

Project title: Lac qui Parle River DO TMDL

Organization (Grantee): Lac qui Parle-Yellow Bank Watershed District

Project start date: 5/1/04 **Project end date:** 6/30/06 **Report submittal date:** July 28, 2006

Grantee contact name: MARY HOMAN **Title:** Clean Water Partnership Coordinator

Address: 600 6th Street

City: Madison **State:** MN **Zip:** 56256

Phone number: 320-598-3319

Fax: 320-598-3125

E-mail:

mary.homan@lqpc.com

Watershed, lake, or water body (if applicable): LAC QUI PARLE RIVER

County: LAC QUI PARLE

Project funding type (check one):

- CWP diagnostic CWP Implementation TMDL Development
 319 Implementation 319 Demonstration TMDL Implementation

For TMDL Development or TMDL Implementation Projects only:

Impaired Reach Name(s) 1) LAC QUI PARLE RIVER; WEST BR LAC QUI R TO TENMILE CR and 2) LAC QUI PARLE RIVER, WEST BRANCH; UNNAMED DITCH TO LAC QUI PARLE R

Assessment Unit ID(s) (AUID) or DNR Lake ID(s) 1) 07020003-501 and 2) 07020003-513

Listed Pollutant(s) Low DO

303(d) List Scheduled Start // Completion Dates 2004/2008

Grant amount: \$46,000 **Matching funds: Cash:** \$0

In-kind: \$0

Total project costs: \$46,000

Brief project description (one to four sentences): This was a Joint Powers Agreement for the purpose of providing technical and administrative assistance for completion of a TMDL study in collaboration with MPCA and USEPA (using the contractor Booz Allen Hamilton).

For Agency Administrative Use Only:

Grant ID number: _____

Grant/project administrator: _____

Executive Summary

The Lac qui Parle River segment 0702003-501 on the impaired waters list for Low Dissolved Oxygen (DO) during low flows was further studied to confirm the low DO impairment listing. This segment is 26 miles long and extends from the confluence of the West Branch and the South Branch of the Lac qui Parle River to Ten Mile creek, just upstream of the Minnesota River. The river segment is designated for aquatic life and recreation and industrial consumption. The DO standard corresponding to these designated uses is a daily minimum of 5 milligrams per liter (mg/L) according to Minnesota Rules Chapter 7050.0222. The purpose of this contract was to conduct additional water quality monitoring at USGS monitoring station #05300000, or also known as Site9 as established in the Diagnostic Study of the watershed by the Clean Water Partnership. In addition to this monitoring, two longitudinal surveys were conducted during 2004 and 2005 with low flow conditions. The goal of the longitudinal survey was to help characterize potential sources that may be contributing to the low DO conditions in the river below Dawson and to collect data for a computer simulation model that will explore cause and effect relationships that may be affecting water quality and specifically, DO concentrations. Two complete datasets were required for the computer simulation that was run by U.S. Environmental Protection Agency contractor Booz Allen Hamilton. This computer modeling was the basis for the draft Total Maximum Daily Load (TMDL) Study.

Education of staff and citizens were important components of this contract. Several classroom and outdoor workshops with students in grades kindergarten through sixth grade provided students with educational presentations on streambank stabilization, prairie habitat, macroinvertebrates, soil identification and testing, wetlands, water cycles and watersheds. In 2004 and 2005 partnering agencies and citizen monitors canoed the Lac qui Parle River in the impaired sections of the river. The steering committee established during the Clean Water Partnership continued with TEAM meetings to provide direction in this study. Several educational opportunities were developed for women in the watershed including Wine, Women and Water, which was nominated for a state environmental education award, Conservation: A Quilt for our Natural Resources and Backyards and Beyond. A newspaper column entitled "Lake That Speaks" is published twice a month and features water quality information.

In an effort to increase understanding and knowledge of the impaired waters study area Booz Allen Hamilton staff, Scott Heefner and Dinush Kurera, and Chris Zadak, MPCA toured the watershed. An important characteristic of the watershed is the tremendous drop in elevation. There is a 1,070 foot drop in elevation from the highest point in South Dakota to Lac qui Parle Lake where the river merges with the Minnesota River. From Lac qui Parle Lake to the Gulf of Mexico there is only a 931 foot drop in elevation.

The Draft TMDL produced by Booz Allen Hamilton does not clearly define the stressors and sources that are causing the low dissolved oxygen levels. It will be difficult to convince producers and landowners in the affected reach of the river that reductions of 50% are needed to improve water quality conditions.

Section 1-Work Plan Review

The original work plan was amended in January 2005 to provide additional data and information requested by the US EPA-hired TMDL contractor for this project. Data needs were to include water quality, point and nonpoint source information and geographic/land use of the watershed. The budget was increased \$20,000.00 to a total of \$46,000.00 for development of a DO TMDL. The contract period was extended to June 30, 2006.

Project Activities

Task 1: Technical support for TMDL Development

Project staff shall supply MPCA and Booz Allen Hamilton with necessary collected available data and information, review work products, and participate in project meetings.

Staff sent all information requested to Booz Allen Hamilton as requested and in a timely manner. Some of the items sent included the Lac qui Parle-Yellow Bank Watershed Diagnostic Study Report and Implementation Plan, videos of aerial flight of Lac qui Parle River, and provided other information as requested to enhance the computer model. Staff actively participated in all teleconference calls held for this project. The Draft Dissolved Oxygen TMDL Report has been read and comments made and included in this report.

Task 2: Monitoring

Project staff shall conduct additional longitudinal surveys and, possibly, diurnal surveys of dissolved oxygen and other field and lab parameters as has been previously done. Such surveys may need to be conducted up to two times and along two reaches. The specific details (parameters, locations and times) for the surveys will be provided by Booz Allen Hamilton. Any expenses for analysis of grab samples of conventional parameters (e.g., nutrients), should they need to be collected, will be paid for separately by the MPCA. This task also encompasses coordination of the volunteers who participate in the stream monitoring program.

Water quality monitoring was conducted at USGS monitoring station #05300000 throughout the contract period. The samples were sent to the Minnesota Department Health Laboratory in St. Paul, Minnesota for analysis of Total Phosphorus, Orthophosphorus, Total Suspended Solids, Ammonia, Nitrite+Nitrate-N, Total Kjeldahl Nitrogen, Turbidity, CBOD-5 day, Fecal Coliform and pH. Field parameters included Temperature, Transparency, Dissolved Oxygen visual observation of stream conditions. Both baseflow and storm event conditions were monitored. In addition to this monitoring, two longitudinal surveys were conducted during both years of 2004 and 2005

2005 did not include all of the CBOD samples, it was conducted at 22cfs. Three new longitudinal survey stations were added (2 upstream of LS15, which was originally the most upstream sampling station, 1 additional point along the stream segment). Two of the recommended survey points were inaccessible and therefore not sampled. Flow was measured at three survey points LS2, LS11 and LS15 during the survey. The other stations did not have flow measured due to stagnant water. The second longitudinal survey was conducted on August 15, 2006 at 11 cfs.

Lab samples were sent to the Minnesota Department of Health for analysis. There was considerable discussion on the test results for CBOD and whether it was credible data to be used in the Draft TMDL Study..

Citizen monitors received data forms to record precipitation and transparency tube readings. They are asked to read the transparency tubes weekly. At the end of the season these forms are returned to the Clean Water Partnership office and forwarded to MPCA. An annual canoe trip held in June offers an opportunity for monitors to experience the river up close and personal. The canoe trips are located on the impaired segment of the river. Citizen monitors helped to complete a transect survey of the Lac qui Parle River.

Task 3: Stakeholder and public participation coordination

Project staff shall lead stakeholder and public participation in the development of the TMDL and the Implementation Plan. Engaging the steering committee established as part of the CWP as well as other groups with water quality interests can serve this projects' stakeholder and public participation needs. Other formal or informal methods to assure participation by those who may be affected by the TMDL should also be considered. Project staff shall provide a written summary of stakeholder and public participation for inclusion the final TMDL report.

The steering committee held regular quarterly TEAM meetings throughout 2004 and 2005 with updates about this study and direction was provided for additional water quality projects in the watershed including the 319 Implementation Project. Several presentations were made to students in grades K-6 that increased awareness of watersheds. Display booths at county fairs highlighted various best management practices. Several events were planned with women as the target audience. Project staff attended several seminars and workshops on TMDL's for personal growth and understanding of the TMDL process. A newspaper column entitled "Lake That Speaks" is published twice a monthly and features water quality information.

A complete list of activities conducted is included later in this report.

Task 4: Implementation Plan Development

Restoration of the impaired reach will require development of an implementation capable of achieving the TMDL. Given that an implementation plan has been developed as part of the Clean Water Partnership grant and will be initiated under the upcoming 319 implementation project "Lac qui Parle River Mainstem Water Quality Enhancement Project" it would be most efficient and appropriate to limit the TMDL Implementation

Plan to what would be needed over and above the existing plan to address the DO impairment. To accomplish this project staff shall work with the steering committee, taking into account the findings and recommendations of the TMDL report, and draft a supplementary plan. This draft plan shall focus on the nonpoint source pollution component of the TMDL (MPCA will determine appropriate point source permit changes that may be required).

A complete workplan has been developed and approved for the 319 Implementation Project "Lac qui Parle River Mainstem Water Quality Enhancement Project" and is attached both as an electronic file and a printed copy of the plan. This plan is developed for the Lac qui Parle River near Canby to Dawson before it merges with the West Branch of the river. Supplement plans to increase DO will be developed from Booz Allen Hamilton recommendations.

Task: 5 Reporting

Project staff shall complete the CWP-TMDL progress reports twice yearly, on February 1 and August 1. Reports must include a short update on the project and a budget update. Required reporting forms are available at <http://www.pca.state.mn.us/water/cwp-319.html#forms>. A separate final report shall include spreadsheets of all data and information collected, methodologies used, and conclusions/findings regarding all tasks. The final report shall be completed by the date of termination of the agreement.

Semi-Annual reports were sent in during 2004 and 2005 on February 1 and August 1 or before that included project expenditures for each category for the reporting period as well as cumulative expenses. Quarterly invoices were sent into MPCA for reimbursement of grant expenses.

Section II-Grant Results

Measurements:

This was a TMDL Development Project and evaluation plans and results are not applicable to this project. The Draft Dissolved Oxygen Total Maximum Daily Load for the Lac qui Parle River, Minnesota was prepared by Booz Allen Hamilton, McLean VA. This draft is being edited at this time. A computer simulation model performed a preliminary simulation of DO concentrations along the Lac qui Parle River to facilitate future water quality management decisions. It was to determine the allowable pollutant load, which includes wasteload allocations for point sources; load allocations for nonpoint, background and natural sources; and a margin of safety. The results of the model simulation are inconclusive at this time.

Products:

Low Interest Loans for Individual Sewage Treatment Systems Brochure
Loan Application Form
"Lake That Speaks" newspaper columns
Water Quality results from 2004 and 2005
Photographs of Citizen Monitors Canoe Trip of impaired waters

Public outreach and education:

The Outreach and Education component is like the hub of a bicycle wheel, in that, it has several spokes (representing different programs) that are all interconnected and designed to improve water quality. It is essential for all the portions of a plan or study to succeed. Educational opportunities were made available for citizens of the watershed and for project staff. With respect to the different personalities and interests of watershed residents, information was presented in different formats and styles to attract multi audiences. Also, it was kept in mind that many people learn from what they do, so hand-on learning activities were developed for personal experiences and to develop a personal commitment to improve water quality.

List of Public Outreach Activities

Activity	Target Audience	Attendance	Materials Distributed or Presented	Comments/ Evaluation
Summer School Canby	Grades K-6	2 sessions with 12 students in each	Watershed Model in sand on beach	Better understanding of water flow
Field Day of Excellence	Local Producers	200 farmers	What does TMDL mean to you?	Positive from comments from producers
Kiwanis	Local Business Professionals	20-25 members	What does TMDL mean to you?	Lots of questions? Good Remarks
Environmental Fair 2004 and 2005	6 th Graders	200 400	Crop Residue and how it affects runoff	Positive evaluations from teachers
CONSERVATION: A Quilt for our Natural Resources 2 programs	Women	22 Canby 24 Hendricks	Conservation Choices, Enriching the Tapestry of American Agriculture, Quilted coaster pattern	Positive evaluations forms returned
Wine, Women & Water	women	100	Backyard Conservation Booklet, Buy Local Products brochure, Wine tasting techniques, List of MN Wineries	Exceptional Nominated for State Environmental Ed. award
Annual Township	Township	75-80	TMDL Study	More questions

Meeting 2005	officers			than answers
Citizen Monitor Refresher course	Citizen Monitors	2-3	Review procedures for t-tube and recording data	Very poorly attended
Environmental Trivia Radio Show	Radio Station Listeners	50 questions and responses	General environmental	Positive form the radio station
Watershed Tour	Booz Allen Hamilton & MPCA	3	LqP River & watershed	Did not get a feel for the whole watershed-just the impaired portion
5 th Grade Watershed Tour 2005 & 2006	5 th grade students	60 50	Canby Creek Watershed and Del Clark Lake	Positive
5 th grade Summer School	5 th Grade Students & summer school session	60 30 K-6 th grade	Clean Up a Lake/ Hands on cleaning a body of water	Positive This is harder than it looks so lets keep it clean.
6 th grade Field Day	6 th graders	50	Watershed Cubes illustrating good & bad conservation practices	Positive Teacher evaluations returned
Lac qui Parle Lake Association	Board Members	6	TMDL Study	Lot of questions
Canoe Trip On LqP River 2005 & 2006	Citizen Monitors and Partners	16 9	Canoe and LqP River-Impaired section of River	Positive
County Commissioners	LqP, Lincoln & Yellow Medicine Coutny Commissioners	15	Low Interest Loan Program for Septic systems in watershed	Positive
Breakfast for ISTS contractors & financial lenders	ISTS contractors	0 but some stopped by office	Information on ISTS loan program	Very Low Response but inquiries in office and mailed

				brochures
Fair Booth	County Residents	Not determined	ISTS Loan Program	Several inquiries in office about loan program following fair
Get the Scoop on Poop Disposal	Homeowners & contractors	15-20	ISTS Loan Program	Positive
Thanksgiving Cards	Citizen Monitors	27	Cards thanking CM for their efforts	Positive
Putting On The Green	Women	0 cancelled due to poor response	Green Ides for home and yard	Poor response
Annual Township Meeting 2006	LqP township officers	75-80	TMDL & 319 project area including ISTS and priority area	Positive
Earth Day Display	Dawson Citizens	50-60	“Green” ideas for home and yard	Well attended and good comments
Backyards & Beyond	women	23	Backyard conservation, Native prairie plants, backyard flower arranging, & backyard landscaping techniques and options.	Positive
Storm Drain Tunnel	MASWCD Employees	25-30	Model Storm Drain and how it was made and used	Positive
Newsletters, Spring, Summer and Fall	Citizen Monitors	25-30 each time	General interest topics	None unless registration for event
TEAM Meetings	Partnering Agencies	Average 12-15 each meeting	Planning & Evaluation, Direction of Project	Positive
Monthly Watershed Meetings	Board of Mangers and	6	Review, Inform,	Required Positive

	Administrator		Evaluate	
--	---------------	--	----------	--

Long Term Results:

The Draft TMDL Study by Booz Allen Hamilton is continuing to be edited to enhance long term water quality decisions that will increase the dissolved oxygen levels in the river. As this study is being developed evaluations, results and reductions are not available. As the TMDL progresses the information will be tracked and monitored.

I am not aware of any new alliances or partnerships formed during this project; however during this TMDL project all of the partnering agencies pulled together to carry the project into the future until additional funding was obtained. The Yellow Medicine Soil and Water Conservation District (SWCD) contracted with the Clean Water Partnership for educational services through two school years and the Lac qui Parle SWCD contracted interim services until another Farm Bill Assistant could be hired. The LqP Water Plan continued monitoring efforts at other sites that this project did not fund so that monitoring results would be maintained. The Water Plan also contributed to educational opportunities for project staff to attend seminars and sponsor events. The Lac qui Parle-Yellow Bank Watershed District encumbered additional expenses that enabled the project to continue until additional funding became available. TEAM meetings were well attended by partners in which invaluable project and program direction was provided. Prairie Country RC&D works with several water quality projects and is a liaison that shares information freely between organizations about successful project and those that were not so successful. The Clean Water Partnership has brought several agencies together to work for a common goal of cleaner water.

The Lac qui Parle-Yellow Bank Clean Water Partnership was awarded a 319 Implementation grant to continue efforts in water quality improvement through June 30, 2009. This implementation project is targeting the South Branch of the Lac qui Parle River from near Canby to Dawson before it merges with the West Branch of the Lac qui Parle River. The focus of the grant is to increase management practices to control runoff of nutrients and soil erosion. Incentives will be offered to landowners to plant buffer strips along the river. Cost share incentives will be offered for construction projects to slow and control the flow of water. Feedlots will be assessed for upgrades along the river. Individual Sewage Treatment Systems will be upgraded with low interest loans offered through a state revolving fund. Education and public outreach is an important component of the grant to increase citizen's awareness of water quality and other environmental concerns. All of the programs will be tracked and evaluated for effectiveness in completing its goals and objectives. Water quality monitoring will continue to improve loading estimate accuracy and will help assess the water quality trends in the watershed.

The results of this project will be presented in future stakeholder meetings to provide public opportunities for review. A direct mailing will target citizens in the priority area. Presentations will be made to local civic groups such as Kiwanis, Lions, Rotary and Chamber of Commerce's and other groups as opportunities become available. During

this study general information about TMDL's and how they will impact us has been presented at meetings and through newspaper articles.

There are several organizations working on TMDL studies for impaired water and results of this study may be helpful to them. Also the impaired waters list of Minnesota continues to grow and past study are valuable resources.

The Draft TMDL study report did not produce the expected results and requires editing to make the study applicable to the end users. When the study is presented for public review it needs to be credible. Citizens need to be able to understand the study and justify future actions affecting water quality.

Section III-Final Expenditures

COST CATEGORY	UNIT COST	UNIT	TOTAL JPA	QUANTITY	This Period \$	Previous Periods \$	Expended \$	Cash \$
Coordinator	20.82	hour	42472.80	84	1,748.88	43,472.16	\$45,221.04	(2,748.24)
Rating Curve Development	2100		2100.00				\$ -	2,100.00
Shipping Expenses		actual	659.05		82.38	320.20	402.58	256.47
Travel (sample collecting)	0.375	miles	768.15		58.56	317.30	375.86	392.29
TOTAL			\$ 46,000.00		\$ 1,889.82	\$ 44,109.66	\$45,999.48	\$ 0.52

Lac qui Parle River Watershed/TMDL Joint Powers Agreement

**Two Amendments have been added to original Lac qui Parle River Dissolved Oxygen TMDL Work Plan. The first amendment was for \$4500.00 for additional coordinator hours to extend the contract from March 31, 2005 to June 30, 2005. The second amendment was for \$15,000.00 to provide technical and administrative support for the development of a Dissolved Oxygen TMDL to be completed by an US-EPA hired support for the development of a Dissolved Oxygen TMDL to be completed by an USEPA-hired contractor. This 2nd amendment extended the agreement till June 30, 2006