation plans. As a result, there has been limited ownership or buy-in to these plans. Not surprisingly, implementation of water quality plans and practices have often stagnated or not met goals developed for a particular watershed. This experience has led MPCA to reconsider the ways in which it studies and manages water pollution. In addition, The Clean Water Council has recommended that MPCA encourage greater civic engagement in watershed planning by encouraging more citizens to become leaders for change in their communities and holding individuals personally responsible for making needed changes that could reduce water pollution.

Since watershed protection and restoration depends largely on changing the behaviors of citizens who live on the land, it will require a real commitment at the community level to address problems in our lakes and streams. Watershed assessment and planning must be much more inclusive, with the public playing a much more active role, beginning early in the planning process. Citizens must be involved in framing the problem, developing solutions and taking responsibility for implementation.

## How does civic engagement help Minnesotans take responsibility?

Civic engagement requires a different orientation - where the government works to create the appropriate venues and opportunities for Minnesotans to take part in the watershed planning processes and to take a greater share of the responsibility for clean water. How can this be encouraged and supported? At its best, civic engagement supports and encourages the following:

- **Conversation** - Government can provide a safe place where diverse stakeholders can meet to engage in deliberative dialogue. The quality of the conversation is very important. Citizens and Stakeholders are not brought together to debate each other, or to try and persuade others to support one view over another. Dialogue allows for the airing of many points of view and for the sharing of personal experience and stories. When meaningful dialogue occurs, participants are confronted with ideas that may challenge their own. In the end, significant shifts in thinking can occur among participants. Conversation can move people beyond self-interest to a concern for the common good.
- **Collaboration** - Collaboration requires social structures within a community that allow meaningful relationships and partnerships to emerge and mutual respect and trust to develop between previously disconnected neighbors, businesses, and local government officials. Trusting relationships can result in the sharing of information, resources and connections that support water restoration and protection efforts. When citizens find creative ways to connect and leverage resources in the community, exciting things can happen.
- **Community** - Civic engagement, at its core, builds community. Government, individuals and organizations can strengthen communities by strengthening existing or building new networks between people, building bridges during times of conflict and fostering a greater level of citizen involvement. Many Americans crave a deeper sense of community. Watershed activities can provide one important opportunity to build and increase social capacity across Minnesota.

# Water Laws in Minnesota



## Questions and Answers about Minnesota Water Laws

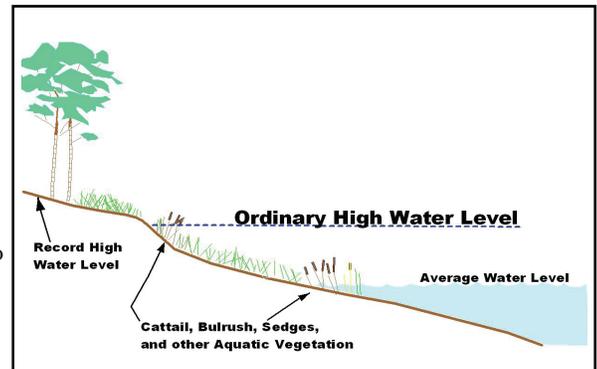
### Basic Water Laws

#### Who owns the bed of a lake, marsh, or watercourse?

When a waterbasin or watercourse is *navigable* under the federal test, the State of Minnesota owns the bed below the natural ordinary low water level [see Minnesota Statute 84-032; *Lamprey v. State*, 52 Minn. 1981, 53 N.W. 1139 (1983) and *United States v. Holt State Bank*, 270 U.S. 49 (1926)]. The federal test used for navigability is “when they are used, or are susceptible of being used, in their natural and ordinary condition, as highways for commerce, over which trade or travel are or may be conducted.” [See *State v. Longyear Holding Co.*, 224 Minn. 451, 29 N.W. 2d 657 (1947).] If a court has found that a lake is non-navigable and meandered, the shoreland owners own the bed of the lake in severalty. [See *Schmidt v. Marschel*, 211 Minn. 543, 2d 121 (1942).] If a stream is non-navigable but has been meandered, the shoreland owners own to the thread (centerline) of the stream. If a lake or stream is non-navigable and not meandered, ownership of the bed is as indicated on individual property deeds.

#### What is the ordinary high water level?

The ordinary high water level is an elevation that marks a regulatory boundary of a Public Water lake, wetland, or stream. It is the highest level at which the water has remained long enough to leave its mark upon the landscape. [See *Lake Minnetonka Improvement*, 56 Minn. 513, 58 N.W. 295 (1894), and Minnesota Statutes, Section 103G.005, subd. 14.] Generally, for basins, it is the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. On streams and rivers, it is the top of the bank of the channel.



#### What are riparian rights?

Riparian rights are property rights arising from owning property abutting water. They include the right to wharf out to a navigable depth; to take water for domestic and agricultural purposes; to use land added by accretion or exposed by reliction; to take ice; to fish, boat, hunt, swim; and to such other uses as water bodies are normally put [see *Sanborn v. People's Ice Co.*, 82 Minn. 43, 84 N.W. 641 (1900) and *Lamprey v. State*, 52 Minn. 181, 53 N.W. 1139 (1893)]. The riparian owner has the right to use the water over its entire surface [see *Johnson v. Seifert*, 257 Minn. 159, 100 N.W. 2d 689 (1960)].

#### What are riparian duties?

It is the duty of the riparian owners to exercise their rights reasonably, so as not to unreasonably harm the ecosystem nor interfere with the riparian rights of others [see *Petraborg v. Zontelli*, 217 Minn. 536, 15 N.W. 2d 174 (1944)]. They cannot dike off and drain, or fence off, their part of the waterbody [see *Johnson v. Seifert*, 257 Minn. 159, 100 N.W. 2d 689 (1960)]. It is a public nuisance and a misdemeanor to “interfere with, obstruct, or render dangerous for passage waters used by the public” [see Public Nuisance Law, Minnesota Statutes 609.74].

#### What are public rights?

Where the public is a riparian landowner, such as where there is a public access site, the public has riparian rights. [See *Flynn v. Beisel*, 257 Minn. 531, 102 N.W. 2d 284 (1960).]

#### What is considered trespassing when the public seeks access to a water body?

The belief that the state owns a strip of land around all Minnesota lakes for public use is false. Riparian property (property abutting a lake, river, or wetland) is either privately or publicly owned. The general public can access water bodies or watercourses via public property, but not through private property. Individuals entering private property without permission from the landowner are trespassing and may be prosecuted under the state trespass laws. A person who has legally gained access to a water body may use its entire surface for recreation, such as boating, swimming, or fishing; and any “incidental use” of the bed or bottom, such as anchoring a boat or decoys, wading to fish or swim, and poling a boat, is allowed.

# Water Laws in Minnesota

## Regulation and Water Use

### What are waters of the state?

Waters of the state are *any* surface waters or underground waters, except those surface waters that are not confined but are spread and diffused over the land [see Minnesota Statutes, Section 103G.005, subd. 17]. This includes *all* lakes, ponds, wetlands, rivers, streams, ditches, springs, and waters from underground aquifers regardless of their size or location.

### When is a DNR permit needed to appropriate or use water?

A water appropriation permit from the Minnesota Department of Natural Resources (DNR) is needed to appropriate or use waters of the state for any use that exceeds 10,000 gallons in any one day or 1,000,000 gallons in a year except for domestic use serving less than 25 persons. [See Minnesota Statutes, Section 103A.201 and Section 103G.271, subd. 1, and Minnesota Rules, Part 6115.0600.]

### What priorities are set for water use?

If there is not enough water for everyone, Minnesota law sets general priorities for which users can appropriate waters of the state. [See Minnesota Statutes, Section 103G.261.] These priorities, from highest priority to lowest priority, are as follows:

1. Domestic water supplies and power producers who have DNR-approved contingency plans
2. Uses of water consuming less than 10,000 gallons per day
3. Agricultural irrigation and processing of agricultural products (consuming in excess of 10,000 gallons per day)
4. Power production, without approved contingency plans
5. Other uses that consume over 10,000 gallons per day
6. Nonessential uses of water



### What are the limitations on the use of ground water?

DNR is responsible for protecting ground water supplies and has authority to establish water appropriation limits through its water use permitting program. Applications for water appropriation proposals must show that the use will be sustainable now and into the future; and that the proposed use will not harm ecosystems, degrade water quality, or reduce water levels beyond the reach of public water supply and private domestic wells. [See Minnesota Statutes, Section 103G.287.]

### What are the limitations on the use of surface water?

Minnesota law sets water use limits for waterbasins and watercourses and discourages taking water from waterbasins of less than 500 acres. [See Minnesota Statutes, Section 103G.285 and 103G.261.] On any waterbasin, the total of all withdrawals cannot be more than one-half acre-foot per acre per year (6 inches of water taken off the surface of the waterbasin). The DNR also establishes minimum *protection elevations* for waterbasins and *protected flows* for watercourses. Surface water withdrawals within a watershed may be suspended when water levels fall below minimum protection levels at indicator sites. \*[See Minnesota Statutes, Section 103G.285, subds. 2 and 3.]

## Regulation of Public Waters and Public Waters Wetlands

### What are public waters and public waters wetlands?

*Public waters* are all waterbasins, wetlands, and watercourses that meet the criteria set forth in Minnesota Statutes, Section 103G.005, subd. 15, and are designated on the DNR's public waters inventory maps. *Public waters wetlands* include all type 3, 4, and 5 wetlands (as defined in U.S. Fish and Wildlife Service Circular No. 39, 1971 ed.) that, at the time of designation, were 10 or more acres in rural areas and 2½ or more acres within cities and are designated on the DNR's public waters inventory. [See Minnesota Statutes, Section 103G.005, subd. 18.]

# Water Laws in Minnesota

## When is a DNR permit needed?

A DNR *public waters work permit* may be needed to do any work that will change or diminish the course, current, or cross section of any lake, wetland, or watercourse that is designated as a public *water* or *public waters wetland* on the DNR's public waters inventory maps. Any work done below the ordinary high water level of public waters or public waters wetlands may require a permit. Examples of such work include draining; filling; dredging; channelizing; constructing dams, harbors, or permanent offshore structures; and placement of bridges and culverts. [See Minnesota Statutes, Section 103G.245, subd. 1, and Minnesota Rules, Part 6115.0150.] Certain projects are exempt from needing a permit provided they are done in accordance with conditions spelled out in Minnesota Rule (Part 6115).

## What is the Public Waters Inventory (PWI)?

This is a map prepared by the DNR showing all public waters and public waters wetlands for each county in the State. [See Minnesota Statutes, Section 103G.201.] These maps are available for viewing on the DNR web site ([mndnr.gov/waters/watermgmt\\_section/pwi/maps.html](http://mndnr.gov/waters/watermgmt_section/pwi/maps.html)). The DNR is in the process of converting the original paper and scanned PWI maps to more accurate GIS-based maps. Until the GIS-based maps are completed for every county, the paper maps will continue to be available from the Minnesota Bookstore located at 660 Olive Street, St. Paul, MN 55155, telephone 651-297-3000 (metro area) or 1-800-657-3757 (statewide). The GIS-based maps available on the website should be used where available as they more accurately depict the basin and stream locations and they contain corrections to errors discovered on the original paper maps.

## Is the state's regulation of public waters and public waters wetlands constitutional?

The Minnesota Supreme Court has held that DNR's inventory of public waters and public waters wetlands, and the DNR's regulation of work that changes the course, current, or cross section of public waters and public water wetlands are clearly constitutional. [See *State v. Kulwar*, 266 Minn. 408, 418, 123 N.W. 2d 699, 706-707 (1963); *State v. Olsen*, 275 N.W. 2d 585 (Minn. 1979); and Minnesota Supreme Court file number C5-86-332, decided on December 24, 1987.]

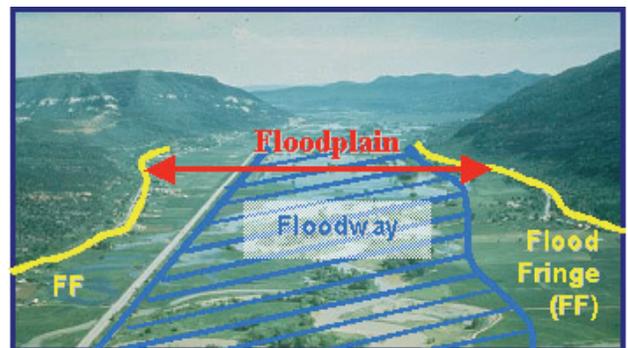
## Regulation of Lands Adjoining Public Waters

### What types of Land Use Regulations do we have in Minnesota?

Land use regulations guide development and land management activity on lands adjacent to public waters through city and county zoning ordinances. These regulations seek the wise development of shoreland areas to preserve their economic and natural environmental values and to protect surface water quality. Most of Minnesota's water-related land use regulations are authorized in Minnesota Statutes, Chapter 103F. These land use regulations generally fall into two categories: floodplain and shoreland. Floodplain regulations work to minimize damage to property and human life. Shoreland regulations work to maintain the ecological and hydrological services of shoreland areas, and to protect the wild, scenic and recreational values of designated river segments. Minnesota's floodplain regulations address the Federal Emergency Management Agency (FEMA) floodplain and flood insurance requirements, as well as Minnesota standards. Minnesota has a variety of shoreland programs covering different bodies of water, including select rivers and river segments. The DNR establishes the minimum statewide standards and criteria for all floodplain and shoreland programs, and local governments implement the programs through land use ordinances. Always check with your local zoning authority for specific ordinance requirements.

### What is floodplain zoning?

Floodplain zoning ordinances apply to the land around lakes, rivers, and streams inundated by the 100-year flood (the flood having a 1-percent chance of being equaled or exceeded in any single year). This land is known as the floodplain and is divided into two zones. Local ordinances specify the uses and construction activity permitted in each zone. The floodway is that part of the floodplain where floodwaters are likely to be deepest and fastest. This area needs to be kept free of obstructions to allow floodwaters to move downstream. The area of the floodplain outside the floodway is called the flood fringe. Development is generally allowed in the flood fringe, but it must be placed on fill or floodproofed high enough to keep it dry during a 100-year flood. The emphasis of the program is to minimize flood damage by promoting nonstructural remedies instead of construction of costly levees, dikes, or dams. [See Minnesota Statutes, Section 103F.101-103F.155, and Minnesota Rules, Parts 6120.5000-6120.6200.]



# Water Laws in Minnesota

## How do the shoreland regulations apply to local zoning?



Minnesota's shoreland programs originated in the 1970s with public concern over poor shoreland development in general and with specific high valued rivers in particular. All programs described here are implemented through local government zoning ordinances. Zoning provisions typically include minimum lot size and width, structure height, structure and septic system setbacks from the water, bluff and vegetation protections, stormwater management, and impervious surface limits. Following is a brief description of the shoreland management regulations in Minnesota.

### Shorelands

This regulatory program covers land adjacent to most public waters in Minnesota. Shoreland protection is extended to land within 1,000 feet of the ordinary high water level of a lake, pond, or flowage, and within 300 feet of a river or stream or to the landward extent of a designated floodplain on a river or stream, if it is wider than 300 feet. Waterbodies vary greatly in their size, depth, use and type of habit and are classified to reflect these characteristics. Minimum lot size and width and structure and septic system setbacks vary depending on the waterbody classification. These dimensional standards are intended to manage development impacts appropriate to the waterbody classification. Eighty-five Minnesota counties and about 160 cities have shoreland ordinances. Many of these communities are also covered by other program regulations (description of these other programs follows). In some cases performance standards for the different programs may overlap and conflict. In these situations, the stricter standard applies. [See Minnesota Statutes, Section 103F.201-103F.227, and Minnesota Rules, Parts 6120.2500-6120.3900.]

### Wild and Scenic Rivers

This program applies to all or portions of seven rivers including the St. Croix (the only federal-designated river), the Mississippi, the Kettle, the Minnesota, the Rum, the Cannon, and the North Fork of the Crow. The boundary generally follows a land survey line or road and includes areas that are visible from the river. Locally administered ordinance standards vary for each river and are based on the management plan specific to each river and river classification. Segments of these rivers are classified as wild, scenic, or recreational. Note that the river management plans have been promulgated into Minnesota State Rules pertaining to each river. [See Minnesota Statutes, Section 103F.301-103F.345, and Minnesota Rules, Parts 6105.0010-6105.1700.]

### Mississippi River Critical Area

The Mississippi River Critical Area includes designated land adjacent to the 72-mile section of the Mississippi River that runs through the 7-county metro area. This area was originally designated in 1976, and the designation was extended in 1979 by Executive Order 79-19 and made permanent by resolution of the Metropolitan Council in Minnesota Statute 116G. The Critical Area boundary coincides with the boundary of the Mississippi National River and Recreation Area, a unit of the National Park Service. All cities containing land within the boundary are required to develop a management plan and adopt zoning ordinances that implement the plan. The DNR and the Metropolitan Council review and approve community land use plans and ordinances. [See Minnesota Statutes, Section 116G.15 and Minnesota Rules, Parts 4410.8100-4410.9910.]

### Other River-Related Land Use Regulations

A number of river segments are protected through local management plans and regulations that are jointly administered by local governments. These include:

**Upper Mississippi River Headwaters:** The upper 400 miles of the Mississippi River and seven headwater lakes are covered by land use regulations developed by the Mississippi Headwaters Board (MHB) in its management plan. All of the eight counties from the headwaters to Little Falls have adopted zoning ordinances that implement land use standards of the MHB. The district includes land within 500 feet of the river for the scenic portion of the river and 1000 feet of the river for the wild portion of the river. Land use applications are reviewed and approved by the county and then sent to the MHB for final review and certification. [See Minnesota Statutes, Section 103F.361-103F.377 and <http://www.mississippiheadwaters.org/>]

**Minnesota River:** Shoreland along the Minnesota River between the City of Franklin in Renville County and the City of Le Sueur in Le Sueur County is protected by the zoning ordinances of Renville, Redwood, Brown, Nicollet, Blue Earth, and Le Sueur counties. These ordinances implement the policies developed in the 1981 Project Riverbend Comprehensive Plan. [See Minnesota Statutes, Section 103F.381-103F.393.]

### DNR Contact Information



DNR website and a listing of Area Hydrologists: [mndnr.gov/contact/ewr.html](http://mndnr.gov/contact/ewr.html)

DNR Ecological and Water Resources  
500 Lafayette Road, Box 32  
St. Paul, MN 55155  
(651) 259-5700

*This information is available in an alternative format on request.*

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### DNR Information Center

Twin Cities: (651) 296-6157  
Minnesota toll free: 1-888-646-6367  
Telecommunication device for the deaf (TDD): (651) 296-5484  
TDD toll free: 1-800-657-3929

Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available regardless of race, color, national origin, sex, sexual orientation, marital status, status with regard to public assistance, age, or disability. Discrimination inquiries should be sent to Minnesota DNR, 500 Lafayette Road, St. Paul, MN 55155-4049; or the Equal Opportunity Office, Department of the Interior, Washington, DC 20240.



## **DEPARTMENT OF NATURAL RESOURCES PERMITS**

### **I. OVERVIEW – MINNESOTA DNR PUBLIC WATERS PERMIT PROGRAM (MNDNR PWPP)**

#### **A. Public Waters Regulation**

Work in public waters has been regulated by the Minnesota Department of Natural Resources (“DNR”) or its predecessor the Department of Conservation since 1937. See generally Application of Christenson, 417 N.W. 2d 607, 609 (Minn. 1987).

#### **B. Public Waters Wetlands**

In 1979, the legislature expressly identified “public waters wetlands” as a category of public waters. See 1979 Minn. Laws ch. 199, § 3. See generally Application of Christenson, 417 N.W.2d 607, 609 (Minn. 1987).

#### **C. Basic Rule**

The basic rule is that a public waters work permit must be obtained from the DNR for work affecting the course, current, or cross-section of public waters, including public waters wetlands. See Minn. Stat. § 103G.245, subd. 1(2). This would include, for example, work involving the draining, filling, excavating, and placing structures in public waters wetlands. See id.; Minn. R. 6115.0190, .0200, .0210.

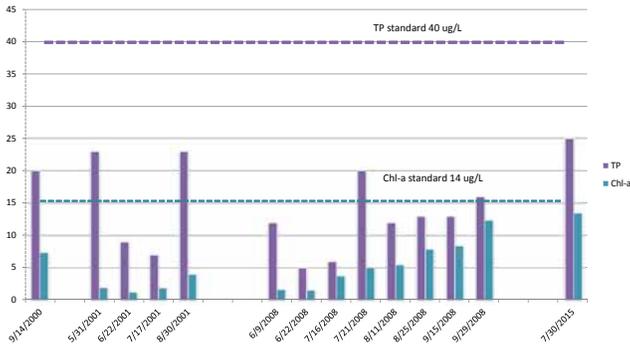
#### **D. Statutes and Rules**

The statutes pertaining to public waters work permits are found in Minn. Stat. ch. 103G. DNR’s administrative rules for the program are found in Minn. R. ch. 6115.

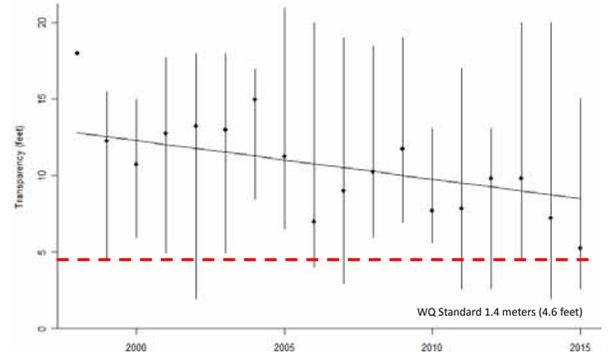
#### **E. “Public Waters Wetlands” vs. “Wetlands”**

In reading Minn. Stat. ch. 103G, it is important to distinguish between those provisions that refer to “public waters wetlands” which are regulated as public waters under DNR’s public waters permits program and those provisions that refer to “wetlands” which are regulated under the Wetland Conservation Act.

## Existing Data on Lake Hallett

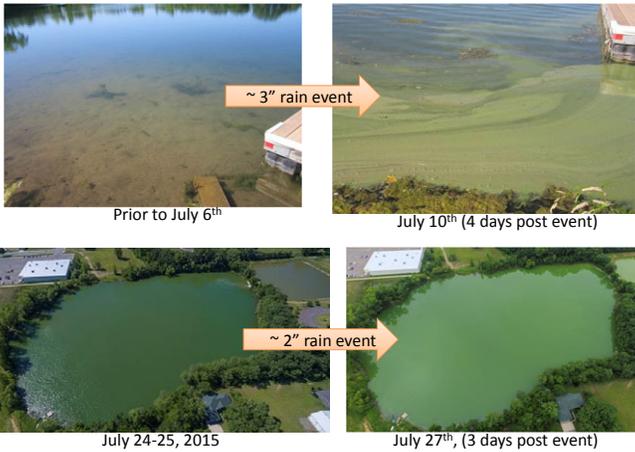


## Strong Declining Trend



Estimated decrease of 3/4 of a foot to 4 feet of clarity over the course of a decade

## Recent Conditions - 2015



## Are the fish safe to eat?

Minnesota Department of Natural Resources

Home > Lakefinder > FCA >

### Fish consumption guidelines

These fish consumption guidelines help people make choices about which fish to eat and how often. Following the guidelines enables people to reduce their exposure to contaminants while still enjoying the many benefits from fish.

Pregnant Women, Women who may become pregnant and Children under age 15

LAKE NAME	Species	Unrestricted	1 meal/week	1 meal/month	Do not eat	Contaminants
HALLETT	Large Sunfish	All sizes				
	Smallmouth Bass	All sizes				
	Yellow Perch	All sizes				Mercury

General Population

LAKE NAME	Species	Unrestricted	1 meal/week	1 meal/month	Do not eat	Contaminants
HALLETT	Large Sunfish	All sizes				
	Smallmouth Bass	All sizes				
	Yellow Perch	All sizes				

DODWD - MN DNR, Division of Waters' lake ID number.  
 Contaminants listed were measured at levels that trigger advice to limit consumption.  
 Listing of consumption guidelines do not imply the fish are legal to keep. MN DNR fishing regulations should be consulted.  
 Dioxin  
 Mercury  
 PCBs - Polychlorinated biphenyls  
 PFOS - Perfluorooctane sulfonate

## Next Steps

- Next Steps
  - Monitoring scheduled for 2016 and 2017
    - Work will be completed collaboratively with the MPCA and local volunteers through our Citizen Lake Monitoring Advanced Program
  - Opt-in assessment can occur upon completion of monitoring (2018)
  - If impaired, TMDL would be required

## What Does MS4 Really Mean?

*“Municipal Separate Storm Sewer System”*

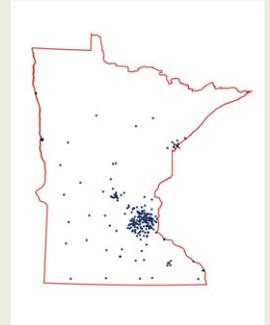
**Municipal** – Must be government entity, operating under state law, with jurisdiction over the discharge of stormwater to lakes, rivers, streams and wetlands.

**Separate Storm Sewer** – Years ago in MN, sanitary and storm sewers were combined. Waste water treatment plants were overwhelmed. Efforts to separate all sanitary and storm sewers in MN is largely complete today.

**System** – Complex array of stormwater conveyances and treatment practices owned by municipality.

## 233 Regulated Small MS4s

- Counties, Cities, Townships
- Watershed Districts
- Transportation Departments
- Public Universities/Colleges
- Correctional Facilities
- Hospitals



## System/Conveyances



## Reducing Pollutants From Your System To Receiving Waters

- EPA established that six focus areas are critical for a local programs to be effective in reducing pollutants discharged from your system. (**M**inimum **C**ontrol **M**easures)

1. Public Education & Outreach
2. Public Participation & Involvement
3. Illicit Discharge (aka dumpings & spills) Prevention
4. Active Construction Site Runoff Control
5. Post Construction Long-term Runoff Management (permanent practices that reduce pollutants long after the project is completed)
6. Inspection and Maintenance of Municipal Stormwater Infrastructure



## Is St. Peter compliant with the MS4 Permit?

- St. Peter was audited in May 2013 for Overall Program Management, Illicit Discharge Detection & Eliminations, and Active & Post Construction Site Runoff Control.
- Found 'Satisfactory' in all areas but one
  - Illicit Discharge Ordinance, which the city has since enacted

## What is required for Municipal Operations?

- ❑ Develop procedures and a schedule of determining effectiveness of ponds
- ❑ Annual inspections of all structural BMPs
- ❑ One inspection every five years of all ponds and outfalls
- ❑ Quarterly inspections of stockpiles and material storage and handling areas
- ❑ Based on inspections, necessary maintenance should be completed as soon as possible
- ❑ Stormwater management training for staff

## If Hallett is deemed impaired, what is the city required to do?

- ❑ To trigger additional MS4 permit requirements, the city must be assigned a Waste Load Allocation (WLA) from an EPA-approved TMDL (approved **prior** to the effective date of the current MS4 permit)
- ❑ If triggered, the city will need to determine whether or not it is meeting the WLAs.
  - If the city believes it is, they will provide a list of BMPs already in place that have gotten the city there.
  - If not, the city will need to develop a compliance schedule consisting of BMPs to be implemented over the course of the permit term. That compliance schedule then becomes the TMDL requirement for the duration of the permit term, outlining any progress made each year within the annual report.

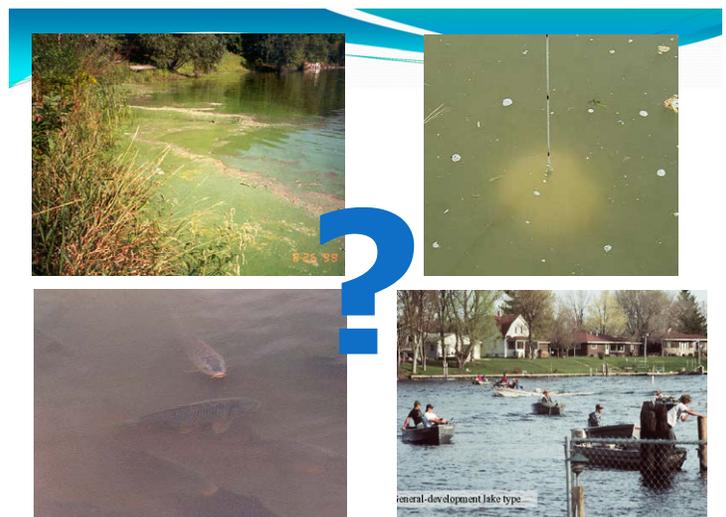
## If Hallett is deemed not impaired, what is the city required to do?

- ❑ There will be no trigger for additional MS4 permit requirements.
- ❑ From a non-regulatory stand-point, improving water quality is always encouraged.



## Watershed Changes Mean:

- Increased Phosphorous Loading.
- Reduced Water Clarity.
- Increased Frequency of Nuisance Algal Blooms.
- A Decrease in the Diversity of the Submerged Plant Community and Loss of Fish Habitat.
- Change in Fish Community from Largemouth Bass and Sunfish to Black Bullhead and Carp.

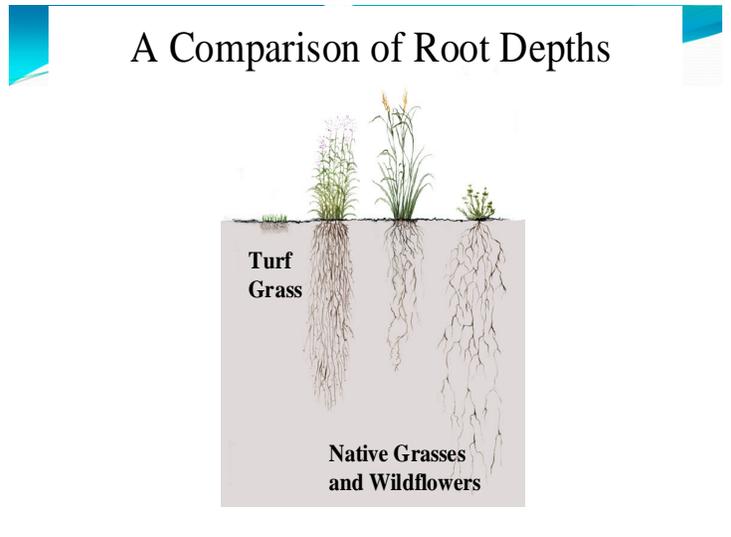
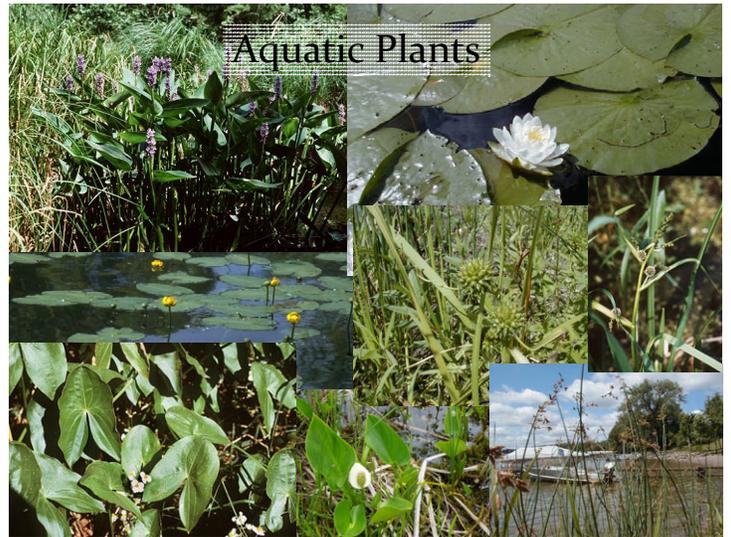




Impact of development on lakes

### Importance of Shoreland Plants

- Protect water quality
- Provide fish and wildlife habitat
- Reduce erosion
- Offer privacy
- Add natural beauty
- Enhance natural insect control
- Discourage Canada Geese

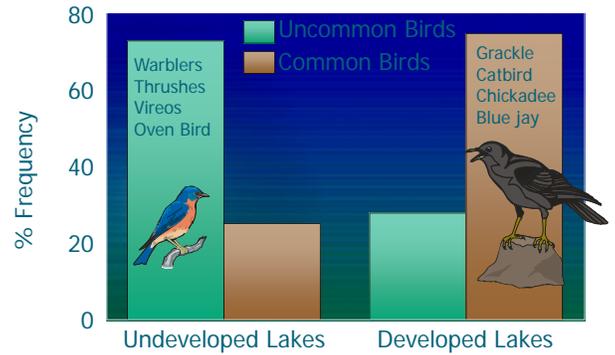


## Research on the loss of Dead & Fallen Trees on shorelines

- Fallen trees are important to fish & many species of wildlife
- Significantly less trees in water along developed compared to undeveloped shorelines
- Fewer trees in the water means fewer spots to catch fish, fewer spots to see turtles, fewer safe roosting sites for newly hatched ducks, etc.

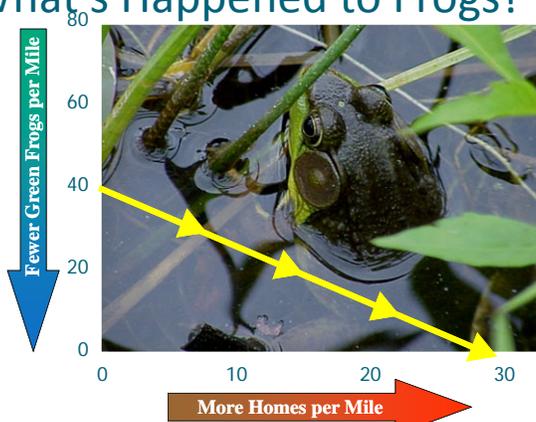


## What's Happened to Songbirds?



Meyer et al. 1997, Wisconsin DNR, Lindsay et al. 2002

## What's Happened to Frogs?



Meyer et al. 1997, Wisconsin DNR, Woodford and Meyer 2003

## Shoreline Vegetation Provides Wildlife Habitat



## Shoreline Plants Enhance Natural Insect Control



# Hallett Lake

## LAKE SURVEY REPORT

TARGETED SURVEY DATED 03/15/2016 FOR DOW NUMBER 52-0001-00

**DRAFT**

### Length Frequency Distribution

**3/4 inch single-frame trapnet (Five nets)**

(Field work conducted between 03/15/2016 and 03/16/2016)

Length in inches	Black	Green	Largemouth
	Crappie	Bluegill	Sunfish Bass
< 3.00	-	-	-
3.00 - 3.49	-	1	-
3.50 - 3.99	-	-	-
4.00 - 4.49	-	-	-
4.50 - 4.99	-	-	-
5.00 - 5.49	-	-	-
5.50 - 5.99	-	-	-
6.00 - 6.49	-	2	1
6.50 - 6.99	2	2	-
7.00 - 7.49	4	5	-
7.50 - 7.99	1	2	-
8.00 - 8.49	-	-	-
8.50 - 8.99	-	-	-
9.00 - 9.49	-	-	-
9.50 - 9.99	-	-	-
10.00 - 10.49	1	-	3
10.50 - 10.99	-	-	2
11.00 - 11.49	-	-	-
11.50 - 11.99	-	-	-
12.00 - 12.99	-	-	-
13.00 - 13.99	-	-	-
14.00 - 14.99	-	-	-
15.00 - 15.99	-	-	-
16.00 - 16.99	-	-	-
17.00 - 17.99	-	-	-
18.00 - 18.99	-	-	-
19.00 - 19.99	-	-	-
20.00 - 20.99	-	-	-
21.00 - 21.99	-	-	-
22.00 - 22.99	-	-	-
23.00 - 23.99	-	-	-
24.00 - 24.99	-	-	-
25.00 - 25.99	-	-	-
26.00 - 26.99	-	-	-
27.00 - 27.99	-	-	-
28.00 - 28.99	-	-	-
29.00 - 29.99	-	-	-
30.00 - 30.99	-	-	-
31.00 - 31.99	-	-	-
32.00 - 32.99	-	-	-
33.00 - 33.99	-	-	-
34.00 - 34.99	-	-	-
35.00 - 35.99	-	-	-
= > 36.00	-	-	-

**Maximum Depth Found - 24 feet**

**Secchi Disc Reading - 4 feet**

	<u>BLC</u>	<u>BLG</u>	<u>GSF</u>	<u>LMB</u>
Total	8	12	1	5
Min. Length	6.81	3.39	6.18	10.20
Max. Length	10.31	7.76	6.18	10.67
Mean Length	7.59	6.72	6.18	10.44
# Measured	8	12	1	5
No Lengths for	0	0	0	0