

2013



2013 ANNUAL REPORT

The mission of the Clearwater River Watershed District is to promote, preserve, and protect water resources within the boundaries of the district in order to maintain property values and quality of life as authorized by MS 103D.

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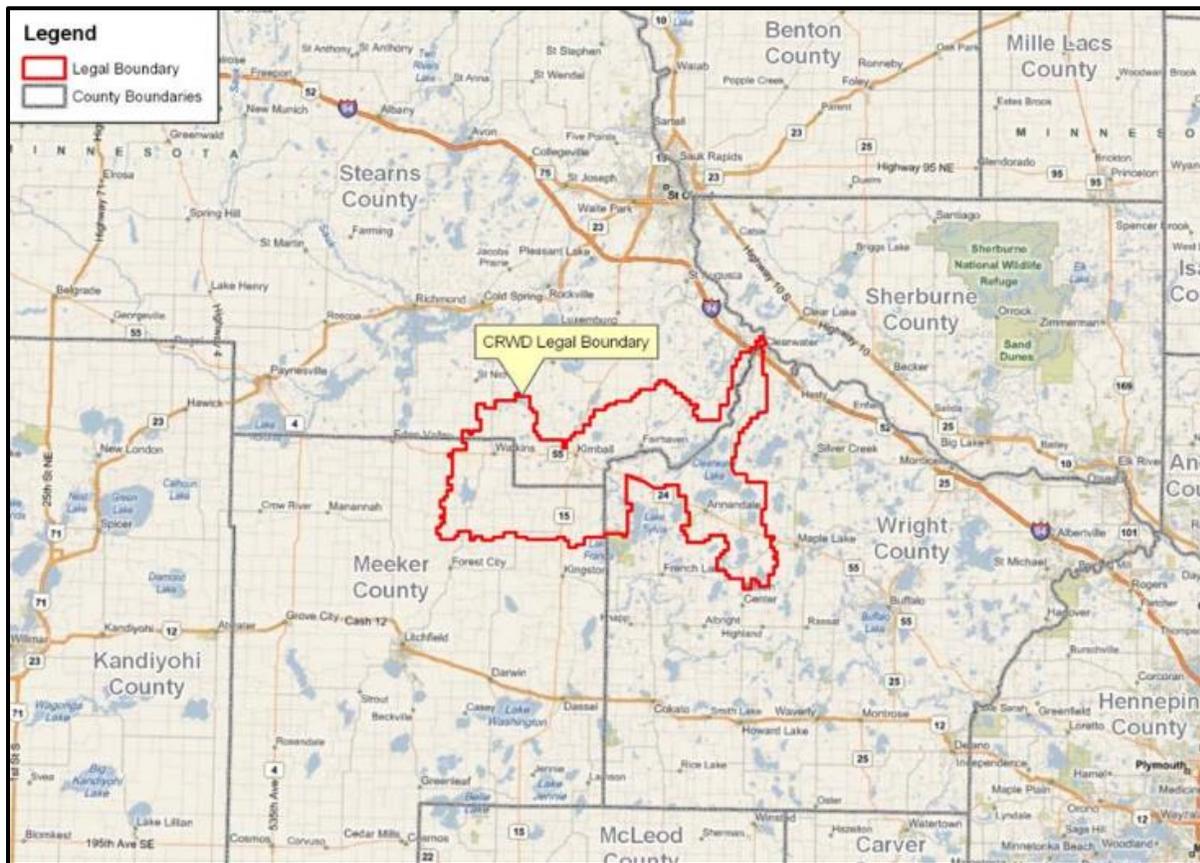
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1.0 Introduction

This report serves to satisfy the annual reporting requirements set forth in Minnesota Statutes Chapter 103D.351, which requires all watershed districts to file an annual report with the Minnesota Board of Water and Soil Resources. This report is a summary of the Clearwater River Watershed District's (CRWD) financial condition, work completed in the prior year, plans for the coming year, the status of all projects, and other matters affecting the interests of the CRWD.

1.1 Mission Statement

The Clearwater River Watershed District's mission is to promote, preserve and protect water resources within the boundaries of the District in order to maintain property values and quality of life.



1.2 History

The area encompassed by the Clearwater River Watershed District (CRWD) is rich in soil and water resources. The presence of those resources has encouraged the growth of two economic mainstays in this Central Minnesota territory – farming and tourism. Around these basics have grown the communities that support their needs. As population and industry grow, those priceless resources, which we often take for granted, may deteriorate.

In the 1960s and early 1970s, those who fished and enjoyed the waters of the Clearwater Chain of Lakes began to notice a decrease in the clarity of those waters, an increase in the number of rough fish (bullheads and carp), and an increase in the growth of algae on the surface of the water. Property

owners sought new tests from scientists interested in water quality. Those tests revealed that the nutrient content of the water had increased substantially since 1946 – phosphorus was coming into the lake at a rate almost double the rate considered damaging.

The lakes through which the Clearwater River flowed were aging much too quickly. That process, which is a natural phenomenon called "eutrophication," was being helped along at an alarming rate via pollution entering the river system from cities, farmland, private property, and industry.

Further reports concluded that the rate of phosphorus input could be reduced by as much as 50% if the cities of Watkins, Kimball, and Annandale, and the Modern Craftsmen's Milk Association of Watkins installed on-land waste treatment systems instead of discharging sewage and industrial effluents into the Clearwater River and Warner Creek. In addition, if the phosphorus input from all non-point sources (such as septic tanks, agricultural wastes, storm water runoff, and soil erosion) could be significantly reduced, water quality in the watershed could be restored to an acceptable level.

After a lengthy series of meetings and legal research, those concerned came to the conclusion that only a watershed district, with its powers of enforcement and its abilities to assess and to obtain federal and state funding, could tackle the pollution problem in the Chain of Lakes. The Clearwater River Watershed District was the culmination of years of hard work and the beginning of many more years of work aimed at undoing some of the damage done over a long period of time to one of our most important resources – our lakes and streams.

The Clearwater River Watershed District was established as a unit of local government on April 9, 1975, through citizen petition by order of the Minnesota Water Resources Board, acting under authority of Chapter 112, MSA (the Minnesota Watershed Act). Though the original thrust of the CRWD and its five-member Board of Managers was the improvement of water quality in the Clearwater River Chain of Lakes, its scope has grown into a complete program of water management within its boundaries.

1.3 Office Location, District Meetings, Other Information

Clearwater River Watershed District
75 Elm Street East, PO BOX 481
Annandale, MN 55302 ([Map](#))
Phone: (320) 274-3935
Fax: (320) 274-3975
Website: <http://crwd.org/>

Normal office hours are 8:00am to 4:00pm
Monday through Friday. Staff may be in the field
during normal office hours.



The Board of Managers holds its regular meeting the second Wednesday of the month at the Annandale Middle School in the School District's board room ([Map](#)) at 7pm. Work sessions are called on an as-needed basis, and are held the fourth Wednesday of the month at the Kimball City Hall ([Map](#)) at 7pm. Other special meetings may be held throughout the year as needed. All meetings are open to the public, and are subject to noticing requirements as laid out in MN Statutes 103D. Meeting notices and minutes are published in the Annandale Advocate (Annandale, MN) and the Tri-County News (Kimball, MN). Meeting agendas and minutes can be found on the District's website at: <http://crwd.org/>.

Much of the information presented in this report stems from other documents the CRWD creates during the normal course of business. When applicable, those documents are noted in the text. The District's website, <http://crwd.org/>, has these documents available for review online, along with other resources. For any further information, contact the District office at the information listed above.

2.0 Financial Condition

The CRWD is funded by a combination of ad valorem tax levy (based on property values within the District), special assessments, and grants. Funds raised by special assessment can only be used for the specific purpose they were levied for. The District budget and corresponding levies and special assessments are approved after public notice and hearing, as dictated by statute. This public hearing is normally held at the September regular meeting. A detailed budget is available for public review at the District office.

The District conducts an independent audit every year. The CRWD's audited financial statements are available for public review at the District's office during normal business hours, at the Annandale Public Library, and online at: http://crwd.org/audit_reports.html.

2.1 Budget Hearing Notice – 2013

NOTICE TO ALL CITIZENS OF THE CLEARWATER RIVER WATERSHED DISTRICT

Notice is hereby given that the Board of Managers will hold a public hearing on the proposed 2014 budget for the Clearwater River Watershed District as follows:

Date: September 11, 2013 Time: 7:00 p.m.

Place: Annandale Middle School, Upper Gymnasium, Annandale, Minnesota

All citizens of the Clearwater River Watershed District are invited to attend the public hearing. The board will vote to approve or disapprove the budget at the hearing.

GENERAL FUND	Budgeted Expenses
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General Government total	\$153,500
Advisory Committee	\$950
Grant Applications	\$5,000
Filter Strip Program	\$7,850
Lakescaping Program	\$2,300
Mississippi River (St. Cloud) Project	\$2,500
Education Program	\$5,450
Other Maintenance – Special Projects	\$1,500
Plan/Plat Review	\$700
Web Site	\$1,550
Other Special Projects	\$8,600
Transfers to Data Acquisition Fund	\$36,600
Transfers to CASH P#06-1 O&M Fund – for the Cedar Watershed Project	\$30,000
Transfers to CCM Riparian Fund	\$5,000
Total General Fund	<u>\$261,500</u>

Other Funds	Budgeted Expenses
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Augusta Bog Control O&M Fund	\$100
Clearwater/Grass Bog Control O&M Fund	\$2,000
Pleasant Lake Outlet O&M Fund	\$575
Data Acquisition Fund ⁺	\$36,600
School Section Lake Outlet O&M Fund	\$2,010
Clearwater Chain of Lakes (1980) O&M Fund*	\$253,380
CASH #06-1 O&M Fund ⁺ *	\$270,835
Cedar Lake AIS Project	\$16,100
Louisa & Marie AIS Project	\$15,100
CCM Riparian ⁺	\$5,000

Clearwater Lake Milfoil Project	\$37,100	
Lake Augusta Milfoil Project	\$3,555	
Kimball Stormwater PH II Project*	\$186,325	
Hidden River Sewer System Fund	\$20,340	Utility Billing Rate: \$160.00/quarter
Rest-A-While Sewer System Fund	\$5,650	Utility Billing Rate: \$175.00/quarter
Clearwater Harbor Sewer System Fund	\$41,200	Utility Billing Rate: \$125.00/quarter
Wandering Ponds Sewer System Fund	\$7,000	Utility Billing Rate: \$175.00/quarter
Total Other Funds	\$902,870	
Total All Funds	<u>\$1,164,370</u>	

+ denotes a fund or sub-fund receiving a transfer from the General Fund

* denotes a fund receiving grant funding for a project: \$111,160 for Cedar Watershed Protection & Improvement Project, \$73,875 for Kimball Stormwater Phase II Project, \$6,950 for Kingston Wetland Restoration Project and \$60,000 for Targeted Fertilizer Application Reduction Project (sub-projects under the Clearwater Chain of Lakes (1980) O&M Fund).

By order of the Board of Managers, Clearwater River Watershed District

3.0 Work Completed in 2013

Much of this information is located in existing District documentation. Where possible, those documents are noted. More information can be found on the District's website: <http://crwd.org/>.

3.1 Projects

3.1.1 Cedar Lake Watershed Protection & Improvement Project

The CRWD, in cooperation and partnership with the Minnesota Board of Water and Soil Resources (BWSR), the Minnesota Department of Natural Resources (DNR), Wright County Soil & Water Conservation District (SWCD) and local property owners, is implementing this project to improve water quality in the Cedar Lake Sub-watershed. In 2002 citizens began to notice severe algal blooms in Cedar Lake, a high value recreational lake with exceptional clarity and fisheries habitat. Those observations, coupled with a sharp rise in average summer phosphorus and chlorophyll-a raised a red flag on the future of the lake. Clearwater River Watershed District began an intensive monitoring program in 2003 to identify nutrient sources in order to protect Cedar Lake.



Through intensive lake and watershed monitoring, CRWD identified the major source of nutrients to the lake: three nutrient impaired shallow lakes (Swartout, Albion and Henshaw Lakes) in the upper watershed and impaired wetlands discharged excess amounts of soluble phosphorus. CRWD also identified a suite of in-lake and watershed BMPs to improve water quality in the impaired shallow lakes to protect Cedar Lake. Implementation of a select number of these BMPs began in 2007. A TMDL for the three upstream lakes was approved in 2009 and the Minnesota Pollution Control Agency (MPCA) approved a Watershed Wide Implementation plan in 2009. Since 2007, CRWD has implemented as many capital and programmatic BMPs as possible with current funding and landowner participation, but additional load reductions were needed to meet water quality goals in all the lakes.

This project targets reductions to the largest watershed sources of nutrient to Cedar and Swartout Lakes by installing iron sand and/or limestone filters to remove soluble phosphorus currently exported from degraded wetlands and lakes. The target is to size the filters to treat baseflow and the 1.25-inch event to provide the maximum cost/ benefit while preserving upstream hydrology. The project targets reductions from the largest watershed sources of nutrients to each lake, providing 80% of the necessary watershed load reductions to Swartout Lake (800 lbs/yr), and 40% of the necessary watershed load reductions to Cedar Lake (480 lbs/yr). The project is expected to provide an estimated 1,280 lbs. of nutrient removal per year, and should be complete by the end of 2015.

Project development and technical / engineering work were completed as part of this project in 2013. Work remaining to be completed includes further project development and technical / engineering, as well as eventual construction. Construction is slated to begin in 2014.

3.1.2 Kimball Stormwater Phase II Project

The CRWD, in cooperation and partnership with the MN BWSR, the MN DNR, the Minnesota Department of Health, Stearns County SWCD, and the City of Kimball, is implementing this project to treat stormwater runoff from the City of Kimball. Currently, the City of Kimball and surrounding area drains (mostly untreated) into Willow Creek, a designated trout stream and important park space for the area. The creek empties into the Clearwater River Chain of Lakes, and this water, left untreated, is detrimental to the health of the creek and the downstream waters due to high temperatures and excessive nutrients. Such factors can cause algal blooms, loss of habitat, and poor water quality.

To correct this problem, treatment basins will be constructed to treat this water, recharging shallow groundwater, and more closely mimic the areas natural hydrology. These changes will improve water quality and temperature in Willow Creek and reduce nutrient



loadings to downstream lakes. This project is Phase II of the CRWD's plan to reduce nutrient loading to sensitive and impaired downstream waters, and to protect high value recreational resources by managing stormwater from one of two urban areas within the watershed draining to the impaired waters. Phase II provides treatment for the 1.25 inch event for the remainder of the drainage areas to Willow Creek near the city (about 108 acres), while enhancing function for Phase I by allowing it to treat a higher volume from a smaller drainage area. The project is expected to provide an estimated 1,175 lbs. of nutrient removal per year, and should be complete by mid-2015. The project will be done concurrently and in cooperation with the City of Kimball while they upgrade their street design to provide an opportunity to optimize designs for both and minimize costs.

This project is being completed cooperatively between the Clearwater River Watershed District, the Minnesota Board of Water & Soil Resources, the Minnesota Department of Natural Resources, the Minnesota Department of Health, Stearns County Soil & Water Conservation District, and the City of Kimball.

Project development and technical / engineering work were completed as part of this project in 2013. Work remaining to be completed includes further project development and technical / engineering, as well as eventual construction. Construction is slated to begin in 2014.

3.1.3 Kingston Wetland Feasibility Study and Restoration Project

The CRWD, in cooperation and partnership with the MPCA, the MN DNR, Meeker County, and Meeker County SWCD, completed construction of the restoration project in the Kingston Wetland complex. This wetland is located four miles south of Kimball, to the west of State Highway 15. The project was designed to restore main channel dissolved oxygen concentrations in the Clearwater River and reduce the seasonal export of soluble phosphorus to impaired lakes while maintaining particulate phosphorus sequestering capacity, and improve stream and wetland habitat and ecology (see [2013 Water Quality Monitoring and TMDL Implementation Status Report](#), located at <http://crwd.org/>).



As part of construction, the CRWD built a low-flow meandered channel. This channel is designed such that high flows continue to access the wetland complex (protecting the hydrology and particulate phosphorus removal capacity of the wetland), while low-flows bypass the wetland. It is during low-flow conditions the dissolved oxygen

concentrations in the river were dropping below state standards, due to the sediment oxygen demand in the wetland. A limestone filter berm was placed at the outlet of the wetland to mitigate soluble phosphorus release from the wetland during low-flow conditions. A rock riffle pool was constructed to protect the hydrology of the system. The project targets the reduction of 1,970 lbs. of phosphorus from the system annually. More information on this project can be found on the District's website: <http://crwd.org/>.

Results from the first year of monitoring post-project indicate the dissolved oxygen concentrations in the Clearwater River below the wetland have improved dramatically, to the point the state standard is being met in conditions where there is low-flow in the river. Monitoring also indicates a reduction in phosphorus export from the wetland is being achieved. Remaining work to be completed includes: 1) continue intensive monitoring for three years post-construction, 2) publish applicable reports and 3) promote project to build partnerships (education & outreach). (see [2013 WQM and TMDL Implementation Status Report](#), pages 5-10 – 5-13, located at <http://crwd.org/>).

3.1.4 Streambank and Channel Stabilization Project

The purpose of this project, which began in 2010, is to stabilize the channel and banks of the Clearwater River. The CRWD has prioritized areas for restoration with extensive tree canopy which does not allow

for the growth of stabilizing ground vegetation. These areas are subject to sloughing and incision of the channel banks. The outcomes of the project are to stop soil loss from the bank area by restoring vegetation, stop soil loss from the channel by installing bank toe protection and grade control, and installing grade control structures that will aerate water.

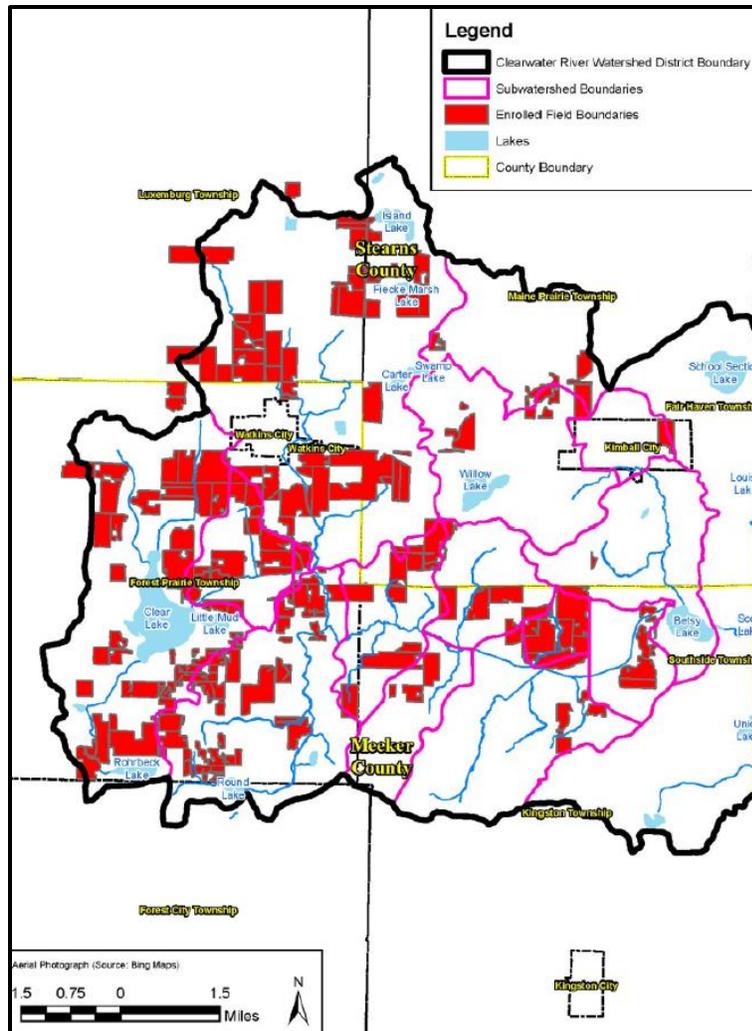


Since 2010, the CRWD has worked with the Conservation Corps of MN and IA (CCM). These work crews were responsible for thinning trees, building and installing brush bundles, fabricating grade control structures from felled logs, live stake harvesting and installation, seeding slopes, and installing erosion control fabric (when determined necessary). Since 2010, approximately 11,000 lineal feet of streambank and channel of the Clearwater River have been stabilized. The photos above show a representative of the streambank before and after work was completed.

The project has given the CRWD the opportunity to work with willing landowners along the Clearwater River. CRWD plans to continue working with additional landowners to continue this project with the CCM in future years.

3.1.5 Targeted Fertilizer Application Reduction Project

Using grant funds secured in 2011 through the MPCA, this project has a goal of enrolling up to 16,000 acres in the target watershed in a gridded soil testing and GPS fertilizer application project. The project includes systematic soil tests to determine nutrient concentrations and the proper amount of fertilizer to be applied in each field. The fertilizer is applied using GPS to apply the correct amount of fertilizer in each grid of the fields based on the results of the soil tests.



The goal of the program is a 10% reduction in fertilizer application rates on selected priority cropland in the District, resulting in a potential 3,200 lbs. annual reduction of phosphorus load in the watershed tributary to Lake Betsy. It is estimated that the program could potentially translate into a 10% to 50% reduction in phosphorus runoff from the watershed.

To date, ~9,500 acres have been enrolled in the program, representing 60% of cropland in the watershed tributary to Lake Betsy (see figure above), with an additional 8,000 acres scheduled for enrollment in 2014. (see [2013 WQM and TMDL Implementation Status Report](#), pages 5-6 – 5-9 located at <http://crwd.org/>).

This project recently received an Environmental Initiative Award in the Natural Resource category. The project was recognized for its unique,

ongoing partnership with local agricultural co-ops and local farmers to protect lakes and streams while supporting farmers through optimized fertilizer use. Check out the press release at the District's website to learn more: http://crwd.org/news_articles/June%205,%202014.html.

3.2 Programs

3.2.1 Annual Project Inspection Program

District staff completed their annual project inspection program and submitted the Project Inspection Report to the Board of Managers on June 12, 2013. The annual project inspection program seeks to ascertain the operational status of all projects the District owns, operates and/or maintains. At a minimum, District staff conducts on site visual inspections of the various components making up an individual project and makes recommendations on any actions needed to maintain operational effectiveness of the project. Copies of CRWD Project Inspection Reports can be found online at http://crwd.org/other_publications_reports.html.

3.2.2 Education and Outreach Program

The District's Education and Outreach Program is a collection of several activities, events, publications, etc. that fall under various projects and programs of the District. While no formal purpose statement has been established for the District's Education program, it can be thought of as a means to "get the word out" so recipients: 1) know what the CRWD is, 2) learn what the CRWD is doing, and why it matters and 3) understand how to join in protecting, promoting and preserving our water resources. The program also serves as a means for the District to discover citizen concerns and establish new methods to accomplish District goals.

In 2013, the CRWD produced several news articles, reports, and other publications, along with the bi-annual District tour. Several advisory committee meetings were held. The CRWD manned a booth at the 2013 Annandale Business Expo. Staff attended several lake association meetings, met with countless individuals, attended meetings with other local government units, and served as part of the Mississippi River (St. Cloud) Watershed Project's Civic Engagement Committee. Engineering staff published a poster and gave a presentation on two of the District's current projects at the 2013 Water Resource Conference. The Board of Managers also held discussion on how to improve the District Education program.

3.2.3 Incentive Program

As part of the District's multi-faceted approach to water resource management, a targeted incentive program has been developed to implement best management practices (BMPs) throughout the watershed. For more information on the District Incentive program, please visit <http://crwd.org/incentives.html>.

In 2013, the District finalized two incentive agreements, resulting in 13 acres enrolled in the District's no-tillage to spring incentive for one year, and 2.5 acres in seeded buffer for seven years.

3.2.4 Water Quality Monitoring Program

The District has been conducting water quality monitoring in some fashion since its inception. The District's annual water quality monitoring program is the backbone of the District's water management plans, programs, and projects. The District monitors water quality in order to establish trends, set goals, determine targeted implementation of programs and projects, and evaluate their effectiveness. Most of the water quality data collected by the District is submitted to the Minnesota Pollution Control Agency (MPCA) for inclusion in their online environmental database.

The District produces an annual water quality monitoring report. These reports can be found online at http://crwd.org/water_quality_monitoring_reports.html. Below is a copy of the executive summary from the 2013 Water Quality Monitoring and TMDL Implementation Status Report.

Executive Summary

This report was prepared by Wenck Associates, Inc. (Wenck) for the Clearwater River Watershed District (CRWD) to provide a description of the District's monitoring program, summarize and analyze 2013 monitoring data, and provide a progress report of TMDL Implementation activities in the District.

Significant findings in this report include the following:

1. Annual precipitation was below normal overall at monitored locations for the year in 2013 and ranged from 24.35 to 28.87 inches. Precipitation between February and June was above normal, July to September precipitation was far below normal.
2. Runoff over the District was below normal overall in 2013, 3.9 inches (compared to 7.9 inches in an average year). Runoff was highest during a period following a later than normal snowmelt in late April combined with above normal precipitation in April through June. Runoff was below normal during most of the period from July through September, when very little precipitation fell and many stream channels stopped flowing or dried up entirely.
3. Phosphorus loads from the Clearwater River were lower than those observed in recent years due to decreased runoff in 2013. The phosphorus load from the Clearwater River was estimated at 2,115 lbs at CR 10.5 (Grass Lake Dam). The upper watershed load measured at CR28.2 was 4,984 lbs. While this was a reduction from previous year's loads, it was still higher than the goals established for downstream Lake Betsy (2,280 lbs) and Clearwater Lake (4,000 lbs).
4. Flow-weighted average phosphorus concentrations were 24 µg/L and 252 µg/L at CR 10.5 and CR28.2, respectively. The concentration at CR10.5 was similar to concentrations seen in recent years, which demonstrates the good water quality in Clearwater Lake. The concentration observed at CR28.2 was lower than recent years and demonstrates a potential reduction in the export of phosphorus from the Kingston Wetland following the restoration of the original stream channel in 2013.
5. Phosphorus loading at Warner Creek station WR0.2 was 529 lbs in 2013, which was similar to recent phosphorus loads at the site, with the exception of 2011, when the load was far greater. Phosphorus concentrations were similar to 2012 and are far lower than elevated concentrations observed at the site from 2009 to 2011.
6. Ortho-phosphorus made up a large percentage of total phosphorus at monitoring stations downstream of some large wetland complexes in 2013, especially at County Ditch 20 near Watkins and the tributary stream north of Clear Lake. This indicates that the export of soluble phosphorus from the wetlands contributes a significant portion of the phosphorus load at these locations during periods of normal or lower than normal runoff, as experienced in 2013. The District should continue to include components to reduce soluble phosphorus in implemented phosphorus reduction projects.
7. With the exception of the 11 lakes that are impaired in the District, the water quality of CRWD lakes is generally good and has generally improved or remained stable in the majority of the lakes in the District in recent years. While phosphorus concentrations remained above TMDL goals in several lakes in the District in 2013, phosphorus concentrations were generally improved from recent years in most lakes, most notably in Caroline, Louisa, Swartout, and Henshaw Lakes. Water clarity was extremely good in 2013 as the highest Secchi depths ever observed were measured in nine of the monitored lakes in 2013.
8. Lake monitoring efforts conducted in 2013 confirm the impact of internal loading of nutrients in some District lakes, as evidenced by monitoring data showing high bottom phosphorus concentrations that typically increase steadily throughout the summer, and periods of anoxia (dissolved oxygen concentrations < 2.0 mg/L) in some lakes. Monitoring data indicates that lakes especially susceptible to internal nutrient loading include Albion, Swartout, Henshaw, Augusta,

Caroline, Louisa, Marie, Betsy, Scott, and Union. CRWD will continue to evaluate potential actions identified in the Watershed Restoration and Protection Plan (TMDL Implementation Plan) that address internal loading in future years.

9. Dissolved oxygen (DO) monitoring conducted in the District identified and confirmed sites with DO impairments. As observed in past years, most DO impairments were observed at sites downstream of large wetland complexes. This confirms conclusions drawn in previous years, that wetland sediment oxygen demand is the cause of low DO at these locations.
10. The completion of the Kingston Wetland Restoration project, which restores native hydrology to the system, resulted in increased DO concentrations downstream of the Kingston Wetland at a location that was impaired for DO during most of the year in previous monitoring years. DO in the impaired reach met state standards for most of the season.
11. Continued diagnostic and effectiveness monitoring as part of Cedar Lake Project #06-1 showed that the watershed phosphorus load in 2013 to Cedar Lake of approximately 773 lbs was below the project goal of 1,000 lbs. Summer average phosphorus and Chlorophyll-*a* concentrations in Cedar Lake were similar to previous years and are meeting minimum water quality standards established by the Minnesota Pollution Control Agency (MPCA). However, summer average phosphorus concentrations remain above the goal of 20 µg/L established through Project #06-01, indicating that additional load reductions, additional actions, and time are necessary to meet lake water quality goals. Water clarity was similar to previous years in 2013 and was good overall except for periods following algal blooms in early summer.
12. The CRWD conducted rough fish removal in Segner Pond in 2013, removing close to what was removed in 2012, approximately 12,000 lbs, of carp in May and early June. Rough fish removal efforts will continue in the District in 2014.
13. The results of water quality monitoring and aquatic vegetation surveys conducted in Swartout, Albion, and Henshaw Lakes in 2013 continue to support the connection of lake water quality to the status of fish communities in these lakes. The reduction of rough fish populations through natural winterkill combined with the aggressive management leads to clear state shallow lakes in this system, as observed in Swartout Lake in recent years and Henshaw Lake in 2013. The response of the water clarity and aquatic vegetation coverage in Henshaw Lake to an expansive fish kill that occurred in early 2013 demonstrates how shallow lakes in the clear state foster rooted aquatic plant growth which, coupled with lower rough fish populations, stabilizes bottom sediments which can reduce internal loading and improve in lake water quality and reduce nutrient export to downstream lakes.
14. In 2013, the CRWD made progress towards water quality goals established in the Watershed Restoration and Protection Plan (WRPP/ TMDL Implementation Plan) by:
 - implementing additional monitoring tasks to fill data gaps identified in the TMDL. Collection of these data assist in achieving grants, final design of capital improvement projects and improved targeting of BMPs;
 - beginning work on two projects for which grant funding was received to protect and improve water quality in the Cedar Lake sub-watershed;
 - completing construction of the Kingston Wetland Restoration project;
 - continuing work on previously implemented projects, including:
 - completing design and permitting for the Phase II Kimball Stormwater Project
 - enrolling participants, conducting soil testing and GPS fertilizer application, and monitoring for the targeted fertilizer application reduction project in the upper watershed which is funded in part by a federal 319 grant,
 - conducting streambank restoration and stabilization project on the Clearwater River with the Minnesota Conservation Corps

- Ongoing implementation of agricultural cost share BMPs
 - Rough fish management (removals and migration barriers)
 - AIS work with lake associations
 - continuing project development towards securing grant funding to implement projects identified in the WRPP:
 - Watkins impoundment, and
 - Lake Betsy hypolimnetic withdrawal
15. In 2014, the CRWD plans to continue progress towards TMDL goals by:
- continuing monitoring water quality, hydrology and hydraulics to track water quality trends, project effectiveness and improve efficiencies of implementation projects,
 - conducting rough fish removal and migration management as necessary
 - continuing to implement the Soil Testing and GPS Fertilizer Application Project by enrolling landowners and continuing follow-up monitoring
 - continuing to monitor the Kingston Wetland Restoration Project,
 - constructing the Kimball Phase II project,
 - completing design and construction of the two components of the Cedar Lake Improvement Project,
 - identifying additional projects and continuing to apply for grant dollars to fund other CRWD projects, and
 - continuing education and outreach efforts, focusing on social media and schools

3.3 Partnerships

The District seeks to work with other groups, both public and private, in promoting, protecting, and preserving the water resources of the District.

Partners	Purpose	Notes
Lake Associations	Work together to address water quality concerns	Bass Lake Improvement Association, Cedar Lake Conservation Club, Chain of Lakes Association, Clear Lake Property Owners, Clearwater Lake Property Owners, Lake Augusta Association, Pleasant Lake Improvement Association
Other Public Entities	Work together to address water quality concerns	State Agencies (DNR, BWSR, MPCA, etc.), Soil and Water Conservation Districts, counties, municipalities, townships, etc.
Mississippi River (St. Cloud) Watershed Project	Fulfil MPCA's 10 yr. intensive watershed approach	CRWD is an active partner in this project; http://www.pca.state.mn.us/index.php/water/water-types-and-programs/watersheds/mississippi-river-st.-cloud.html

4.0 Work Plans for 2014

Most of these work plans are summarizations of more detailed plans, usually taken from engineer's reports, inspection reports, grant work plans, the District's [Watershed Management Plan](#) and Board of Managers' Strategic Planning sessions. If you would like more detail, contact the District office.

Project / Program	Plan	Notes
CCM Streambank Restoration	Continue bank & channel stabilization; perform vegetation management on berms of wetland treatment systems and isolation unit	20 crew days awarded
Cedar, Albion, Swartout, Henshaw P#06-1	Examine Segner Pond limestone berm (repair as needed); rough fish seining (as needed); maintain fish barriers; treat curly-leaf pondweed as needed; implement capital improvement project to treat soluble phosphorus entering Cedar and Swartout Lakes	Curly-leaf pondweed treatment conducted by Cedar Lake Conservation Club (following DNR permit); two capital improvement projects are TMDL Implementation Projects
Cedar Lake Aquatic Invasive Species (AIS)	Ongoing treatment of AIS on an as-needed basis	Treatment done by Cedar Lake Conservation Club (following DNR permit)
Clearwater Lake Milfoil Treatment	Ongoing treatment of Eurasian Watermilfoil on an as-needed basis	Treatment done by Clearwater Lake Property Owners Association (per DNR permit)
Clear Lake North V- Notch Weir Retrofit	Project development – investigate feasibility to retrofit north v-notch weir to include soluble phosphorus treatment element	Similar to Clear Lake South Notch Weir
Clearwater River Chain of Lakes (1980) Restoration Project	Operation and maintenance on sub-projects' components; includes rough fish removal	Refer to project inspection reports on District's website for more information on work; rough fish trap managed by commercial fisherman
District Governance	Review of governance of District to ensure maximum effectiveness	No formal plan has been developed to accomplish this
District Rules and Regulations	Consider undertaking a formal process to review and update these Rules & Regulations	Formal process has not been developed
District Annual Project Inspections	Conduct inspections of components of each individual District project on the ground; provide recommended actions to maintain operational effectiveness for each project	Normally conducted in the spring of each year; project inspection report created to highlight results of inspections
Education & Outreach	Attend various civic groups' and LGUs' meetings; attend Annandale Business Expo; install signage for Kimball Stormwater projects; consider another watershed tour (if in demand); consider hiring education consultant to shape education plan	This plan is not formalized, and is subject to change; could include expansion to cover legislative relationships, social media and broader target audiences
District Incentive Program	Consider undertaking a formal process to review and update this program	Formal process has not been developed

Project / Program	Plan	Notes
Engineering Intakes	Develop plan to improve tile intakes with engineering solutions to lower amount of pollution export while maintaining drainage	Included as a priority project in current Watershed Management Plan
Kimball Stormwater Treatment	Major construction of phase II underway and planned to be completed in 2014	\$738,750 received from MN BWSR via Clean Water, Land and Legacy Amendment; treats majority of stormwater from city
Kingston Wetland Feasibility Study & Restoration	Construction is complete; continue monitoring project for effectiveness; deliver education activities.	Monitoring includes site visits, water chemistry analysis, develop education activities
Lake Augusta Milfoil Treatment	Ongoing treatment of Eurasian Watermilfoil on an as-needed basis (discussion on amending this project to allow for AIS treatment)	Treatment done by Lake Augusta Association (following DNR permit)
Lake Betsy Internal Load Reduction	Develop and implement a project to reduce the internal load in Lake Betsy	Included as priority project in Watershed Management Plan
Lakes Louisa & Marie AIS	Ongoing treatment of AIS on an as-needed basis	Treatment done by Chain of Lake Association (following DNR permit)
Mississippi River (St. Cloud) Watershed	Continue partnership through completion of Watershed Restoration and Project Strategies (WRAPS) Report; investigate future partnership regarding civic engagement	WRAPS Report will be completed in 2014
Special Project	As opportunities / needs arise, the District may implement (or may be petitioned to implement) a special project. In either case, work plans are then developed.	MN Statutes 103D govern the steps the District must take to implement a special project, including petitioned projects
Targeted Fertilizer Application Reduction	Continue partnership with agricultural cooperatives in enrolling producers in program; soil-testing and GPS-aided application; continue civic education	Around 9,500 acres have been enrolled in the program so far; educational activities to be developed
Theil Creek Stabilization	Assist Stearns County SWCD as this project moves into next phase	Work is focused on hydrological assessment
Upper Watershed Soluble 'P' Abatement	Project development - investigate feasibility to implement several soluble phosphorus treatment BMPs at locations in District	Locations could include outflows from wetland, tile lines, or drainage ditches
Water Quality Monitoring	Conduct lake, stream and additional supplemental monitoring to establish trends, set goals, determine targeted implementation of programs and projects, and evaluate their effectiveness	Number of sampling sites, frequency, the type of monitoring and supplemental activities are determined annually in the early spring
Watkins Stormwater Improvement	Develop and implement a project to treat stormwater in the area around the City of Watkins	Included as a priority project in current Watershed Management Plan

5.0 Status of all District Projects and Programs

This information is compiled on a yearly basis as part of the District's Inspection Program. Projects are inspected at various times throughout the year, with all District projects undergoing inspection annually in the spring, dependent on weather conditions. The 2013 Project Inspection Report is available for review on the District's website at: http://crwd.org/other_publications_reports.html.

5.1 TMDL Implementation Projects

The Clearwater River Watershed District was one of the first Watershed Districts in the state to complete its Total Maximum Daily Load (TMDL) Implementation Plan. The CRWD has undertaken several water quality projects that were listed as part of this plan to reduce pollution loads to the impaired waters of the District. An explanation of each project and its current status is listed below.

Please note each project is partially funded by grants from state agencies, and as such also undergoes state and/or federal reporting requirements.

5.1.1 Clearwater River Channel Stabilization (CCM Riparian) Project



This project began in 2010 and is located in the upper reaches of the Clearwater River near Meeker County Highway 17. The purpose of the project is to provide vegetated slopes and ground cover, as well as stream bank toe and head cutting protection, to targeted sections (private land) of the Clearwater River where the stream banks are eroding. To combat this erosion problem, three different stages of the project are performed along the target sections.

1. Trees along the streambank are thinned to allow sunlight to reach the ground. The felled trees and the corresponding brush were reused as slope breaks, toe protection, and grade controls. The brush was formed into bundles and staked in place to act as toe protection along the water's edge.
2. Willows on-site are harvested and planted into the streambank to create root systems that will anchor the streambank and help prevent erosion.
3. The project is re-evaluated after a set time to see if more thinning, placing of slope breaks and bundles and plantings are needed.

This project is a grant-funded project with the Conservation Corps of Minnesota (CCM) through the Minnesota Board of Water & Soil Resources (BWSR). The District provides materials and guidance, the CCM provides work crews, and landowners agree to allow work to be completed on their property. Contact the District if you are interested in have this type of work done on your property.

5.1.2 Targeted Fertilizer Application Project (expansion of the Fertilizer Field Trial Project)

HISTORY: The Nonpoint Source Pollution Abatement Project was added to the District's Chain of Lakes Restoration Project in 1985 and later extended to 1993. This project aimed to institute farming practices

that would protect the public from water quality degradation while at the same time reducing soil loss, lowering farm operating costs, and increasing profits. The infrastructure developed to implement this was the Tri-County Conservation Project (TCCP), composed of the Stearns, Meeker, and Wright Soil and Water Conservation Districts, along with CRWD. To demonstrate conservation tillage practices, a no-till drill was purchased. Also, tillage demonstration plots were used. A local farmer group was formed to provide grass roots input on implementing conservation practices through the project. Critical erosion and nutrient export areas were identified using a computer model. Runoff and groundwater monitoring, including pesticide impacts, was conducted. The project, with a budget of some \$1.5 million, worked through cooperation among individual farms, the agri-business community, the TCCP member soil and water conservation districts, Minnesota Pollution Control Agency, Board of Water and Soil Resources, Agricultural Extension Service, U.S. Soil Conservation Service, Environmental Protection Agency, and others.

NOW: Agricultural runoff remains a significant source of polluting nutrients to waters of the CRWD. In response to this, the CRWD began a pilot project aimed at demonstrating the feasibility of a large-scale targeted fertilizer application project. Known as the Fertilizer Field Trail, the focus was on demonstrating the benefits received by participating farmers and the District's surface waters by assisting farmers in changing from standard fertilizer application technology to variable fertilizer application technology.

Many farmers apply fertilizers to their fields at standard rates, even though field fertilizer requirements vary significantly throughout a given field. By testing the soil throughout a given field to determine fertilizer requirements, the farmer can apply the fertilizer at variable rates throughout a field. This results in a tested field receiving the correct amount of fertilizer needed. Benefits achieved are a significant monetary savings for the farmer, due to increased yields and decreased purchase of fertilizer, and a decrease in phosphorous entering the District's waters, since no excessive fertilizer is applied and washed out of the field during rain events.

Based on the success of the pilot project, the District applied for and received an EPA Section 319 grant (through the Minnesota Pollution Control Agency, MPCA) to increase this project over a larger area. Now known as the Targeted Fertilizer Application Reduction Project, this project is focused on enrolling up to 16,000 acres into this systematic soil testing program from the upper watersheds of Lake Betsy. The result of this project is estimated to be about 17% of the required load reduction for Clear Lake from agricultural sources. This project will have a trickle-down effect for all the waters downstream of Clear Lake and Lake Betsy.

5.1.3 Kingston Wetland Feasibility Study and Restoration

HISTORY: The Kingston Wetland Treatment System is the major facility of the Chain of Lakes Restoration Project and contains nearly 300 acres of wetland. Over 19,000 feet of diversion channels were constructed, with more than 150 distribution pipes installed along the length of the channel. The construction cost of this project was approximately \$394,000 and it was completed in 1985. The system was designed to remove approximately 5,600 pounds of phosphorus annually.

NOW: The District was awarded an EPA Section 319 grant (through the MPCA) in 2010 for the Kingston Wetland Feasibility Study and Restoration Project. This project seeks to improve dissolved oxygen (DO) concentrations in a DO impaired reach of the Clearwater River, to reduce the seasonal export of soluble phosphorus to downstream impaired lakes, and to improve stream and wetland habitat, as well as an annual 1,970 pounds reduction of soluble phosphorus being exported downstream. The project was slated to begin in early 2011, but was postponed due to contracting issues. Water quality sampling began in spring 2011 for this project and continued through that year. Project development continued throughout most of that year

Construction was completed in spring 2013. Post-construction monitoring is currently underway. Civic education components will be developed to inform the public on the project, with delivery to begin in 2014.

5.1.4 Kimball Stormwater Phase II Project

The District received \$738,750 from the MN Board of Water and Soil Resources as part of the Clean Water, Land, and Legacy Amendment. The project focuses on the installation of infiltration basins on the west side of the City of Kimball to allow stormwater treatment of another 108 acres while increasing the effectiveness of Phase I by allowing it to treat a higher volume from a smaller drainage area. Work will be done concurrently and in cooperation with the City of Kimball while they upgrade their street design. Major construction is slated to be completed in 2014.

5.2 Cedar, Albion, Swartout, Henshaw Project #06-1

The Cedar #06-1 project was implemented in 2006 to mitigate the effects of nutrient-rich waters in the Cedar Lake sub-watershed. This watershed is made up of four lakes: Henshaw and Albion lakes flow into Swartout Lake, and Swartout flows into Cedar Lake. From Cedar Lake, water flows into Clearwater Lake and down the Clearwater River into the Mississippi River. The project is made up of three separate parts, listed below.

The CRWD is in the process of implementing the Cedar Lake Watershed Protection & Improvement Project, an amendment to #06-1. The project targets reductions to the largest watershed sources of nutrient to Cedar and Swartout Lakes by installing iron sand and/or limestone filters to remove soluble phosphorus exported from degraded wetlands and lakes. The project is designed to treat baseflow and the 1.25-inch event to provide the maximum cost/ benefit while preserving upstream hydrology. The project provides 80% of the necessary watershed load reductions to Swartout Lake (800 lbs/yr), and 40% of the necessary watershed load reductions to Cedar Lake (480 lbs/yr). The project should be complete by the end of 2015.

5.2.1 Rough Fish Mitigation Barriers

Rough fish mitigation barriers are placed at three separate points on the streams connecting the four lakes. One is located at the outlet of Henshaw Lake, another at the inlet of Swartout Lake from the Swartout WMA, another at the outlet of Swartout Lake, and the final one below the



wetlands between Swartout Lake and Cedar Lake. The fish barriers stop the movement of rough fish, which cause nutrient release in the bottom sediments of the lakes.

These fish barriers continue to prove quite effective at controlling the rough fish population. The barriers were inspected and found to be in good condition.

5.2.2 Rough Fish Removal

Rough fish removal occurs on Henshaw and Swartout lakes. Carp cause a great deal of phosphorous



movement within the sub-watershed due to their stirring up of bottom sediments rich in phosphorous. Carp can also cause a lake's ecological balance to tip due to their interruption of the food chain and their foraging method causing a loss of beneficial aquatic vegetative plants. By removing the carp, the bottom sediments are not disturbed and the phosphorous remains trapped in the sediments instead of the water column, leading to increased water quality. This has been especially beneficial in Swartout Lake, which has seen dramatic

improvements in water clarity due to the removal of carp from the lake.

Carp seining continues on an as-needed basis, with seining in the winter months being the preferred method. Open water seining may be conducted if winter conditions are not favorable. There was no seining conducted in 2012 or 2013.

5.2.3 Segner Pond

The Segner Pond treatment system uses a large sediment basin and a limestone berm to remove incoming sediment and phosphorous from the flows of Henshaw, Albion, and Swartout lakes before entering Cedar Lake. The system also has a fish barrier at the inlet to the pond to halt the movement of rough fish, such as carp.



A temporary fish trap was operated at this site, and approximately 10,000 lbs. of rough fish (primarily carp) were removed. Limestone was added to the berm to repair breaches/low spots. Both activities will continue on an as-needed basis.

5.2.4 Curly-leaf Pondweed Treatment

The treatment of Curly-leaf Pondweed in Cedar Lake falls under this project. Treatment is conducted annually by the Cedar Lake Conservation Club, which develops a treatment program and undergoes permitting through the Minnesota Department of Natural Resources. The District provides fiscal oversight and offers other assistance when necessary, but seeks to minimize involvement to keep costs low.

The project also has ongoing water quality monitoring conducted to assess its effectiveness and make adjustments as necessary. Go to [page 12](#) for a summary of the District's 2013 Water Quality Monitoring Report.

5.3 Clearwater River Chain of Lakes (1980) Restoration Project

The Clearwater River Chain of Lakes Restoration Project is a series of eight lakes and watershed restoration measures undertaken in the 1980s to improve the water quality of the Clearwater River Chain of Lakes. The Chain of Lakes Restoration Project was a \$4.4 million project spanning the 1980s-1990s designed to significantly improve water quality on Clearwater Lake and several smaller lakes that make up the chain. The bodies of water benefitted from the overall project include: the Clearwater River, Grass Lake, Clearwater Lake, Lake Augusta, Lake Caroline, Lake Marie, Lake Louisa, Scott Lake, and Lake Betsy. Six of the eight original projects continue operation today. The eight original projects are described briefly below, along with their status.

5.3.1 County Ditch Twenty Wetland Treatment System (Watkins)

Wetland Treatment Systems serve as the backbone of the restoration project. Wetlands excel at removing pollutants from our waters. The County Ditch 20 Wetland Treatment System contains approximately 40 acres of wetlands, which are served by a diversion structure and two channels. A total of approximately 7,000 feet of diversion channels distributes the contaminated runoff over the wetland. The approximate expense of this project was \$200,000 and was completed in late 1984. This wetland system removes approximately 1,000 pounds of phosphorus annually.

5.3.2 Kingston Wetland Treatment System

The Kingston Wetland Treatment System is the major facility of the project and contains nearly 300 acres of wetland. Over 19,000 feet of diversion channels were constructed, with more than 150 distribution pipes installed along the length of the channel. The construction cost of this project was approximately \$394,000 and was completed in 1985. The system removes approximately 5,600 pounds of phosphorus annually.

5.3.2.1 Kingston Wetland Feasibility Study and Restoration Project

As part of the ongoing operation and maintenance of the Kingston Wetland Treatment System, the District undertook this major feasibility study and restoration project. Construction was completed in 2013. For more information on this TMDL Implementation Project, go to [page 19](#).

5.3.3 Annandale Wetland Treatment System

The Annandale Wetland Treatment System consists of approximately 40 acres of wetland in two locations, with 4,600 feet of diversion channels. The approximate construction expense of this project was \$120,000 and it was completed in late 1984, with an approximate phosphorus removal capacity of 750 pounds per year.

5.3.4 Upper Lakes Aeration and Mechanical Fish Removal (Discontinued)

The Upper Lakes Aeration and Mechanical Fish Removal Project included the hypolimnetic aeration of Lakes Louisa and Marie. These aerators were installed in 1985-1986. In addition, mechanical removal of rough fish (carp, bullhead, etc.) was performed on Lake Betsy, Scott Lake, Union Lake, Lake Louisa, Mill

Pond, and Lake Marie during the fall of 1984 and the spring and fall of 1985-1988. Being bottom feeders, rough fish mix large amounts of nutrients into the water from the sediments. The estimated cost of this project was \$285,000, and it removes an estimated 1,800 pounds of phosphorus annually. The aerators were removed in the 1990s due to operation costs. Other projects were implemented to take the place of the aerators.

5.3.5 Lake Augusta Erosion Control Project

This project consisted of building a sedimentation basin along with riprap and energy dissipaters. The goal of the project was to alleviate a serious erosion problem leading to sediment entering Lake Augusta along the southwestern portion of the lake. The original estimated phosphorus removal capacity was 50 pounds per year.



5.3.6 Monitoring Program

From 1981 through 1992, a monitoring program including lake and stream water quality, stream flows, and precipitation (beginning in 1983) was a part of the Clearwater Chain of Lakes Restoration Project. The monitoring program helped bring about important modifications, including the addition of the Upper Watkins Wetland isolation and the Nonpoint Source Pollution Abatement Projects.

This monitoring continues as part of the District's yearly Water Quality Monitoring program. Go to [page 12](#) for a summary of the District's 2013 Water Quality Monitoring Report.

5.3.7 Upper Watkins Wetland Isolation Project

The Upper Watkins Wetland Isolation Project was added to the project in 1983. Formerly, untreated wastewater from a cheese plant was discharged into the Upper Watkins Wetland. This transformed the wetland from a nutrient trap (its natural state) into a nutrient source – in fact, the largest nutrient source in the entire watershed. The project diverts runoff and channel flow around the edge of the wetland and includes more than 11,000 feet of isolation dikes and channels plus overflow structures and ditch crossings. The estimated expense of this project was \$460,000 and it was completed in late 1984. It has resulted in a phosphorus load reduction of approximately 30,000 pounds annually.

5.3.8 Non-point Source Pollution Abatement Project

The Nonpoint Source Pollution Abatement Project was added to the project in 1985 and later extended to 1993. This project aimed to institute farming practices that will protect the public from water quality degradation while at the same time reducing soil loss, lowering farm operating costs, and increasing profits. The infrastructure developed to implement this was the Tri-County Conservation Project (TCCP), composed of the Stearns, Meeker, and Wright Soil and Water Conservation Districts, along with CRWD. To demonstrate conservation tillage practices, a no-till drill was purchased. Also, tillage demonstration plots were used. A local farmer group was formed to provide grass roots input on implementing conservation practices through the project. Critical erosion and nutrient export areas were identified using a computer model. Runoff and groundwater monitoring, including pesticide impacts, was conducted. The project, with a budget of some \$1.5 million, worked through cooperation among individual farmers, the agri-business community, the TCCP member soil and water conservation districts,

Minnesota Pollution Control Agency, Board of Water and Soil Resources, Agricultural Extension Service, U.S. Soil Conservation Service, Environmental Protection Agency, and others.

5.3.8.1 Fertilizer Field Trial, now the Targeted Fertilizer Application Project

The ideas and methods of this project continue today with the District's Targeted Fertilizer Application Reduction Project. For more information on this TMDL Implementation Project, go to [page 18](#).

5.4 Outlet Control Projects

In response to the high water experienced in the early 1980s, the District was petitioned by property owners on Pleasant Lake in Wright County and School Section Lake in Stearns County to create two outlet control structures to help control the water levels of Pleasant and School Section Lakes. The outlets are permitted by the Minnesota Department of Natural Resources and operation of the outlets follow strict DNR guidelines to protect the waters and properties downstream as well as Pleasant and School Section Lakes.



5.5 Wastewater Treatment Systems



The Clearwater River Watershed District owns and operates four communal sanitary sewer systems. Their names are: Clearwater Harbor Sanitary Sewer System, Hidden River Sanitary Sewer System, Rest-A-While Sanitary Sewer System, and Wandering Pond Sanitary Sewer System. Clearwater Harbor is located along Grass Lake and Beachwood Road along Clearwater Lake in Stearns County. Hidden River is located adjacent to the northern end of Clearwater Harbor along the Clearwater River in Stearns County. Rest-A-

While is located on Lake Louisa on Aspenwood Road in Stearns County. Wandering Pond is above Lake Louisa on the north end of Reed Court in Stearns County.

Both Clearwater Harbor and Hidden River are permitted by the Minnesota Pollution Control Agency. Both systems were petitioned by Stearns County to be constructed, owned, and maintained by the District. Rest-A-While and Wandering Pond are permitted by Stearns County Environmental Services. Both systems were petitioned by two separate developers to be constructed, owned, and maintained by the District. The systems treat wastewater from serviced properties in a manner that protects the groundwater as well as the nearby surface waters from sewage pollution.

As of the writing of this report, all four systems were in compliance of their permits. A listing of the contracted operators of the systems is listed below.

Septic Check, Clearwater Harbor, Hidden River, and Rest-A-While Sewer Systems Operator

Address: 6074 Keystone Rd, Milaca, MN 56353

Phone: (320)983-2447

Fax: (320) 983-2151

E-mail: info@septic-check.comWebsite: <http://www.septiccheck.com>**Miller's Sewage Treatment (WRM Service), Wandering Pond Sewer System Operator**Address: 9075 155th Street, Kimball, MN 55353

Phone: (320) 398-2705

Fax: (320) 398-2705

Website: <http://www.millerssewage.com>

5.6 Other Projects

5.6.1 Lake Augusta West Channel Clean Out Project

The District was petitioned by property owners along the Lake Augusta West Channel in 2011 to clean out the channel to allow access to Lake Augusta for owners along the channel, as well as remove sediment entering the lake from the channel. Sediment was removed from approximately 560 feet of channel. The benefitted property owners were assessed for the work.

5.6.2 Clearwater River State Highway 55 Fish Trap

The fish trap on the Clearwater River along State Highway 55 cost \$30,000 and is estimated to remove 200 pounds of phosphorous per year from Clearwater Lake. The fish trap allows for the control of rough fish in the upper chain of lakes by trapping rough fish for harvesting and mitigating their annual spawning.

The District is discussing the option of seining from Lakes Louisa and Marie in the hopes of being able to remove this fish trap from operation.

5.6.3 Nistler-Geislinger Basin

The Nistler-Geislinger Basin was constructed south of the southern inlet to Clear Lake along 355th Street (Meeker County) to provide a place for sediment to settle out before entering Clear Lake. The basin cost \$28,000 to complete and is estimated to remove 27 pounds of phosphorous per year from Clearwater Lake by trapping sediment before it enters the river system.

5.6.4 Ostmark Basin



The Ostmark Basin was completed in 2004 to correct a developing erosion problem in conjunction with Meeker County Soil and Water Conservation District. Before the basin was installed, runoff was causing a gully to form along 360th Street (Meeker County), and the sediment from this gully was being deposited in Clear Lake. The basin slows the runoff, effectively stopping the creation of the gully, and keeping sediment from entering Clear Lake.

5.6.5 Norton Avenue Basin



This basin, located above Lake Augusta near Norton Ave on 100th Street NW (Wright County), serves to slow the flow of water to Lake Augusta. This basin was constructed to correct a developing erosion problem that was sending a large amount of sediment into Lake Augusta. By allowing runoff to pond in the basin during rain events rather than gouging the hillside, sediment is kept on the land instead of in the lake.

5.6.6 Clear Lake North V-Notch Weir



At the upper end of the Watershed District, Clear Lake is the first lake the Clearwater River flows through. As part of the District's efforts to increase the water quality in this lake, a V-Notch Weir was installed on the northern tributary to the lake, near the public access. The purpose of this weir is to temporarily impound water during rain events over a 24-36 hour period. By doing so, this allows any water-borne sediment a chance to settle out of the water column before entering Clear Lake.

The \$52,000 Weir at the north end of Clear Lake provides an estimated 236 pounds of phosphorous removed from Clearwater Lake per year by trapping nutrients before entering the river system.

5.6.7 Clear Lake South Notch Weir



At the upper end of the Watershed District, Clear Lake is the first lake the Clearwater River flows through. As part of the District's efforts to increase the water quality in this lake, a Notch Weir was installed on the southern tributary (County Ditch No. 44) to the lake, along 355th Street. The purpose of this weir is to temporarily impound water during rain events over a 24-48 hour period. By doing so, this allows any water-borne sediment a chance to settle out of the water column before

entering Clear Lake. In conjunction with this weir, a sand/iron filter was constructed. The sand/iron filter provides a filter media to remove soluble phosphorus from the water column before entering Clear Lake. This project was installed at the end of 2012.

Results from the first year of monitoring indicate that phosphorus concentrations were lower below the project location than in previous years. The project will continue to be monitored as part of the District annual water quality monitoring program

5.7 Programmatic Projects/Activities

Also listed below are projects that were not included on the project inspection report due to these projects being programmatic in nature.

5.7.1 Aquatic Invasive Species Projects

The CRWD currently has four projects aimed at controlling aquatic invasive species on several district lakes. Each project is financed by a special assessment against riparian properties of the particular lake. The projects are listed below.

5.7.1.1 Cedar Lake Aquatic Invasive Species (AIS) Project

The District was petitioned by the Cedar Lake Conservation Club to institute an aquatic invasive species (AIS) project for Cedar Lake. Currently, Cedar Lake is infested with two invasive species, Eurasian Watermilfoil, and Curly-leaf Pondweed. The project provides a funding mechanism to combat present and future AIS, and is funded by a special assessment of properties riparian to Cedar Lake. Treatment is conducted annually by the Cedar Lake Conservation Club, who develops a treatment program and undergoes permitting with and through the Minnesota Department of Natural Resources. The District provides fiscal oversight and offers other assistance when necessary, but seeks to minimize involvement to keep costs low.

5.7.1.2 Clearwater Lake Eurasian Watermilfoil Control Project

As part of the Clearwater Chain of Lakes Restoration Project, the District is required to maintain the quality of the lakes benefitted by the project. Therefore, when Eurasian Watermilfoil was discovered in Clearwater Lake, the District undertook a treatment program. The program is funded by a special assessment of properties benefitted by Clearwater Lake. Treatment is carried out annually by the Clearwater Lake Property Owners Association, which develops a treatment program and undergoes permitting with and through the Minnesota Department of Natural Resources. The District provides fiscal oversight and offers other assistance when necessary, but seeks to minimize involvement to keep costs low.

It is expected that a petition will eventually be received from residents of Clearwater Lake to change this project from Eurasian Watermilfoil to all Aquatic Invasive Species.

5.7.1.3 Lake Augusta Eurasian Watermilfoil Control Project #01-2

As part of the Clearwater Chain of Lakes Restoration Project, the District is required to maintain the quality of the lakes benefitted by the project. Therefore, when Eurasian Watermilfoil was discovered in Lake Augusta, the District undertook a treatment program. The program is funded by a special assessment of properties benefitted by Lake Augusta. Treatment is carried out annually by the Lake Augusta Association, which develops a treatment program and undergoes permitting with and through the Minnesota Department of Natural Resources. The District provides fiscal oversight and offers other assistance when necessary, but seeks to minimize involvement to keep costs low.

The District was petitioned by residents of Lake Augusta to amend this project to include the treatment of all aquatic invasive species found in the lake. The amendment process was completed in 2014, and this project is now referred to as the Lake Augusta Aquatic Invasive Species (AIS) Project.

5.7.1.4 Lakes Louisa and Marie Aquatic Invasive Species (AIS) Project

The District was petitioned by residents on Lakes Louisa & Marie to institute an aquatic invasive species (AIS) project for these two lakes. Currently, Lakes Louisa & Marie are infested with one invasive species, Curly-leaf Pondweed. The project provides a funding mechanism to combat present and future AIS, and is funded by a special assessment of properties riparian to both lakes. Treatment is conducted annually by the Chain of Lakes Association, which develops a treatment program and undergoes permitting with and through the Minnesota Department of Natural Resources. The District provides fiscal oversight and offers other forms of assistance when necessary, but seeks to minimize involvement to keep costs low.

5.7.2 Bog Control Projects

In response to high water levels in the mid-1980s that caused severe floating bog problems on Augusta, Clearwater, and Grass Lakes (which led to several emergency bog removal activities to prevent flooding), the CRWD set up two bog control projects with the cooperation of the lake property owners involved. These projects included acquisition and improvement of access areas for bog removal, and the funding (via assessment) and process for removal of floating bogs deemed harmful. Estimated cost for the two projects was \$17,000, and they were initiated in the summer of 1985.



In 2011, the Clearwater River Watershed District experienced high water that rivaled the water levels in the mid-1980s. This high water resulted in a significant number of floating bogs on Clearwater Lake, Grass Lake, Lake Augusta, and Clear Lake. The District, through its established bog control projects (or through the District's special projects account) removed several bogs that were threatening to restrict flow of the river (which in turn could cause flooding on these lakes). The CRWD works in conjunction with the Minnesota Department of Natural Resources as well as other local authorities in removal of problematic bogs. The CRWD only becomes involved with bog removal when the flow of the Clearwater River is threatened. Several bogs were removed from the Grass Lake Dam as well as the road crossing over the channel between Grass and Clearwater Lakes. No bog activity was noted in 2013. In 2014, several floating bogs were removed from the Grass Lake Dam as part of the Clearwater / Grass Bog Control Project.

5.7.3 Incentives Program

As part of the CRWD's multi-faceted approach to water quality management, the District offers targeted incentives to its citizens to implement best management practices (BMPs). The District also seeks various opportunities to join with partners implementing water quality projects.

5.7.3.1 Agricultural Incentives

The Clearwater River Watershed District offers several incentives to agricultural producers to adopt best management practices (BMPs) in their operations. Listed below are some examples. Contact the District office with your questions and interest.

1. If you enroll and establish a buffer in the CRP (Conservation Reserve Program), the CRWD will pay you an additional one-time incentive of \$200/acre made directly to you when USDA authorizes your contract.
2. Under the seeded buffer incentive option, the producer can establish a buffer that can be harvested for hay. The one-time up-front payment from the CRWD for a three-year period is \$350/acre. This seeded buffer is intended for use along rivers, streams, and county ditches.

3. The third option is intended for the corn, soybean, or small grain rotation. The CRWD will pay you \$50/acre per year to not till a certain area after harvest. This option is intended for use where soybeans or small grain have been harvested. The following spring you simply till and plant like you always do.
4. The CRWD is willing to pay you \$50/year if you seed a 50'x50' area around your tile intakes into permanent grass. You will be paid \$100/year if the permanent grass area is 100'x100' and \$200/year if the permanent grass buffer around your intake is one-half acre in size. Some producers want to remove their open intakes and replace them with an underground rock inlet. We'll help you do that too. The one-time payment is \$400/intake replacement.
5. The CRWD provides a one-time payment for the establishment of grass waterways installed in the Cedar Lake Subwatershed. This payment will reimburse the property owner 25 percent of the cost of the construction and seeding costs, based on a plan developed and approved by the Natural Resource Conservation Service. The grass waterway must be maintained for five years.

The Clearwater River Watershed District is also involved with assisting livestock producers with adopting BMPs in their operations. The District evaluates these projects on a case-by-case basis, often times joining with the local SWCD (Soil and Water Conservation District). Please contact the District office with your questions and interest.

5.7.3.2 Residential Incentives

The Clearwater River Watershed District offers an incentive to area residents to establish shoreline buffers on their property. Why does the CRWD provide these buffer incentives? Buffers prevent sediment and nutrients from entering rivers, streams, county drainage ditches, and lakes. The fewer nutrients enter a water body, the cleaner the water body will be.

Lakeshore residents can buffer their lawns and we will help. The DNR (Department of Natural Resources) has grant money available, the local SWCD (Soil and Water Conservation District) has technical assistance available, and the CRWD will pay a one-time incentive of 20% of the total cost (up to \$750) for you to participate in buffering your shoreline.

While there are certain requirements for the size of the lakescaping buffer (depending on who is involved in the project), once established the buffer protects the lake, provides beautiful flowers, and attracts wildlife. Ongoing maintenance is very low. Also, for those who have a nuisance geese problem, these buffers help to keep geese off your property by limiting access. Contact the District office or your local SWCD for more details.

5.7.3.3 Partnership Incentives

The Clearwater River Watershed District will oftentimes partner with landowners and/or various entities to produce a result that furthers the District's [mission](#). Listed below are examples of activities the District has partnered in. The CRWD is always looking for various ways to partner with others who are working towards promoting, preserving, and protecting water resources, as well as assisting District residents. Please [contact](#) the District office to discuss ideas.

5.7.3.3.1 Agricultural BMPs

Vergin Grassed Waterways

In 2010, the Clearwater River Watershed District partnered with a local landowner along with the Stearns County Soil and Water Conservation District, to install grassed waterways in an agricultural field that suffered from erosion caused by runoff from rain events. The District contributed \$5,000.00 towards the cost of installation of the grassed waterways, keeping the sediment and nutrient-laden runoff from entering Lake Caroline.

Wylie Erosion Control

In 2012, the Clearwater River Watershed District partnered with a local landowner along with the Meeker County Soil & Water Conservation District to install a series of erosion control structures in agricultural fields in order to stop surface runoff and gully formations from rain events. The District contributed \$5,000 towards the cost of installation.

5.7.3.3.2 Clearwater River Channel Stabilization (CCM Riparian) Project

In 2010, 2011, and 2012, the Clearwater River Watershed District pursued and won a grant with the [Conservation Corps of Minnesota](#) to provide work crews for a stream bank restoration and channel stabilization project in the upper reaches of the Clearwater River. The District sought and received landowner approval to conduct this work on private land (most of the land along the Clearwater River is privately held). To learn more about this project, check out: http://crwd.org/tmdl_ccmriparian.html.

5.7.3.3.3 Forest Prairie Township Road Ditches 650th Ave & 355th Street

In 2012, the District was approached by the Forrest Prairie Township Board asking for assistance in making repairs and modifications to the western and northern ditches along 650th Ave and 355th Street. During large rain events, water in these two ditches would sometimes overtop the road, causing large quantities of sediment to wash into the Geislinger/Nistler Basin. This continued action would significantly decrease the life of the basin, and could potentially cause water quality issues in Clear Lake.

There were two main causes for this: one, the two ditches were full of sediment, and two, the culvert running under 650th Ave was not large enough to handle drainage during large rain events. To rectify this issue, the District partnered with Forest Prairie by providing financial assistance to clean out the ditches and reshape them so they could handle more water. By doing so, the overall velocity of water flowing through these ditches is lessened, leading to less scouring. The township replaced the culvert with a larger model, and also placed an overflow culvert to protect the roads from washing out in large rain events.

On top of this, the owner of the field which lies along the two ditches made modifications so that drainage entering the ditches from the field would be more controlled and less likely to contribute sediment from field runoff.

5.7.3.3.4 Installation of Rain Gardens

The CRWD provides a one-time \$2.50 per square foot incentive for installation and maintenance of a rain garden on private property where installation will provide a benefit to cleaner water. The incentive

cannot exceed payment for more than an area equal to 10 percent of the impervious surface on the property. The plan must be pre-approved by the CRWD.

5.7.4 Education Program

The District's Education and Outreach Program is a conglomeration of several activities, events, publications, etc. that fall under various projects and programs of the District. While no formal purpose statement has been established for the District's Education program, it can be thought of as a means to "get the word out" so recipients: 1) know what the CRWD is, 2) learn what the CRWD is doing, and why it matters and 3) understand how to join in protecting, promoting and preserving our water resources. The program also serves as a means for the District to discover citizen concerns and establish new methods to accomplish District goals. The table below lists the past activities, events, publications, etc. the District has produced to meet this mission.

Action	Purpose	Frequency
Watershed Tour	Showcases the programs and projects undertaken by the District. Serves as an opportunity for citizens to interact with the Board in an informal manner.	Bi-annual (summer)
Advisory Committee	Statutory requirement; serves as a means to disseminate information to citizens, as well as a way to receive citizen input on a variety of topics.	Quarterly, with ability to increase frequency.
District Website	Fulfill legal requirements as well as a means to disseminate information, solicit feedback, and serve as a repository on District information.	Available at all time depending on internet connection.
Brochures, flyers, fact sheets, etc.	Hand out for events attended by District staff as well as Managers. Calls attention to new developments in the District, as well as reminders of projects and programs. Also serves as promotion of specific projects and programs, as well as call for action, such as meeting/hearing attendance.	General brochure is produced bi-annually; others are produced as-needed.
Annandale Business Expo	Serves as an opportunity for Board members to meet with citizens in a different venue to discuss issues and promote the District.	Annually
Newspaper Publication	A means to broadcast specific information, oftentimes announcing a situation or a new project. Can be in the form of a public service announcement, an advertisement, or a piece of news.	As deemed necessary.
Signage	Inform on purpose of project(s), offer warnings and limit access.	Currently only Segner Pond has signage. Plans are for signs at Kingston Wetland,

Action	Purpose	Frequency
		Cedar Lake Watershed Project, and Kimball (PH I & II).
Demonstration Plots	From Clearwater River Chain of Lakes (1980) Restoration Project: plots served to demonstrate results from different conservation tillage techniques as part of the Tri-County Conservation Project.	Ceased operation in early 1990s.
Attendance at outside group events	District staff (or Board members) attending various events, such as lake association meetings, Lions clubs, other LGUs' meetings. May present at meetings, may simply be in attendance in order to learn and/or answer questions.	Ongoing as able

5.7.5 Water Quality Monitoring Program

The Clearwater River Watershed District has been monitoring quality of the District's water since its inception. Water quality monitoring is the backbone of the District's water management plans, programs, and projects. The District monitors to establish trends, set goals, determine targeted implementation of programs and projects, and evaluate their effectiveness. Without the monitoring program, the District would not be able to continue its mission.

As part of the Cedar, Albion, Swartout, Henshaw Project #06-1, the District has established a water quality monitoring program specifically designed for this sub-watershed. This program's goals are similar to the larger monitoring program listed above, but is focused only on Lakes Cedar, Albion, Swartout, Henshaw, and their surrounding watersheds. Results from this monitoring are included with the District's annual water quality monitoring reports.

For a summary of the District's 2013 Water Quality Monitoring Program, go to [page 12](#). Also, the data from the District's monitoring program are sent to the Minnesota Pollution Control Agency for inclusion in their Environment Database. Check it out at:

<http://www.pca.state.mn.us/index.php/topics/environmental-data/eda-environmental-data-access/eda-surface-water-searches/eda-surface-water-data-home.html>.