



2019 Annual Report

2020 Annual Plan of Work

11360 Highway 212, Suite 6
Cologne, MN 55322
Phone: 952-466-5230

<http://www.co.carver.mn.us/swcd>

I. INTRODUCTION

The mission of the Carver Soil and Water Conservation District (SWCD) is to provide high quality assistance to the land managers and citizens of Carver County for the protection of land and water resources.

The Carver SWCD was organized by local farmers for the purpose of promoting the science of good land use; and to assist landowners and operators in planning and applying soil and water conservation practices needed to protect and improve their land and water resources. The District is a legal subdivision of the State of Minnesota, operating under a charter issued by the Secretary of State on November 12, 1946. The soil and water conservation policy of the State is to encourage land occupiers to conserve soil, water, and the natural resources they support through the implementation of practices that:

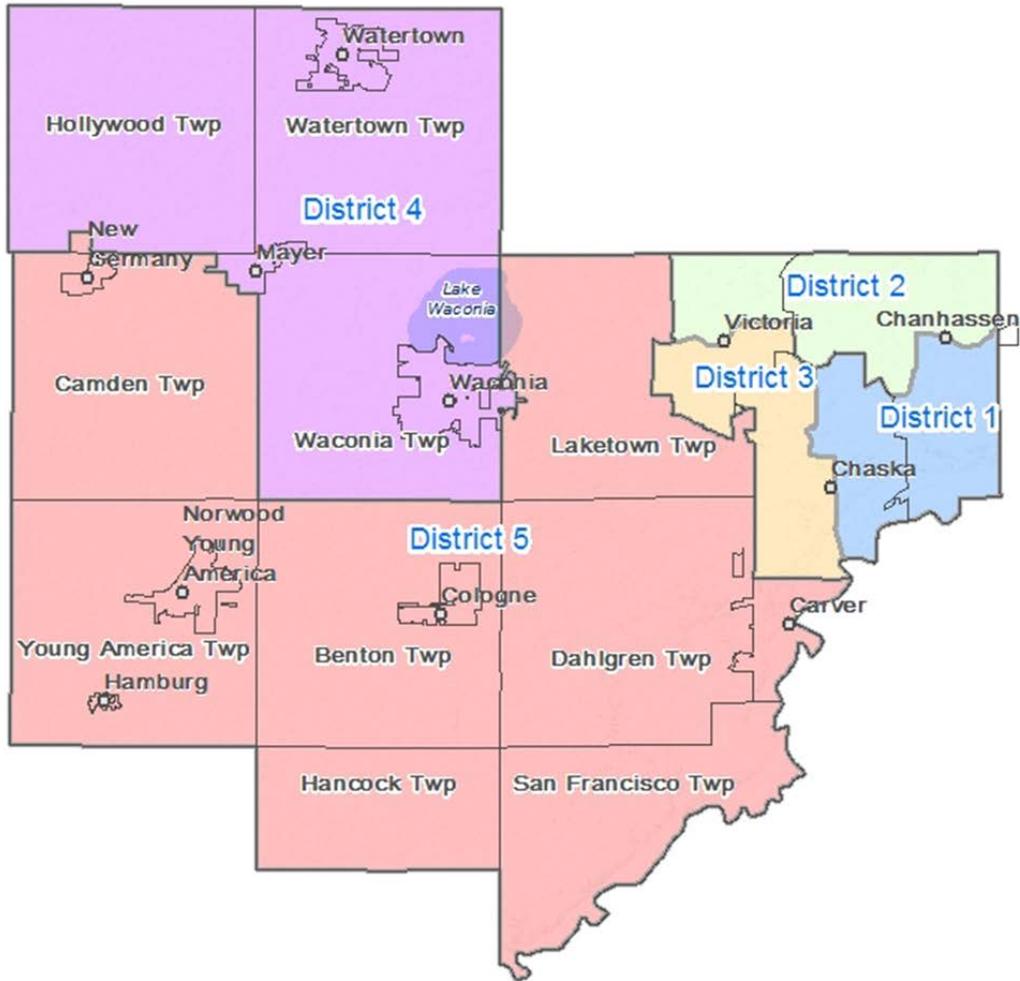
- (1) Control or prevent erosion, sedimentation, siltation, and related pollution in order to preserve natural resources;
- (2) Ensure continued soil productivity;
- (3) Protect water quality;
- (4) Prevent impairment of dams and reservoirs;
- (5) Reduce damages caused by floods;
- (6) Preserve wildlife;
- (7) Protect the tax base; and
- (8) Protect public lands and waters.

Since 1946, the Carver SWCD has been providing technical and financial assistance to landowners, land operators, municipalities, townships, counties and businesses for the improvement of their natural resources. The continued success of the Carver SWCD is a result of listening to our constituents, adjusting or expanding our technical capabilities, and providing leadership in emerging land use and conservation issues.

The purpose of this annual report and annual plan is to summarize the major accomplishments of last year and to identify needs for the upcoming year. It should be noted that not every activity can be captured by this report, but the reader should get an overall idea of the District's activities.

CARVER SWCD BOARD OF SUPERVISORS

The SWCD is governed by a five-member Board of Supervisors and they are charged with developing policies and employing staff to fulfill the mission of the SWCD. A legislative change in 2014 required the Supervisors to be elected by equal population districts starting in 2016. The Board meets the third Thursday of each month at 8:00 a.m. in the Cologne Public Works Headquarters (unless otherwise scheduled).



ELECTION YEARS

- District 1: 2018 – 2022
- District 2: 2020 – 2024
- District 3: 2018 – 2022
- District 4: 2020 – 2024
- District 5: 2018 – 2022

CURRENT BOARD SUPERVISOR

- Stan Wendland
- Marcus Zbinden
- Mark Zabel
- Bob Burandt
- Jeff Sons

CARVER SWCD STAFF

						
Mike Wanous <i>District Manager</i>	Felicia Brockoff <i>Administrative and Finance Specialist</i>	Ben Datres <i>Farm Bill Technician</i>	Aaron Finke <i>District Technician</i>	Chip Hentges <i>Conservation Technician</i>	Terry Meiller <i>Resource Conservationist</i>	Seth Ristow <i>Resource Conservation Technician</i>

Local Partner Agencies

Board of Water & Soil Resources (BWSR)
Carver County
Carver County Water Management Organization (WMO)
Cities of Carver County
Department of Natural Resources (DNR)
Hamburg Hunt & Fish Club
Lower Minnesota River Watershed District (LMRWD)
Minnehaha Creek Watershed District (MCWD)
Natural Resources Conservation Service (NRCS)
Pheasants Forever (PF)
Riley Purgatory Bluff Creek Watershed District (RPBCWD)
Townships of Carver County
U.S. Fish & Wildlife Service (USFWS)

II. ANNUAL OBJECTIVES AND ACTIONS

Agriculture Conservation Practices

The goal of this program is to work with private landowners to minimize negative impacts of agriculture activities on natural resources. There are a number of state and federal programs aimed at providing grant and loan money to assist landowners with installing practices that protect and enhance water quality. It is also important to provide landowners with technical assistance that will enable them to build soil quality for future generations.

The SWCD has provided technical assistance and cost share assistance for traditional Ag BMP's for over 70 years. Examples of these practices include, but are not limited to: grass waterways, water and sediment control basins, residue management, grade stabilization structures, contour strips, nutrient management, critical area planting, rock inlets, buffer strips, tree and shrub establishment. The SWCD will continue to promote the use of BMP's on a county wide basis. Special focus will take place in the sub-watershed's that have been identified as priorities from Total Maximum Daily Load (TMDL) studies, as well as those identified in the Carver County Water Management Plan.

The MN buffer law went into effect in the summer of 2015. The buffer law requires 50-foot buffers of perennial vegetation along all public waters and 16.5 foot buffers along public ditch systems. The MN DNR developed buffer protection maps based on public water inventory maps and legally established public drainage ditches. SWCD's are charged with determining compliance on land that is adjacent to public waters and public drainage ditches. Carver County has a high compliance rate (over 98%), but there are still several areas that lack the required buffer setbacks.

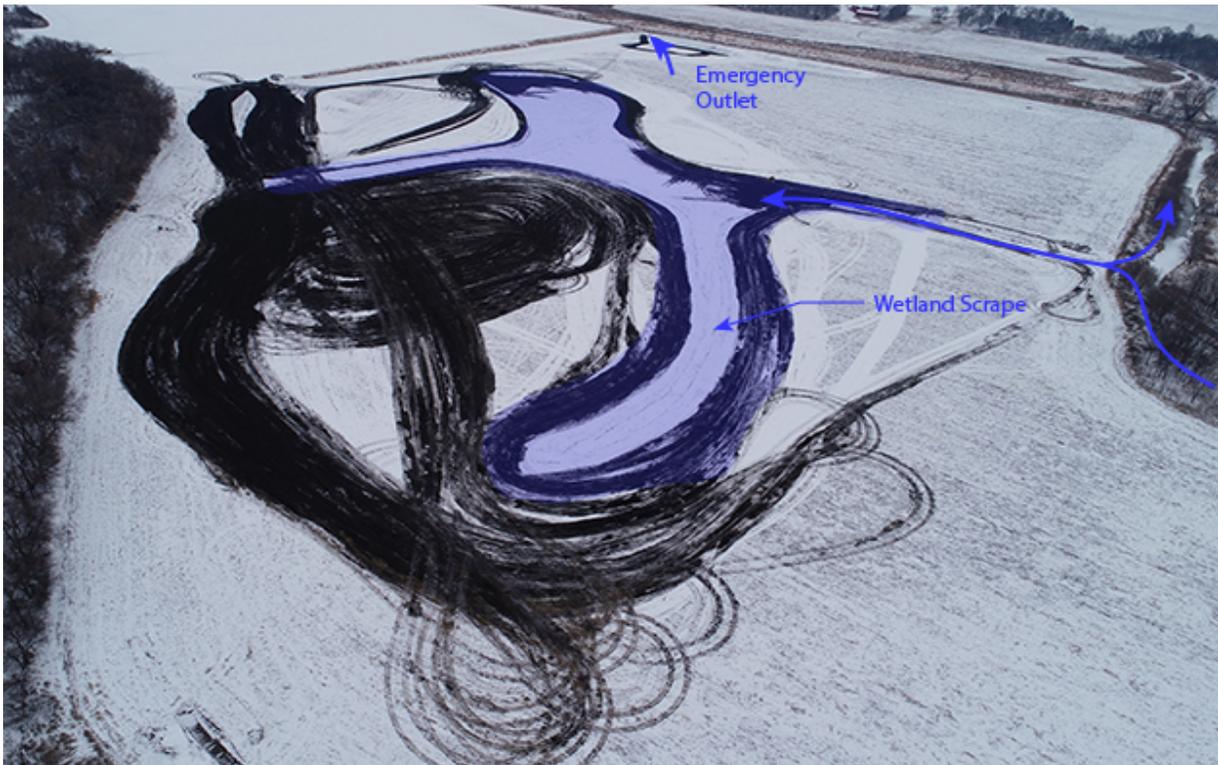
Accomplishments for 2019

- Installed 4 grassed waterways, totaling 3,993 feet through a Clean Water Grant on CD 6.
- Installed 3 Water and Sediment Control Basins through a Clean Water Grant on CD 6.
- Designed and installed 3 grassed waterways, totaling 3,984 feet through the Disaster Relief Assistance Program (disaster relief from June 2014 storm events).
- Installed 1 grade stabilization structure through the Disaster Relief Assistance Program (disaster relief from June 2014 storm events).
- Sold 8,725 trees to 128 landowners.
- Newly purchased Great Plains no-till drill rented to 12 landowners for alfalfa inter-seeding/CRP plantings/Cover Crop establishment on 158 acres.
- Final harvestable buffer payments to 3 landowners.
- Site surveys and designs completed for 4 water and sediment control structures and 2 grade stabilization structures through the SWCD state cost-share program.
- Completed construction inspection of 2 CREP projects (Wetland Restorations activities) resulting in 112.6 acres of permanently restored wetlands.
- Wrote prescribed burn plans for 14 landowners participating in CRP or easement program, totaling 305 acres
- Soil Health/Cover Crops – staff attended several workshops and trainings to learn more about soil health and hosted a joint cover crop workshop with Scott and Le Sueur counties with over 100 attendees.
- Provided cost-share and incentive payments to 4 landowners for establishing 71.4 acres of cover crops through the Soil Health and Cover Crop Program.
- Followed-up on 1 excessive soil loss complaint, and follow up meetings with landowners regarding RUSLE 2 analysis.

- Staff provided technical assistance on several other sites (technical assistance might include survey work, hydrology calculations, concept designs), not all sites result in project implementation.



Grassed waterway establishment in Dahlgren Township through the Clean Water Grant on CD 6



Aerial view of a newly constructed CREP floodplain wetland restoration in Dahlgren Township.



50' buffer along a public water in Carver County.

Actions for 2020

1. Implement projects with state aid funding sources.
2. Expand upon the soil health/cover crop program utilizing district capacity funds to achieve additional acres of cover crops to improve soil health.
3. Work cooperatively with the USDA NRCS and FSA to promote and implement the Federal USDA programs such as EQIP, CRP, and CREP.
4. Assist the County Feedlot officer with feedlot technical assistance and compliance.
5. Work cooperatively with the Carver County WMO to encourage compliance with County and WMO rules and regulations.
6. Implement the buffer law provisions of 103F.48
 - a. Use the state BuffCAT tool to identify parcel compliance
 - b. Send letters with maps to landowners that need to take action in order to be in compliance
7. Secure funding to complete priority projects identified in the Carver County Water Plan by applying for grants and special funding programs.

Approximately 3,200 staff hours are needed for this program.

This work is to be completed by the District Technician, Farm Bill Technician, and Resource Conservationist.

Urban Conservation

The Carver SWCD assists in the implementation of conservation programs and water rules compliance that have been adopted by the Carver County Water Management Organization (WMO). Staff assists with the development plan reviews of proposed projects to determine compliance with National Pollution Discharge Elimination Systems (NPDES) and local water rules. Staff also reviews the implementation of the water plan by performing site inspections on construction activities and providing technical assistance with the installation of urban BMP's. In Carver County, SWCD staff work extensively with WMO staff to ensure that projects are installed according to plan and in compliance with all applicable water management rules. The SWCD also has an agreement with the City of Chanhassen to review plans, conduct erosion and sediment control inspections and providing technical assistance on water quality features. In addition, the SWCD has contracts with Riley Purgatory Bluff Creek Watershed District (RPBCWD) and with the Lower Minnesota River Watershed District (LMRWD) to assist landowners with identifying BMP locations and providing design assistance.

Essential duties of this program include the following:

- Assists the Carver County WMO with plan reviews.
- Conduct field visits to construction sites to inspect for compliance with stormwater regulations.
- Supports WMO staff and City staff with development of watershed models, site investigations, survey work, and technical expertise.
- Assists and/or prepares landscape restoration designs to treat stormwater, included but not limited to: rain gardens, bio-retention cells, shoreline restorations, and water re-use projects.
- Provide technical assistance and BMP designs for RPBCWD and LMRWD.



6" of top soil with erosion control logs. Requiring 6" of top soil reduces runoff and need for fertilization and irrigation.

Accomplishments for 2019

The following list tracks projects by cities and inspection requirements:

City or Township	Plan Reviews	Construction Site Erosion and Sediment Control Inspections/Sites	Stormwater Treatment Installations	Violations that required enforcement
Carver	2	12	2	1
Chanhasen	4	16	4	0
Chaska	10	36	6	0
Cologne	1	4	1	0
Hamburg	1	1	0	0
Mayer	2	4	0	0
New Germany	0	0	0	0
Norwood Young America	1	4	1	0
Waconia	16	32	5	1
Watertown	3	6	1	0
Camden Township	1	1	0	0
Dahlgren Township	1	3	1	0
Hollywood Township	0	0	0	0
Laketown Township	1	3	0	0
San Francisco Township	4	4	1	0
Waconia Township	3	1	0	0
Watertown Township	1	1	0	0
Young America Township	3	9	0	0
TOTALS	54	133	21	2

Riley Purgatory Bluff Creek Watershed District Cost-Share Program

- Assisted Clean Water Stewards with water quality projects
- Involved with the installation of 14 Cost Share Projects
- Conducted 58 site visits
- Designed 7 BMP projects
- Helped improve Cost Share Program to include native habitats



Native Shoreline Project on Red Rock Lake in Eden Prairie

Carver County Water Management Organization Cost Share Program

- Conducted 15 site visits
- Designed 8 projects
- Involved with the installation of 5 projects (Residential and Municipal)



Native Shoreline Installation on Lake Waconia

Carver SWCD Pollinator Program (First Year)

- Conducted 31 site visits
- Designed 3 projects
- Involved with the installation of 3 projects (Residential and Municipal)



Rendering of the Watertown Disc Golf Course with pollinator plantings.

Lower Minnesota River Watershed District Cost Share Program

- Conducted 4 site visits
- Designed 3 projects

Actions for 2020

1. Conduct 150 construction site erosion control inspections.
2. Provide BMP design services for the WMO, RPBCWD, and LMRWD.
3. Participate in educational efforts to raise awareness of the impacts of storm water and CSEC on water quality.
4. Provide technical assistance to LGU's and contractors for the best use of storm water BMP's.
5. Assist the WMO and other LGU's with the implementation of rain gardens, bio-retention, shoreline restorations, and other forms of low impact development practices.
6. Identify the best locations for BMP's by conducting sub-watershed analysis.
7. Follow through with the installation of projects identified in the sub-watershed analysis.
8. Increase technical capacity with current modeling and the latest water quality treatment devices.
9. Improve pollinator program application process and criteria
10. Continue internship program to help teach future professionals about water quality field
11. Expand outreach for all cost share programs
12. Expand arboriculture services to citizens

Approximately 2,800 hours are needed for this task.

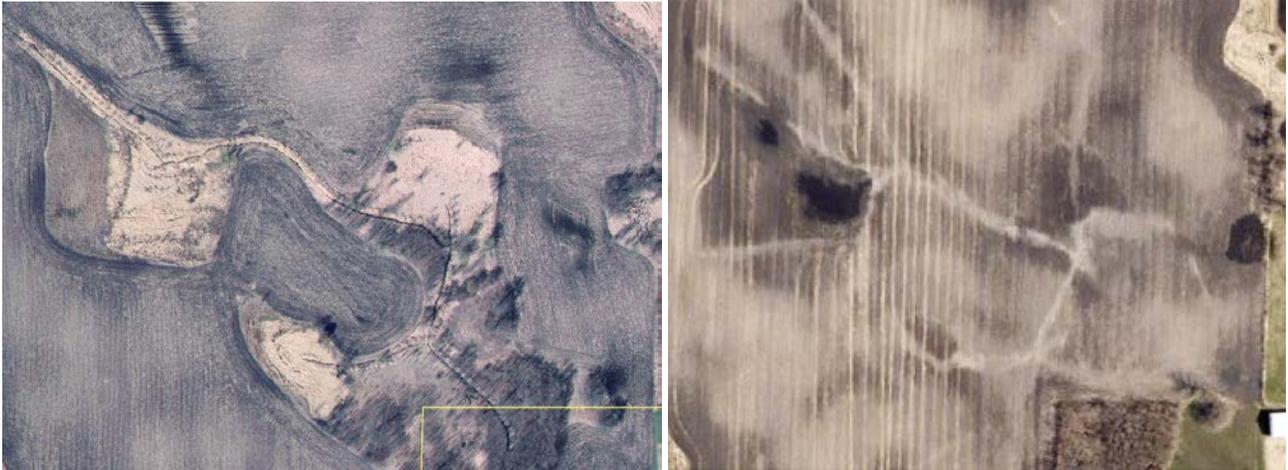
This work is to be completed by the Resource Conservation Technician and the Conservation Technician.

Wetland Protection and Restoration

The SWCD provides technical assistance for the Minnesota Wetland Conservation Act (WCA). Wetlands serve multiple functions and are an important part of the Carver County landscape. The Carver WMO is the LGU for WCA implementation in the unincorporated areas, but the SWCD provides technical assistance and field reviews. Each city is responsible for WCA administration within the city limits. By statute requirements, the SWCD is a member of the technical evaluation panel (TEP) and the SWCD writes restoration orders when required. The SWCD also assists landowners that wish to explore options for restoring wetlands on their property. This could be done through a conservation program, private wetland banking, or with landowner contribution without enrolling into a program.

Accomplishments for 2019

- Provided technical assistance to landowners with WCA related questions
- Attended 60 TEP meetings
- Seeded upland buffer, wetland basin, and performed vegetation maintenance throughout the growing season for the County sponsored wetland banking site in Watertown
- Reviewed and issued restoration orders on 6 WCA violations
- Restorations completed on 3 wetland violations



Restoration of a wetland basin that was illegally drained.

Actions for 2020

1. Provide assistance to Carver County for WCA and stay updated with changes to the MN WCA laws.
2. Continue to be part of the TEP's for WCA projects, write restoration orders when needed.
3. Continued progress in the Watertown wetland banking project, restoration efforts are planned for spring/summer of 2020.
4. Understand and promote the wetland restorations programs available through State and Federal programs including RIM, private and public banking, CRP, CREP, and USFWS programs.
5. Assist the USDA with the wetland provisions within the Farm Bill Program, including Swamp-buster and 1026 drainage requests.
6. Seek to prevent wetland losses by educating landowners of the State wetland protection laws.
7. Prepare BWSR Road Bank proposals for residents in Carver County with possible restoration projects.

Approximately 2,000 hours are needed for this task.

This work is to be completed by the District Technician.



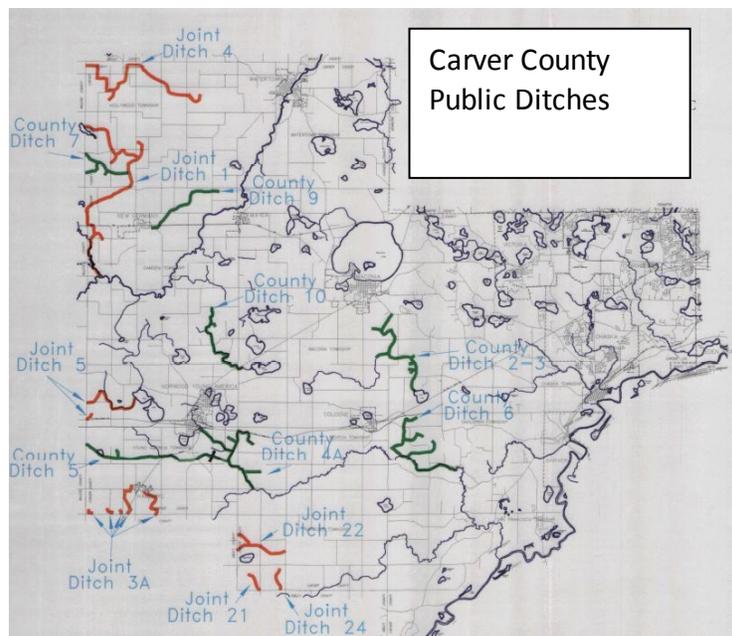
Native vegetation taking over at the Watertown wetland banking site.

Drainage and Ditches

The Carver SWCD has an agreement with the Carver County Ditch Authority to assist the County Auditor in cleanout requests and management of the County ditch systems. There are 16 public ditch systems in Carver County, the SWCD provides ditch inspections and technical assistance for maintenance of these ditch systems. The SWCD is also a point of contact for other drainage related questions. We work with many landowners on drainage related questions that range from flooded crop fields to wet backyards, and often involve neighboring properties and drainage problems. While the SWCD does not provide legal advice, we often can direct people in the right direction to help them get their problem resolved.

Accomplishments for 2019

- Completed ditch inspections of 4 public drainage ditches
- Assisted with repair procedures on 3 ditch systems
- Contracted for tree spraying on JD3, JD5, CD4 and CD6
- Design and technical assistance for BMP's on CD#6
- Inventory and inspections for compliance with the buffer law
- Completed annual buffer strip reporting
- Assisted landowners with questions about redetermination of benefits and the new buffer law
- Worked with Townships and private citizens on drainage questions and complaints



Actions for 2020

1. Respond to requests for repairs of public drainage systems
2. Assist Carver County and landowners with the processes of MN Drainage Law 103E
3. Promote the installation and maintenance of grass buffer strips and rock inlets to keep sediment out of the ditch systems
4. Implement a state grant to install BMP's in the watershed of County Ditch #6
5. Educate landowners about BMP's
6. Explore opportunities to include water quality projects with drainage repairs
7. Continue to work with the County Auditor and Ditch Authority on improving processes/procedures

Approximately 800 hours are needed for this task.

This work is to be completed by the District Manager and the District Technician.

Education and Outreach

In 2019, the Carver SWCD coordinated the Metro Area Envirothon. The event was held on May 2, at the Arboretum in Chaska. Hopkins High School from Hennepin County captured the top 3 slots for First, Second, and Third place. They advanced to the Minnesota Envirothon, where two of the Hopkins High School teams captured First Place and Second Place. The Carver SWCD also assists in coordinating the state Envirothon. Hopkins High School represented Minnesota at the National Envirothon in Raleigh, North Carolina in July of 2019, and placed 14th overall.

The District also sent out spring and fall newsletters, press releases, educational presentations for landowners, and other classroom presentations as requested. The SWCD also maintains a website, and a Facebook page as another means of education and outreach to citizens.

Accomplishments for 2019

- Hosted the Metro Area Envirothon.
- Co-coordinated and assisted with the Minnesota State Envirothon.
- Presented to 100 students that are part of local conservation clubs or 4-H groups.
- Developed and sent a spring and fall newsletter to approximately 3,000 citizens.
- Assisted Carver County Extension with presentations to landowners as requested.
- Presented conservation materials to Watertown conservation club.



Envirothon teams work collaboratively to answer questions at the Forestry & Current Events Stations

Actions for 2020

1. Coordinate a Metro Area Envirothon with funding from the District Capacity Grant.
2. Continue to assist in coordinating the Minnesota State Envirothon.
3. Continue to provide education efforts in the classroom, conservation clubs and 4-H events.
4. Maintain the SWCD website and Facebook page to keep citizens informed of programs and activities
5. Develop and distribute District Newsletters.
6. Assist the Environmental Coordinator with education and outreach activities, including hosting the Metro Area Children's Water Festival through the Metro Joint Powers Board.
7. Provide education to citizens of Carver County as they relate to the SWCD programs.
8. Assist Carver County with the educational components of the County Water Plan.
9. Promote the new soil health program through the Carver SWCD, by providing educational opportunities including meetings and field day demonstrations.

Approximately 800 hours are needed for this task.

This work will be completed by the Administrative and Finance Specialist with assistance from other staff as needed.

Financial Stability

The Carver SWCD does not have taxing authority and relies on cooperation with other agencies to balance its budget of expenditures and revenues. The SWCD provides many services to Carver County and many of the departments within the County. In particular, many of the projects completed by the Water Management Organization are done in cooperation with the SWCD.

Accomplishments for 2019

- Worked with the County Divisions to prepare a conservative and responsible 2020 budget request.
- Successfully implemented several projects with the Carver WMO.
- Continued our partnership with the Riley Purgatory Bluff Creek Watershed District to provide BMP design services.
- Continued agreement with Lower MN River Watershed District to provide BMP design services within their jurisdiction.
- Continue our partnership with the City of Chanhassen to provide construction site erosion control inspections.
- Leveraged State funding through the Farm Bill Assistance grant, CREP easement incentives, and special contracts and grant agreements with BWSR.
- Developed and implemented work plans for the District Capacity Funding received from the state.

Actions for 2020

1. Continue to be fiscally responsible while still providing high quality service to Carver County citizens.
2. Work with Carver County to ensure the County General Levy adequately supports conservation efforts and addresses Citizen's needs.
3. Continue to work closely with the Carver WMO to implement the County Water Plan and County Water Rules, assist with grant implementation.
4. Work with Carver County watershed districts and WMO to make wise decisions with watershed-based funding allocations from the state.
5. Implement and track state requirements of MN water law.
6. Develop relationships with the WMO, LGU's and Watershed Districts and seek opportunities to partner on programs.

Approximately 800 hours are needed for this task.

This work will be completed by the District Manager and the Administrative and Finance Specialist.

STAFFING NEEDS

In order for the SWCD to accomplish the above objectives, the following staffing needs are required:

- 1 FTE District Manager
- 1 FTE Administrative and Finance Specialist
- 1 FTE Conservation Technician
- 1 FTE Resource Conservationist
- 1 FTE District Technician
- 1 FTE Resource Conservation Technician
- 1 FTE Farm Bill Technician
- 1-2 Summer Intern(s)

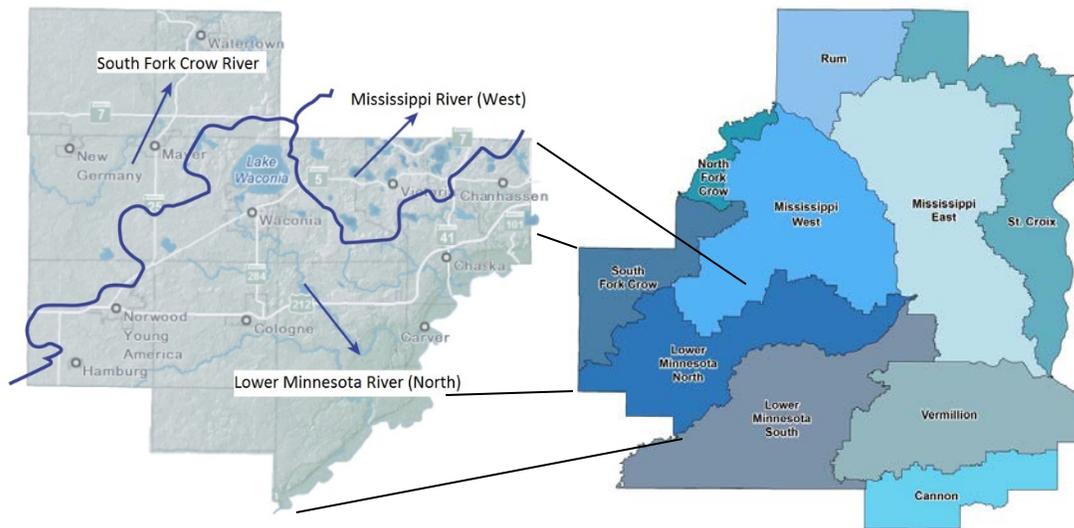
III. WATERSHED-BASED IMPLEMENTATION FUNDING

A. Purpose Statement

As part of the 7-county metro Watershed-Based Implementation Funding (WBIF) process, SWCD’s within the 7-county metro area have the option to develop an annual plan that details potential projects and programs that should be considered for potential funding utilizing WBIF dollars (a ranking and scoring process will occur with other local LGU’s). This section will identify projects Carver SWCD may pursue through the WBIF process.

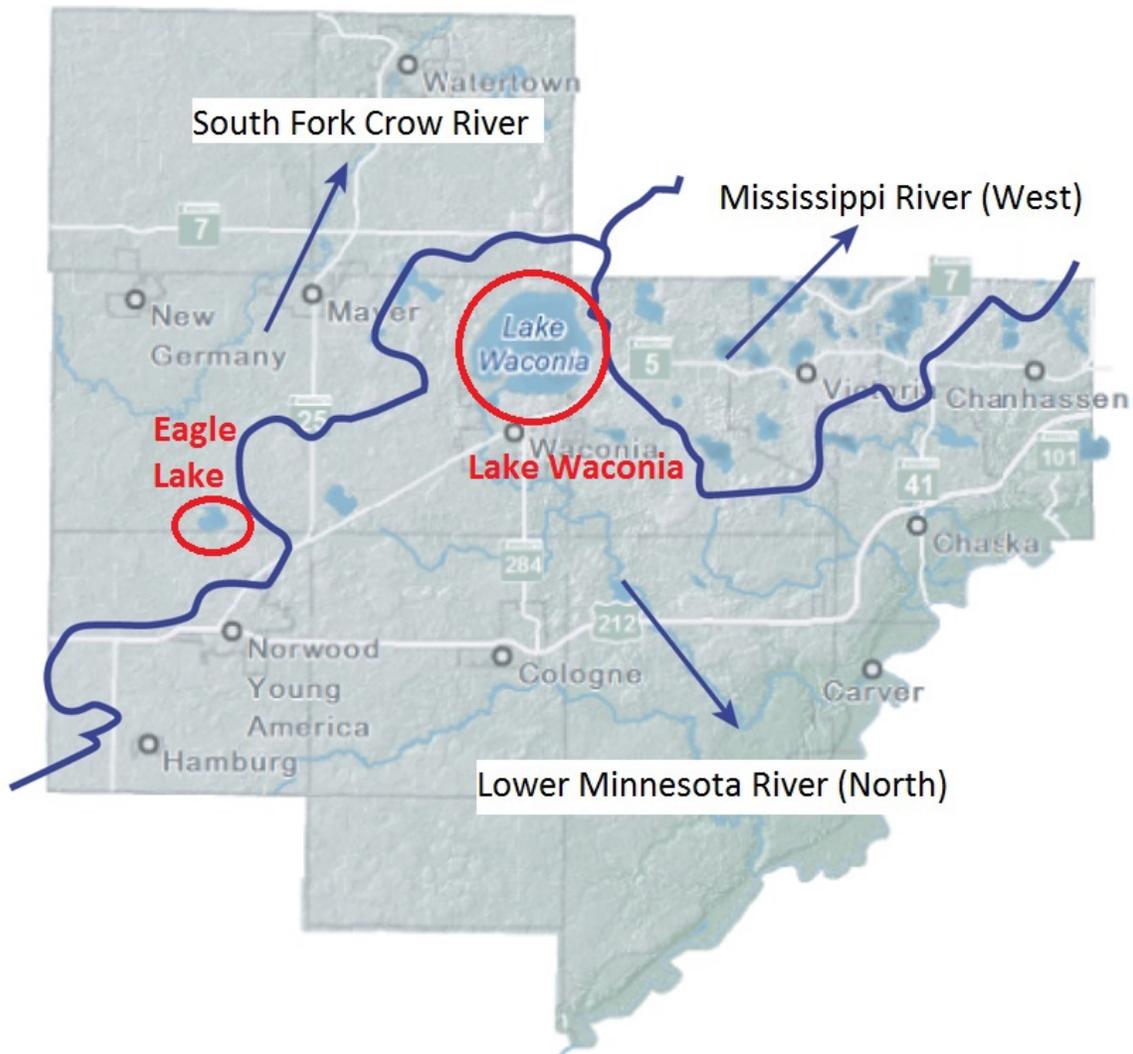
B. Prioritization of Issues and Resources

The Watershed-Based Implementation Funding process will make funds available for each major watershed basin within the 7-county metro area. The Carver County major watershed basins are identified on the map below:



Within each of the major watersheds, the priority resource issues are very similar with surface water quality protection and improvement being the highest priority. The eastern half of the county is quickly developing and urban stormwater BMP’s are needed. The western half of the county is primarily agriculture and ag BMP’s are needed in this area. The SWCD strongly believes wetland restorations are important county wide as they help to mimic natural hydrology and reduce peak runoff events. The SWCD is actively promoting the Conservation Reserve Enhancement Program (CREP) to restore marginal cropland back to wetlands.

For the purposes of WBIF, the Carver SWCD is prioritizing two water bodies – Eagle Lake and Lake Waconia.



Eagle Lake is located in the South Fork Crow River major watershed and has a completed TMDL. The SWCD completed a Sub-Watershed Analysis (SWA) for the area draining into Eagle Lake. The SWA identified location and cost/benefit analysis of best management practices that could be installed to improve water quality draining into the lake.

Lake Waconia is located at the headwaters of Carver Creek which drains to the Minnesota River. Lake Waconia is a locally significant water body that is on the verge of being impaired. The SWCD completed a SWA for the rural areas draining into Lake Waconia. The SWA identified BMP's that could be installed and provided a cost/benefit analysis for the BMP's.

C. **Method of Targeting**

The entire SWA process is an in-depth targeting process. The SWA pinpoints locations of BMP's, identifies the best BMP for that particular location, and provides a cost/benefit analysis for the BMP. The potential BMP implementation table is ranked according to cost per pound of phosphorus. Landowner willingness to install the BMP is the only unknown factor, but if the landowner is not willing to implement, the next highest scoring project will be pursued.

The SWA method of targeting is described below: (from the SWA reports)

Step #1: Project Scoping

Designating an impaired water body and its subsequent subwatershed to analyze is the first step in the assessment process. Water quality monitoring data, non-degradation report modeling, and TMDL studies are just a few of the resources available to help determine which water bodies are a priority. Assessments supported by a Local Government Unit with sufficient capacity (staff, funding, available GIS data, etc.) to greater facilitate the assessment also rank highly.

Step 2: Desktop Analysis

The purpose of the desktop analysis was to narrow the amount of field reconnaissance and other time-consuming tasks that would be needed to complete the SWA by identifying and prioritizing those areas within the subwatershed that likely yield the greatest pollutant (phosphorus) load. To accomplish this, the process of hydrologic conditioning was performed to modify the elevation values in the raw "bare earth" DEM raster through GIS processing to make the DEM more suitable for most hydrologic analyses. The modification process involves breaching digital dams and elevating user defined sinks to ensure that water flow paths are accurately represented in the conditioned DEM.

Depressional areas (sinks, wetland, and potholes) are a naturally occurring feature in much of Carver County's landscape. During runoff events the runoff volume to the depressional area is not contributed downstream until the runoff exceeds the depressional area volume. If the runoff volume did not exceed the depressional area volume, the area was categorized as non-contributing. For the purpose of this study, non-contributing areas were defined as areas that contained the runoff from a 10-year recurrence, 24-hour runoff event. This event was defined as 4.2 inches of precipitation. All depressional areas determined to be contributing were adjusted by elevating their elevation values to create a continuous flow path that traverses through the depressional area.

The LiDar-derived DEM was used to develop a spatial dataset of potential drain tile inlet locations in the non-contributing areas. The depressional areas within the HydroDEM were screened by their physical attributes including surface area, depth, and drainage area to filter the minor depressions that are not typically drained with subsurface features. If a depressional area had any area classified as cropland (cropland percentage >0) using the Minnesota Land Use Classification System (MLCCS) then it was put into a crop depression category. A point layer was generated for each crop depression that represents the lowest elevation value in the raw DEM. This point location was considered a likely drain tile inlet and a direct conduit of pollutant (phosphorus) loading to surface waters.

In addition to a dataset of potential drain tile inlet locations predicted from the hydrologically conditioned DEM, terrain analysis was completed using GIS (geographic information systems). These products include a raster of Stream Power Index (SPI) values, which provide a (relative) indication of the erosive power of overland and concentrated surface water runoff across the landscape. Also computed was a raster of potential soil yields from overland areas using the Revised Universal Soil Loss Equation (RUSLE2). A number of different data sources were used in the performance of the terrain analysis work including elevation data, rainfall frequency/duration data, land use/land cover, soils, rainfall-runoff (R-factor) values

and Carver County's culvert inventory. Priority management areas in the watershed were identified by analyzing and combining the SPI and RUSLE results to locate those areas where the most erosive overland flows and high sediment yields combine. It was assumed that areas having the highest soil erosion rates were also the areas that generated the greatest phosphorus load.

For the purpose of summarizing the results of the SPI and RUSLE analyses, subcatchment areas within each catchment were defined. Subcatchment areas are divided into 2 categories: Surface Overland and Crop Depression subcatchments. The category of Surface Overland Subcatchments refers to an area that drains to the location where the flow transitions from concentrated overland flow to in-channel flow. The outlet from the overland subcatchment area is defined as a "surface overland catchment pour point". A Crop Depression Subcatchment was used to summarize the SPI and RUSLE analyses for the crop depressional watersheds. A "crop depressional catchment pour point" is the location of the lowest elevation within the depression (i.e., tile outlet).

Once all of the required input variables were derived for RUSLE, the values were multiplied to determine a potential sediment yield for each (3 meter by 3 meter) raster cell in the project area. To determine the amount of sediment yielded at each raster cell that actually reaches the downstream overland subcatchment pour point, a Sediment Delivery Ratio (SDR) was applied. The SDR is computed as a function of the flow length between the source of sediment loading and the downstream point of interest (in this case the, the surface overland and crop depression catchment pour points).

Step 3: Field Reconnaissance

After identifying priority parcels through the desktop analysis, these areas were then set as priorities for guiding field reconnaissance work. Field maps were prepared with base data layers including aerial photos, catchment and subcatchment lines, parcel lines, ranked flowpaths, potential tile intake locations, wetlands and soils. During the field reconnaissance, SWCD staff verified existing site conditions as well as site constraints to determine potential BMP options as well as to eliminate non-feasible options from consideration.

Step 4: Cost/Treatment Analysis

After feasible BMP projects were identified, potential phosphorus reductions were calculated and preliminary cost estimates compiled. The projects were then ranked based on the cost per pound of phosphorus removal per year, over a 10 or 15 year life-cycle, depending on the BMP. The final value for the cost per pound of treatment includes construction and installation.

Treatment Analysis:

Modeling of the phosphorus loading in each catchment, before and after project installation, was completed using RUSLE2 and BWSR spreadsheet software, whenever possible. The phosphorus reduction estimates associated with the installation of each project should be considered as pollutant reduction to the waterbody. Some practices, such as wetland restorations, could not be modeled using this software. In these cases, pollutant reduction values from research of literature review were used to determine pollutant removal rates for the proposed projects. The studies researched (*National Pollutant Removal Performance Database, Center for Watershed Protection, Version 3, September, 2007*) identified phosphorus removals through wet detention time of approximately 40% - 60%, a 45% phosphorus reduction was used for this report. It is important to note that reported treatment levels are dependent upon optimal site selection and sizing. Not all locations and sizes will yield the same results.

Cost Estimates

Each project was assigned estimated costs for construction and installation based on a recent analysis of values for similar projects installed in Carver County over the past ten years. An annual cost per pound of phosphorus removal was then calculated for the 10 or 15-year life-cycle. In the final evaluation and ranking, the estimated costs to remove phosphorus are listed.

Step 5: Project Ranking

Potential projects are listed from most cost effective to least, based on cost per pound of phosphorus removed over the life-cycle timeframe. Cost estimates represent material and labor for each project installed on that particular site. Depending on complexity, additional project costs ranging from 25% to 50% of the construction cost must be added to account for project outreach and promotion, survey, design, construction oversight and operation and maintenance. The reported treatment levels are dependent upon optimal siting and sizing which would be achieved during the actual design stage of the proposed project.

The completed SWA reports achieve the *Prioritized, Targeted, and Measurable* results that BWSR is looking for in the 1W1P and WBIF process.

D. Measurable Goals

The measurable goals for the SWA projects are identified in the potential BMP project list as phosphorus reduction expressed in pounds per year. In the case of Eagle Lake, the actual outcomes can be measured to the load reduction requirements of the TMDL.

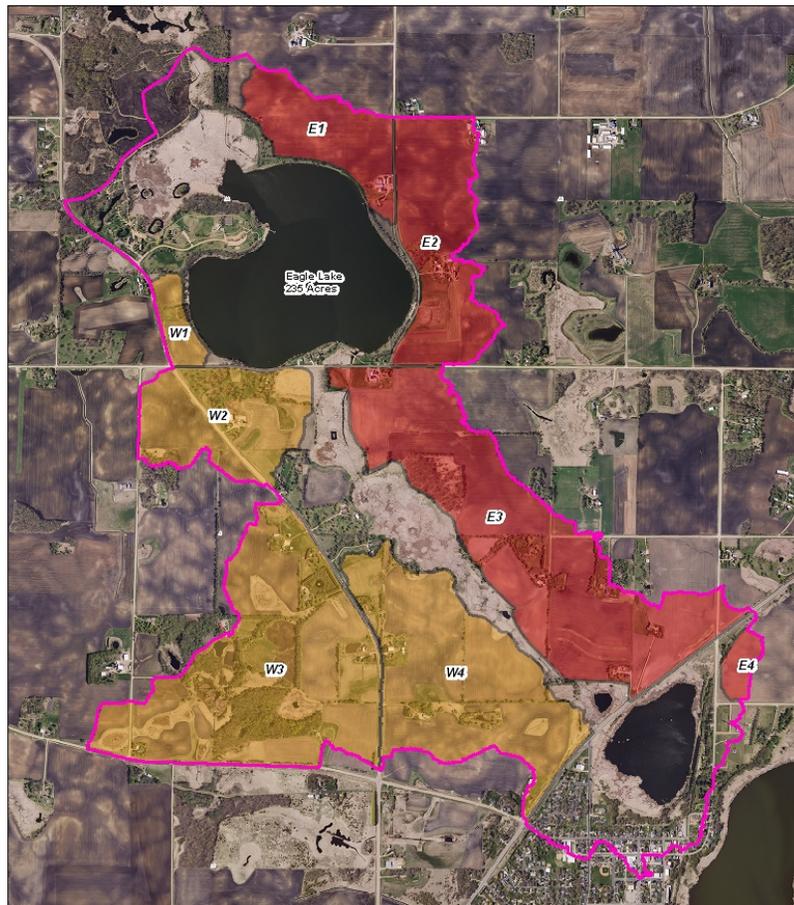
E. Implementation Actions

The focused list of potential BMP projects for the Eagle Lake SWA and Lake Waconia SWA are listed below. Maps and exact project locations are provided in the respective SWA reports.

Eagle Lake SWA Potential project and cost/benefit table (Top 30)

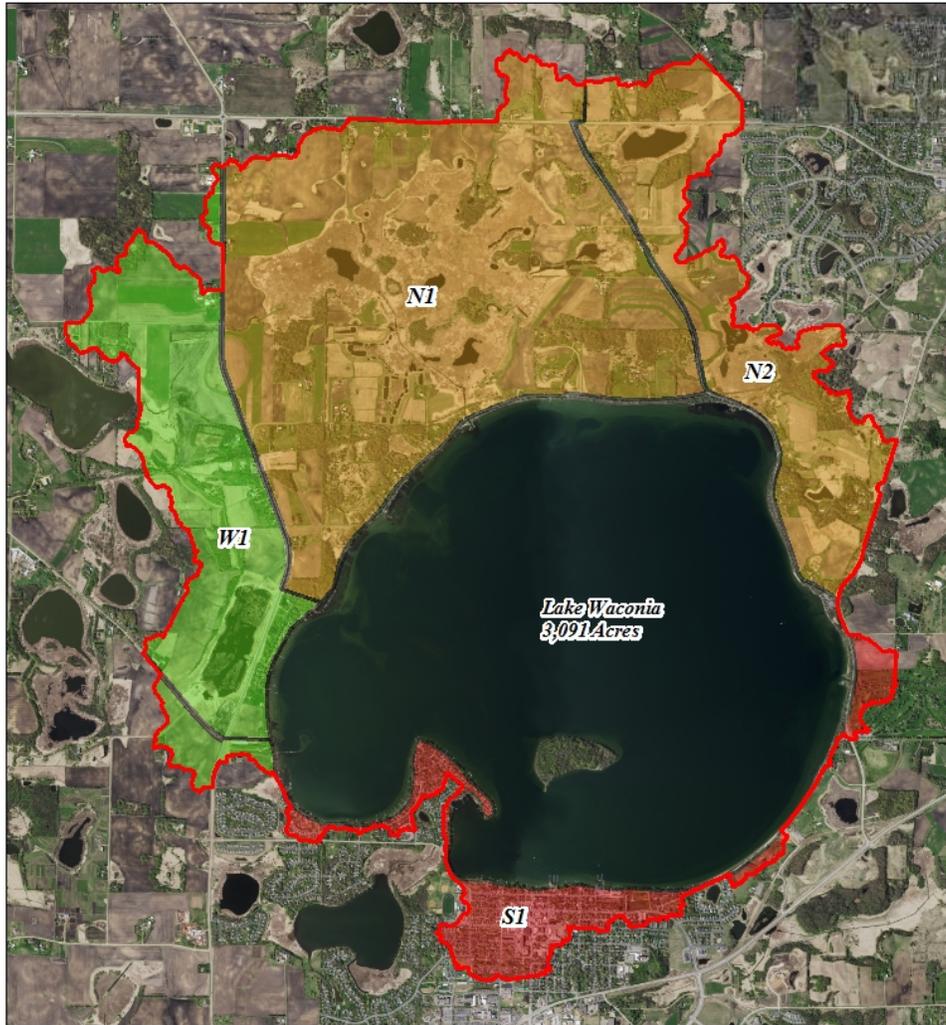
Rank	Feasibility Code	BMP/Project Name	Catchment	Qty	Units	P Reduction (lbs/yr)	Est. Project Cost	cost/lb/yr
1	A	Conservation Tillage	W-1	14.4	Acres	46.8	\$0	\$0.00
2	A	Conservation Tillage	E-3	18.4	Acres	45.8	\$0	\$0.00
3	A	Conservation Tillage	E-3	19.5	Acres	40.8	\$0	\$0.00
4	A	Conservation Tillage	E-3	16.1	Acres	32.7	\$0	\$0.00
5	A	Conservation Tillage	E-2	22.0	Acres	29.3	\$0	\$0.00
6	A	Conservation Tillage	E-3	14.5	Acres	23.2	\$0	\$0.00
7	A	Conservation Tillage	W-2	14.9	Acres	21.2	\$0	\$0.00
8	A	Conservation Tillage	E-4	14.5	Acres	19.7	\$0	\$0.00
9	A	Conservation Tillage	E-1	21.5	Acres	11.2	\$0	\$0.00
10	C	CRP Buffer Strip	E-3	1.0	Acres	30.5	\$2,900	\$9.50
11	A	Rock Inlet	E-2	1	Each	5.6	\$550	\$9.82
12	C	CRP Buffer Strip	W-1	2.1	Acres	49.1	\$6,090	\$12.40
13	A	Rock Inlet	E-1	2	Each	6.6	\$1,100	\$16.56
14	A	Rock Inlet	E-3	1	Each	3.4	\$550	\$16.76
15	A	Rock Inlet	W-4	1	Each	3.1	\$550	\$17.74

16	A	Rock Inlet	E-3	2	Each	6.0	\$1,100	\$18.33
17	B	CRP Buffer Strip	W-4	2.6	Acres	35.2	\$7,540	\$21.42
18	B	Grassed Waterway	W-4	240	Ln Ft	4.9	\$1,080	\$22.04
19	B	Grassed Waterway	W-1	250	Ln Ft	5.3	\$1,250	\$23.54
20	C	Grassed Waterways (3)	E-3	1,200	Ln Ft	17.1	\$5,400	\$31.57
21	A	Grassed Waterways (3)	E-1	1400	Ln Ft	19.0	\$6,300	\$33.17
22	B	CRP Buffer Strip	W-4	2.8	Acres	20.3	\$8,120	\$40.00
23	C	Grassed Waterways (3)	E-3	1,100	Ln Ft	11.9	\$4,950	\$41.59
24	C	CRP Buffer Strip	W-2	1.2	Acres	8.0	\$3,480	\$43.50
25	A	CRP Buffer Strip	E-1	2.0	Acres	13.0	\$5,800	\$44.61
26	B	WASCB	W-4	1	Each	8.5	\$5,500	\$64.70
27	C	Grassed Waterways (3)	E-3	1,450	Ln Ft	9.0	\$6,525	\$65.51
28	C	Grassed Waterways (3)	E-3	1,115	Ln Ft	6.6	\$5,017	\$76.00
29	C	WASCB	E-2	1	Each	7.1	\$5,500	\$77.46
30	B	CRP Buffer Strip	E-3	2.4	Acres	8.4	\$6,960	\$82.85



Lake Waconia SWA Potential project and cost/benefit table (Top 30)

Rank	Feasibility Code	BMP/Project Name	Catchment	Qty	Units	P Reduction (lbs/yr)	Estimated Cost (Materials & Labor)	Term Cost (\$/lbs. P/yr)
1	A	FS 3	N-1	3.0	Acres	47.7	\$2,802.00	\$5.91
2	A	FS 2	N-1	1.7	Acres	34.4	\$2,139.00	\$6.21
3	A	FS 4	N-1	2.5	Acres	37.7	\$2,547.00	\$6.75
4	B	FS 1	N-2	1.4	Acres	25.5	\$2,046.00	\$8.02
5	A	FS 3	W-1	6.3	Acres	50.9	\$4,485.00	\$8.80
6	B	FS 2	N-2	1.1	Acres	19.9	\$1,833.00	\$9.21
7	B	FS 5	N-1	3.6	Acres	31.7	\$3,108.00	\$9.80
8	A	FS 1	N-1	3.9	Acres	27.1	\$3,261.00	\$12.03
9	A	FS 7	N-1	2.1	Acres	17.1	\$2,343.00	\$13.70
10	B	WR 2	N-1	2.7	Acres	59.8	\$10,051.50	\$16.81
11	B	FS 9	N-1	0.6	Acres	8.4	\$1,578.00	\$18.79
12	A	GW 1	N-2	330	Ln Ft	14.4	\$2,707.50	\$18.80
13	A	GW 25	N-1	550	Ln Ft	18.9	\$3,664.50	\$19.39
14	A	GW 18	N-1	750	Ln Ft	22.7	\$4,534.50	\$19.97
15	A	FS 2	W-1	4.7	Acres	17.8	\$3,669.00	\$20.60
16	A	GW 23	N-1	420	Ln Ft	14.4	\$3,099.00	\$21.52
17	B	WR 3	N-1	1.5	Acres	31.0	\$6,997.50	\$22.57
18	A	GW 7	N-2	970	Ln Ft	24.2	\$5,491.50	\$22.69
19	C	Rock Inlet 1	W-1	1	Each	5.6	\$1,280.00	\$22.96
20	C	Rock Inlet 1	N-2	1	Each	5.6	\$1,280.00	\$22.96
21	A	GW 16	N-1	1,630	Ln Ft	35.6	\$8,362.50	\$23.49
22	A	FS 10	N-1	0.8	Acres	6.9	\$1,680.00	\$24.34
23	A	GW 6	N-1	510	Ln Ft	14.3	\$3,490.50	\$24.40
24	C	Rock Inlet 1	N-1	1	Each	5.1	\$1,280.00	\$25.22
25	A	GW 19	N-1	1,050	Ln Ft	22.8	\$5,839.50	\$25.61
26	A	GW 9	N-2	360	Ln Ft	10.5	\$2,838.00	\$27.02
27	A	GW 20	N-1	660	Ln Ft	13.8	\$4,143.00	\$30.02
28	A	GW 8	N-1	525	Ln Ft	10.9	\$3,555.75	\$32.62
29	A	FS6	N-1	1.1	Acres	5.6	\$1,833.00	\$32.73
30	A	GW 13	N-1	960	Ln Ft	16.3	\$5,448.00	\$33.42



LEGEND

- Lake Waconia SWA Watershed
- Lake Waconia North Catchments
- Lake Waconia South Catchment
- Lake Waconia West Catchment



F. Partner Involvement Process

Both the Eagle Lake SWA and the Lake Waconia SWA are located in the Carver County WMO watershed boundary. The SWCD and WMO have worked together on development of the SWA and have communicated about the WBIF process. Both of the SWA's are also specifically listed in WMO water plan implementation section of the most recent WMO water plan.

IV. COST-SHARE PROGRAM REQUIREMENTS

A. High Priority Erosion Problems

Whenever possible, State cost-share dollars will be used to maximize financial support for conservation programs. Often, state funding requires local match and the local funds can be stretched farther with state and federal programs. When this approach is applied to the state cost share program, it will provide applicants with cost-sharing up to 75% of the total project cost. These are practices that meet NRCS practice standards and specifications. These practices are very beneficial on Highly Erodible Land (HEL) and in areas with active gullies.

B. High Priority Water Quality Problems

A map of Carver County and the impaired waters appears on the next page.

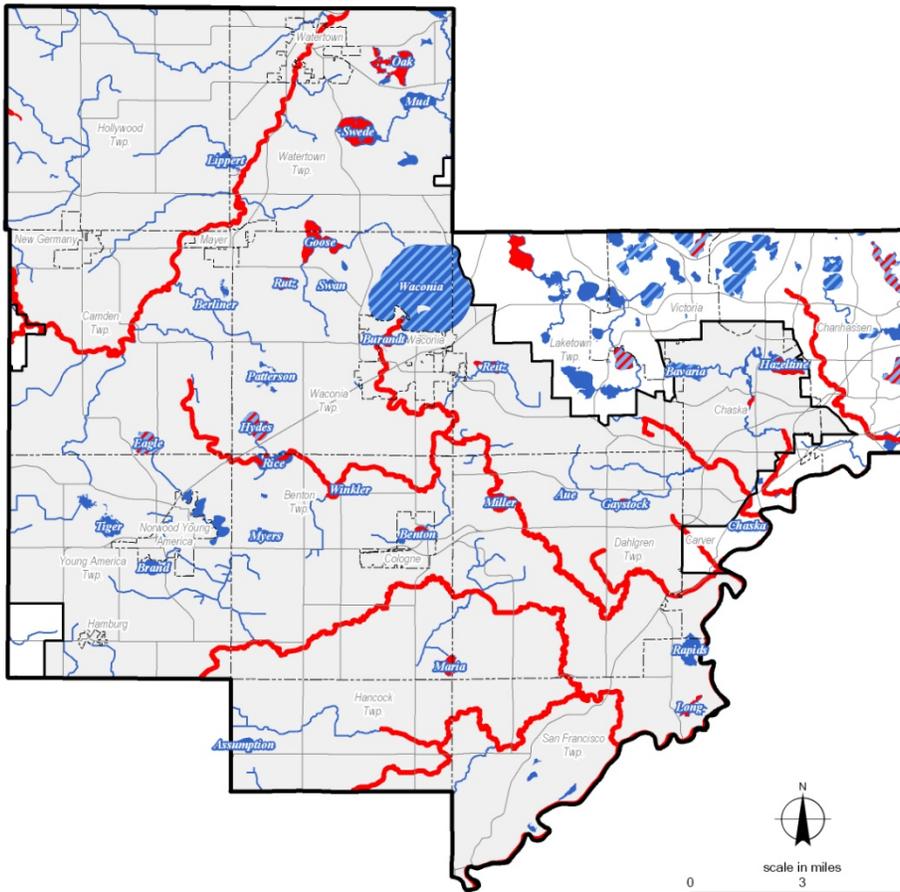
The Carver SWCD works closely with the Carver County Water Management Organization to identify and target sub-watersheds with water quality concerns. The Bevens and Carver Fecal TMDL's identify sub-watersheds with the highest priority. Sub-watersheds will be selected in order to identify and prioritize the best places for installation of BMP's. A sub-watershed analysis has been started for the watershed that drains to Lake Waconia, and another for the headwaters of Bluff Creek.

C. Special Projects

Special projects that do not easily fit under one of the approved practices that are listed in the NRCS handbook or State Cost Share Manual, may be considered by the Board for technical and/or financial assistance. If State cost share dollars are to be used, the practice must meet the minimum criteria as identified in the BWSR State Cost Share Manual.

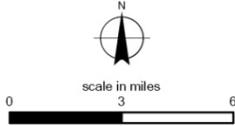
The SWCD will work with the WMO to identify and target projects and apply for grant funding through the Clean Water Fund grant. SWCD staff work closely with WMO staff to identify and prioritize projects as listed in the current Carver County Water Management Plan. SWCD staff are also working more closely with RPBCWD and LMRWD to identify potential best management practices and projects within those watersheds.

Carver County Impaired Waters



- Legend**
- Impaired Streams
 - Impaired Lakes
 - Excess Nutrients & Mercury
 - Excess Nutrients
 - Mercury
 - County Boundary
 - CCWMO Boundary
 - Municipal Boundaries
 - Major Roads
 - Lakes
 - Streams & Ditches

Carver County Water Plan 2010-2019
 Public Health & Environment Division
 Planning & Water Management Dept.



This map was created using Carver County's Geographic Information Systems (GIS), it is a compilation of information and data from various City, County, State, and Federal offices. This map is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

IV. BUDGET REQUIREMENTS



2020 Budget

Income

Intergovernmental County	\$524,075
Intergovernmental Local	\$35,000
Intergovernmental State	\$343,500
Charges for Services	\$18,000
Interest Earnings	\$5,000
Miscellaneous Revenues	<u>\$5,000</u>
Total Income	\$930,575

Expenses

District Operations Personnel Services	\$609,380
District Operations Other Services & Charges	\$57,500
District Operations Supplies	\$3,500
District Operations Capital Outlay	\$40,000
Project Expenses	<u>\$143,695</u>
Total Expenses	\$930,575