

*Lac qui Parle-Yellow Bank
Water Quality Enhancement
Project*

Final Report

Mary Homan
7/29/2011

Project Sponsor:

Lac qui Parle-Yellow Bank Watershed District

Project Partners:

Lac qui Parle SWCD
Yellow Medicine SWCD
Lincoln SWCD
Lac qui Parle Water Plan
Yellow Medicine Water Plan
Yellow Medicine County
Lincoln Environmental Office
Area II MN River Basin Projects, Inc.
Clean Up the River Environment (CURE)
Prairie Country RC&D
Lac qui Parle NRCS
Yellow Medicine NRCS
Lincoln NRCS
Minnesota Department of Natural Resources

Grant Project Summary

Project title: Lac qui Parle-Yellow Bank Water Quality Enhancement Project
Organization (Grantee): Lac qui Parle-Yellow Bank Watershed District
Project start date: 1/1/ 2009 Project end date: 6/30 2011 Report submittal date: 7/29/2011
Grantee contact name: Mary Homan Title: Project Coordinator
Address: 600 6th Street, Suite 7
City: Madison State: MN Zip: 56256
Phone number: 320-598-3319 Fax: 320-598-3125 E-mail: mary.homan@lqpc.com
Basin (Red, Minnesota, St. Croix, etc.): Minnesota County: Lac qui Parle

Project type (check one):

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

Grant Funding

Final grant amount:	<u>\$279,997.97</u>	Final total project costs:	<u>\$1,617,031.73</u> <u>\$1,689,246.13</u>
Matching funds:		Final in-kind:	
Final cash:	<u>\$26,558.52</u>		Final Loan: <u>\$300,627,52228,413.12</u>
Contract number:	<u>B19291</u>	MPCA project manager:	<u>Katherine Pekarek-Scott</u>

For TMDL Development or TMDL Implementation Projects only

Impaired reach name(s): _____
AUID or DNR Lake ID(s): _____
Listed pollutant(s): _____
303(d) List scheduled start date: _____ Scheduled completion date: _____

AUID = Assessment Unit ID
DNR = Minnesota Department of Natural Resources

Executive Summary of Project (300 words or less)

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

The Lac qui Parle-Yellow Bank is a rural watershed that is located in western Minnesota that is mainly agricultural. Best Management Practices that slow the flow of water are crucial to water quality. Our BMP Implementation program included an incentive for

filter strips that enrolled 98.8 acres into Continuous CRP contracts with eight landowners. A cost share program replaced thirty-three open tile intakes with either a rock inlet or a dense pattern tile beneath the intake and constructed eight water and sediment control basins, two terraces, one diversion, one rain garden and one ag waste facility. These practices were estimated to reduce approximately 480 tons of soil and 675 pounds of phosphorus. Water sampling at three sites indicate that total suspended solids and *E.coli* bacteria have decreased since 2002.

Many educational outreach activities encouraged additional practices throughout the watershed such as: rain gardens, rain barrels, marking storm drains, manure management, maintenance of septic systems, composting, and living green ideas. A low head dam on the West Branch Lac qui Parle River was replaced with a series of rock weirs. This project offered additional opportunities to engage students and citizens in a river clean-up while the river was drawn down for construction, tree and shrub planting on the riverbanks and a unique water festival during the community's annual Riverfest. A fifteen minute weekly radio show started in 2009 highlights local programs, water quality issues and other environmental concerns. This resulted in increased participation in workshops, meetings and local programs such as the cost share and incentives offered for special projects.

Signs that identify river crossings have been erected on paved county roads. By giving the rivers a name, it adds value to them and gives it more personality and more reasons to care for them versus an anonymous water course.

Goals (Include three primary goals for this project.)

- 1st Goal: Reduce non-point source pollutants
- 2nd Goal: Enhance Public Awareness
- 3rd Goal: Collect Water Quality Data

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

- 1st Result: 98.8 acres filter strips with savings of 339.3 tons Total Suspended Solids and 574.4 lbs Total Phosphorus. 33 open tile intakes replaced with savings of 6.6 tons of soil and 16.5 lbs of Total Phosphorus. Constructed practices saved 135 tons of soil and 85.8 lbs of Total Phosphorus.
- 2nd Result: Unique educational opportunities with a specifically tailored message for a targeted audience have resulted in optimum participation for the watershed.
- 3rd Result: There were 744 samples collected at three sites in 2009 and 2010. These samples were collected at all different water levels and flows to get a balanced data set. Improvement of total suspended solids and E.coli bacteria is shown in the data analysis

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

Description/location:

West Branch LqP River being drawn down before removal of low head dam.

West Branch LqP River Rock Rapids that replaced a low head dam.

Signage on Lazarus Creek, a tributary of the LqP River to increase awareness of rivers and water quality in the watershed.

Garden Party held in a park by Canby Creek included presentations on landscaping for water quality, rain barrels, rain gardens and composting.

Canoeing the rivers allows citizens to get up close and personal with the river and provides a better understanding of the rivers.

Acronyms (Name all project acronyms and their meanings.)

BMP Best Management Practice

BWSR Board of Water and Soil Resources

CWP Clean Water Partnership

DNR Department of Natural Resources

Lbs. pounds

LqP-YB Lac qui Parle-Yellow Bank

Mg/L milligrams per Liter

MPCA Minnesota Pollution Control Agency

NRCS Natural Resource Conservation Service

NTU Nephelometric turbidity units

SWCD Soil and Water Conservation District

TEAM Together Everyone Achieves More

TP Total Phosphorus

TSS Total Suspended Solids

Partnerships (Name all partners and indicate relationship to project)

Lac qui Parle-Yellow Bank Watershed District: Project Sponsor, administration, cash contribution

Lac qui Parle SWCD: Vehicle in-kind, newsletter space, TEAM member, Education Partner

Yellow Medicine SWCD: Newsletter space, TEAM member, Education Partner

Lincoln SWCD: Newsletter space, TEAM member, Education Partner

Lac qui Parle Water Plan: TEAM member, Newsletter space, cash contribution

Yellow Medicine Water Plan: TEAM member, newsletter space

Yellow Medicine County: SRF Loan Administration

Lincoln Environmental Office: SRF Loan Administration

Area II MN River Basin Projects, Inc.: Technical services for BMP's

Clean Up the River Environment (CURE): Newsletter and website space

Prairie Country RC&D: TEAM member, newsletter space, River sign identification partner
Lac qui Parle NRCS: Technical service for BMP's, tracking BMP's, TEAM member
Yellow Medicine NRCS: Technical service for BMP's, tracking BMP's, TEAM member
Lincoln NRCS: Technical service for BMP's, tracking BMP's, TEAM member
Minnesota Department of Natural Resources: TEAM member, Dawson Dam Removal/Replacement

Work Plan Review

1. Introduction

1.1 Purpose of the Review

The purpose of this review is to evaluate the progress and effectiveness of the work plan for the Dawson Dam Removal/Replacement project.

This review will assess the following areas:

2. Project Objectives

The primary objective of the project is to remove the Dawson Dam and replace it with a more environmentally friendly structure.

Secondary objectives include:

• Improving water flow and sediment transport downstream.

• Enhancing habitat for native fish species.

• Reducing the risk of dam failure and associated environmental impacts.

3. Work Plan Components

The work plan is divided into several key components:

• **Design and Construction:** This component involves the development of detailed plans for the dam removal and replacement structure.

• **Monitoring and Evaluation:** This component focuses on tracking the progress of the project and assessing its impact on the environment.

• **Stakeholder Engagement:** This component involves working with local communities, agencies, and other stakeholders to ensure the project meets their needs.

• **Resource Management:** This component involves identifying and allocating the resources needed to complete the project.

• **Risk Management:** This component involves identifying potential risks to the project and developing strategies to mitigate them.

• **Communication:** This component involves providing regular updates on the project's progress and any changes to the work plan.

4. Progress Report

The following table provides a summary of the project's progress to date:

Overall, the project is progressing well, with most key milestones being met on schedule.

There are a few areas where the project is slightly behind schedule, but these delays are expected to be resolved by the end of the project.

The project team is committed to completing the Dawson Dam Removal/Replacement project on time and within budget.

Work Plan Review

1. Work Plan Changes

Amendment 1 (June 9, 2009)

Reduce the total contract amount from \$348,580 to \$280,150.

Change the contract expiration date from December 31, 2011 to June 30, 2011.

Amendment 2 (December 21, 2010)

The work plan was amended to include the Dawson Dam Replacement which included the removal of an existing concrete dam and replacing it with a series of rock rapids. This was a large project in the watershed that the Minnesota Department of Natural Resources initiated. Their project was enhanced in the Dawson community by riverbank planting of shrubs and natives grasses and multiple educational and outreach activities for residents.

Another amendment was to erect signs to identify water crossings throughout the watershed. Many residents do not know the names of water courses that they drive by daily. By giving the rivers and creeks a name, it gives the river more personality and more reason to care for it.

The SRF Loan program for upgrading non-compliant sewage systems was amended to include funding for Agricultural Best Management Practices throughout the Lac qui Parle-Yellow Bank watershed. The approved Ag BMP's include the following practices: Water and Sediment Control Basins, Livestock Waste Management Practices, Grass Waterways, Streambank Restoration Practices, Terraces, Diversions and Retention Ponds.

Water quality monitoring samples were analyzed at ERA Labs in Duluth, MN for the first year and at MVTL, Inc. in New Ulm, MN the second year.

Budget changes include:

- \$6,558.64 of grant funds and \$2,556.80 from cash match was moved from Program Element 3 to Program Element 1.
- \$500.00 of grant funds was moved from Citizen Monitors to Promotional Materials in Program Element 2.
- \$1,600.00 of grant funds was moved from Program Element 3 Analysis to Program Element 2 Field Days.
- \$3,025.91 of grant funds was moved from Program Element 3 (\$1,879.52 – Analysis, \$102.39 – Shipping, \$1,044.00 – Mileage) to Program Element 4 Year 2 Salary.
- \$2,700 of grant funds was moved from Computers to Year 2 Salary, \$389.05 of grant funds from Office Supplies was moved to Year 1 Salary, \$410.95 of grant funds from Office Supplies was moved to Year 2 Salary, and \$460.18 of Employer Match Year 1 was moved to Year 1 Salary in Program Element 4: Fiscal Management.
- SRF Loan amounts for Lincoln County were revised in 2010 and 2011 to reflect actual loan disbursements

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2. Activities and Tasks of Work Plan

Program Element 1: BMP Implementation

Best Management Practices were installed throughout the Lac qui Parle-Yellow Bank watershed to prevent and reduce non-point source pollution. The larger than normal rain amounts received in the fall of 2009 and 2010 was a deterrent of replacing open tile intakes. We had several intakes that were not able to be replaced. The weather also affected the construction process of terraces.

Construction Projects including terraces, water and sediment control basins, alternative tile inlets and rain gardens provided cost share up to 75% cost share with preference given to projects with EQIP funding. Incentives were offered for installation of filter strips. Dawson Dam Replacement included removal of existing concrete dam and replacing it with a series of rock rapids.

Filter Strips: A total of 98.8 acres were enrolled in the Continuous CRP program with 9 different landowners. Projects were reported in eLINK. The BWSR filter strip calculator estimated savings of 339.3 tons/year of Total Suspended Solids, 147 tons/year soil, and 574.4 lbs./year of Total Phosphorus.

Construction Projects included eight water and sediment control basins, two terraces, one diversion, one rain garden and one ag waste facility. Projects were reported in eLINK. The BWSR gully erosion calculator estimated a savings of 93.8 tons/year of Total Suspended Solids, 135 tons/year of soil and 85.8 lbs./year of Total Phosphorus. MN Farm results were unavailable at this time for the ag waste facility.

Open Tile Intake Replacement- A total of 33 open tile intakes were replaced with either a rock inlet or a more common pattern tile formation. Projects reported in eLINK and BWSR calculator estimated savings of 6.6 tons/year of soil and 16.5 lbs./year of Total Phosphorus.

Side Inlets- No side inlets were funded with this project.

Special Projects-One Rain garden reported in eLINK. The bioretention calculator estimated savings of .33 lbs/year of Total Phosphorus, 1.9 lbs./year Nitrogen, and 37.5 lbs/year Total Suspended Solids.

Program Element 2: Education and Outreach Programs

Educational outreach was conducted with participating TEAM members to bring quality information in a fun and entertaining manner to attract residents of all ages from young children through adulthood. *Activities with a targeted message for a certain audience have been instrumental in getting a message delivered. A weekly radio program has provided listeners with information on multiple topics that relate to water quality and other conservation concerns. Of course with the successes there is frustration when weather doesn't cooperate for a planned event that results in a poor attendance. The apathy of many citizens is and always will be a concern, which is why we keep trying to be creative in our topics and presentation style. See section 5 for a list of education and outreach programs that were completed with this project.*

Program Element 3: Water Quality Monitoring

Water quality monitoring was conducted thirty times per year from March 2009 through September 2010 to characterize existing conditions and to determine effectiveness of best management practices installed in the watershed. *Water Quality monitoring began the*

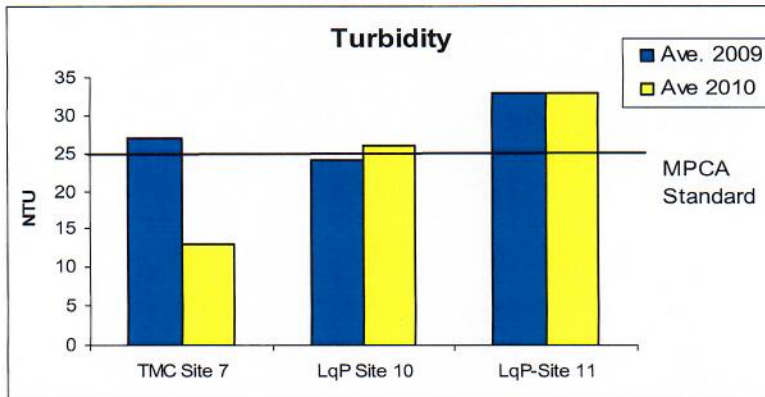
middle of March in 2009 and 2010. In 2009, there were a total of 577 samples collected and in 2010, there were 744 total samples collected. The monitoring sites were out of their banks both years during spring runoff. In both 2009 and 2010, there were large rainfall events in the months of September and October which extended the monitoring year into October. In 2009, the dam at LQP10 was removed and replaced with a series of rock riffles. Below is a table that shows the mean, maximum, minimum and number of samples collected at each site for each of the lab parameters sampled.

2009 and 2010 Summary Data for Lac qui Parle River Watershed CWP Sites			
Turbidity (NTU)			
	LQP7	LQP10	LQP11
2009 Mean	27	24	33
2010 Mean	13	26	33
2009 Max	340	160	220
2010 Max	29	77	120
2009 Min	1.7	1.9	6.6
2010 Min	2.2	3.4	10
2009 samples	28	21	25
2010 samples	33	28	32
Total Phosphorus (mg/L)			
	LQP7	LQP10	LQP11
2009 Mean	0.2	0.19	0.16
2010 Mean	0.21	0.2	0.19
2009 Max	1.39	0.91	1.05
2010 Max	0.798	0.453	0.478
2009 Min	0.03	0.04	0.05
2010 Min	0.029	0.034	0.037
2009 samples	27	21	27
2010 samples	33	28	32
Ortho Phosphorus (mg/L)			
	LQP7	LQP10	LQP11
2009 Mean	0.12	0.08	0.07
2010 Mean	0.13	0.1	0.08
2009 Max	4.73	0.204	0.233
2010 Max	0.555	0.2	0.386
2009 Min	0.003	0.002	0.002
2010 Min	0.005	0.007	0.006
2009 samples	26	21	26
2010 samples	33	28	32
Nitrate+Nitrite Nitrogen (mg/L)			
	LQP7	LQP10	LQP11
2009 Mean	3.3	0.62	1.13
2010 Mean	6.78	1.1	1.91
2009 Max	9.7	2.3	3.5
2010 Max	14.3	3.37	5.25
2009 Min	0.16	0.037	0.04
2010 Min	0.2	0.2	0.2
2009 samples	27	17	27
Total Kjeldahl Nitrogen (mg/L)			
	LQP7	LQP10	LQP11
2009 Mean	1.06	0.98	0.99
2010 Mean	1.45	1.16	1.59
2009 Max	4.3	3	2.6
2010 Max	3	2	2.3
2009 Min	0.5	0.5	0.5
2010 Min	0.3	0.2	0.2
2009 samples	27	21	27
2010 samples	33	28	32
Total Suspended Solids (mg/L)			
	LQP7	LQP10	LQP11
2009 Mean	27	25	41
2010 Mean	24	26	46
2009 Max	320	230	175
2010 Max	57	87	180
2009 Min	3	4	7
2010 Min	6	4	12
2009 samples	27	20	26
2010 samples	33	28	32
Total Volatile Suspended Solids (mg/L)			
	LQP7	LQP10	LQP11
2009 Mean	5	5	7
2010 Mean	5	6	10
2009 Max	50	40	40
2010 Max	19	21	31
2009 Min	1	2	1
2010 Min	2	2	2
2009 samples	27	20	25
2010 samples	33	28	32
E coli bacteria (MPN)			
	LQP7	LQP10	LQP11
2009 Mean	530	288	265
2010 Mean	142	155	124
2009 Max	2400	2000	690
2010 Max	547	649	411
2009 Min	9	20	10
2010 Min	1	2	4
2009 samples	22	18	24

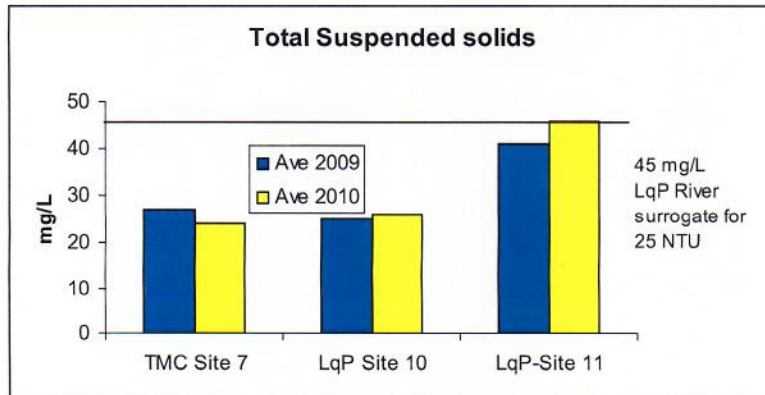
2010 samples	33	28	32
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2010 samples	33	28	32
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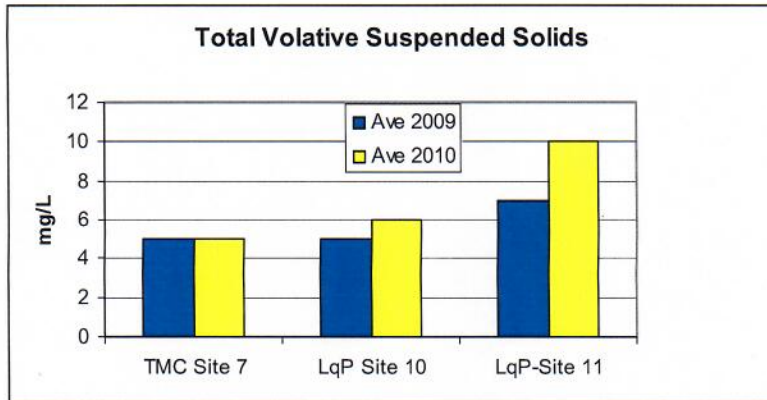
The following chart shows turbidity averages at the three sites monitored during this project. The MPCA standard is 25 NTU. Site 11 had the highest average of 33 NTUs in both 2009 and 2010.



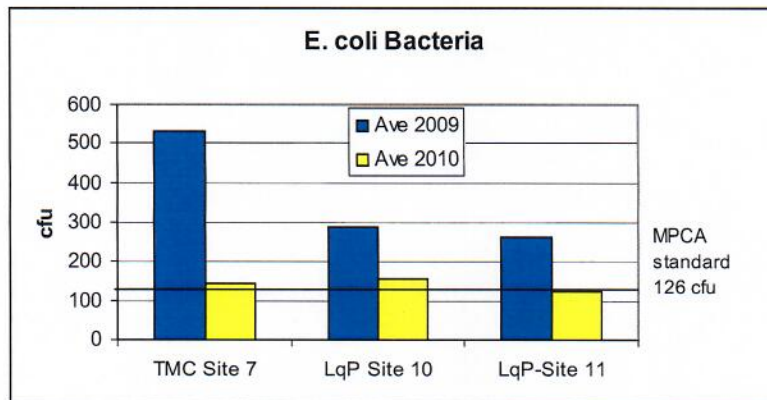
The following chart shows average concentration of Total Suspended Solids at the three sites monitored during this project. In the Lac qui Parle watershed, the surrogate value for 25 NTU is 45 mg/L of which we met during this project.



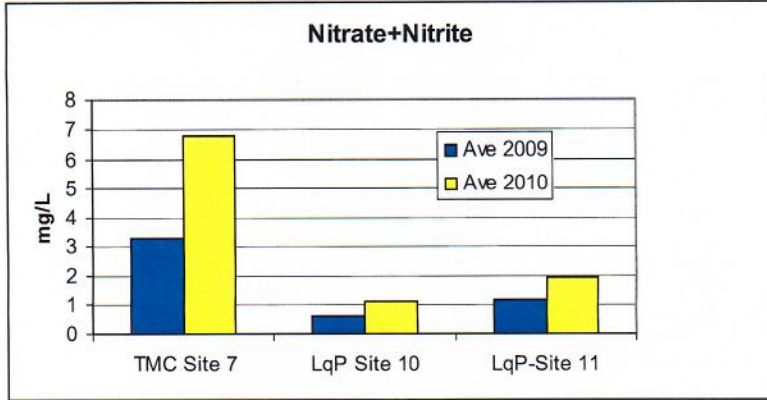
The following chart shows the average total volatile suspended solids at the three sites monitored during this project. The values reflect closely to the TSS average shown above. Total Volatile Solids measure the organic component of the solids in a water sample. It appears that a relatively small amount of suspended solids in the water are organic. This indicates that most of the suspended solids composition is sediment.



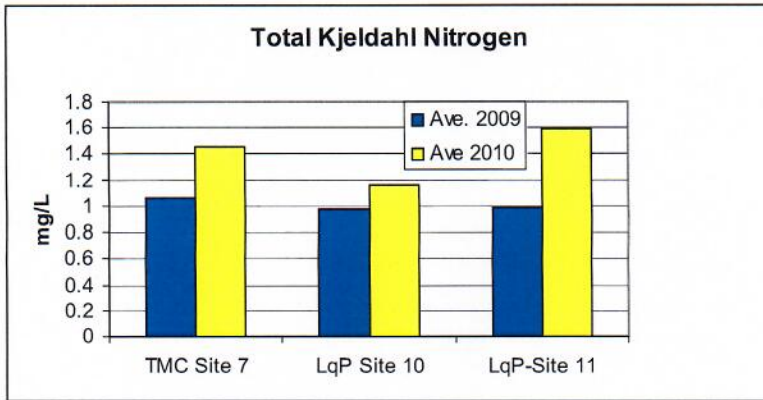
The following chart shows averages for *E. coli* bacteria at the three sites monitored during this study. MPCA standard is 126 cfu. Monitoring shows a decrease at all three sites in 2010.



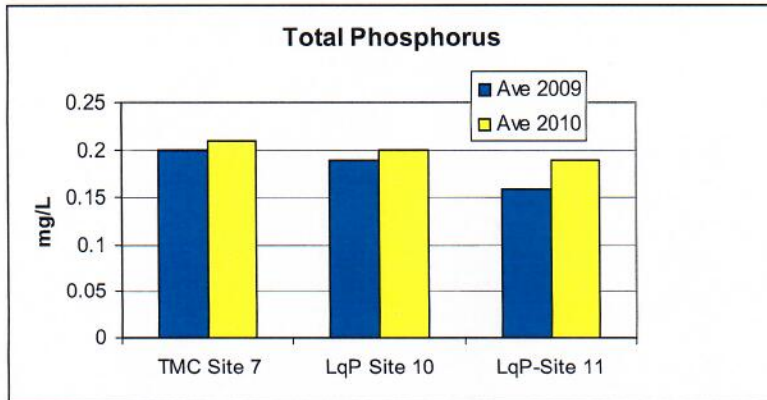
The following chart shows the averages for Nitrate+Nitrite Nitrogen at the three sites monitored during this study. Ten Mile Creek continues to have the highest levels. As a reference, the drinking water standard is 10 mg/L. In review of 2002, it appears that nitrate-nitrite levels may be increasing.



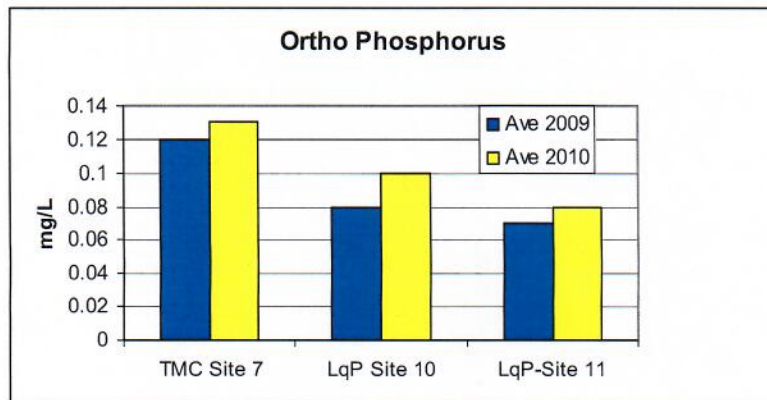
The following chart shows averages of Total Kjeldahl Nitrogen at the three sites monitored during this project. The averages are similar to 2002 averages.



The following chart shows the averages of total phosphorus at the three sites monitored during this project. All sites have similar readings and the readings are highest right away in the spring and then decline as the season goes on.



The following chart shows averages for Ortho-Phosphorus at the three monitoring sites during this project.



The FLUX model was used to calculate flow weighed mean concentrations and loads for four parameters for 2009 and 2010 at all three monitoring sites. The following charts and tables are derived from that data computed using the FLUX model. The model inputs and results are included in the Appendix.

Pollutant Loads

The year 2009 was marked by a high snowmelt and relatively few storm events throughout the summer. Water levels rose in late September and October after several rain events occurred in the area. The loading data does represent this trend.

2009 Loads by Site (tons)

Site	TSS	TP	OP	NO2_NO3
LQP07	2,349.08	10.20	5.66	109.78
LQP10	8,431.08	39.72	14.32	139.35
LQP11	4,036.11	13.60	6.28	94.09

In 2010, there were several rain events throughout the season in which higher loads were generally seen. The LQP7 stage recording equipment was removed in August due to a bridge replacement at the site. The flow data was estimated until September 20, 2010.

2010 Loads by Site (tons)

Site	TSS	TP	OP	NO2_NO3
LQP07	1,566.48	15.95	10.88	356.91
LQP10	5,608.33	50.58	28.46	333.48
LQP11	10,668.35	43.83	15.96	474.76

For comparison, the 2002 loads were extracted from the Lac qui Parle Clean Water Partnership Diagnostic Study Report and Implementation Plan and shown in the table below. In 2002, there were relatively low flows throughout the year. In addition, water quality samples were collected at LQP7 but no flow data accompanied that data. In a glance, it appears that water quality has worsened from 2002 to the current study period. Only TSS at LQP11 in 2009 was lower than 2002.

2002 Loads by Site (tons)

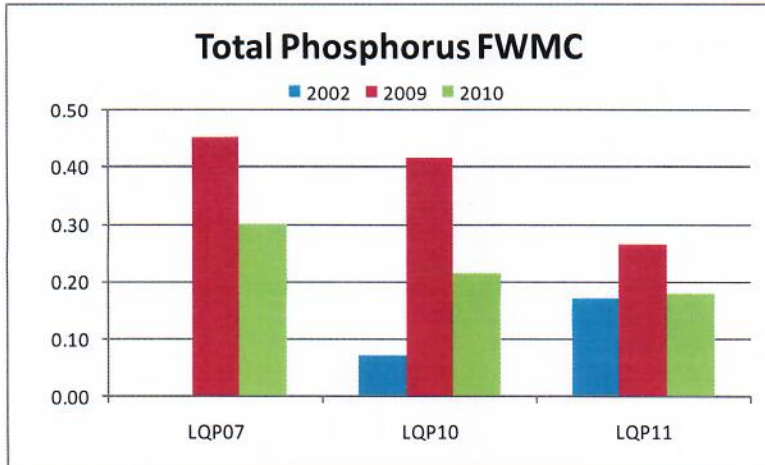
Site	TSS	TP	OP	NO2_NO3
LQP10	584.49	2.77	1.14	18.09
LQP11	4,713.80	7.84	1.61	61.21

Reviewing the peak sampled flow and peak flow during the monitoring season, it shows that in both 2009 and 2010 there was a several fold difference as shown below. In addition the total volume of water moving past the two monitoring site is two – seven times different from 2002 to 2009 and 2010. Only at LQP11 is there comparable flow volume between 2002 and 2009 but again the peak flows are substantially different. As mentioned above the TSS was lower in 2009 than 2002. One possibility may be that even with higher peak flows and flow volume the amount of water may have diluted the water causing rather low TSS values for the amount of water passing the site.

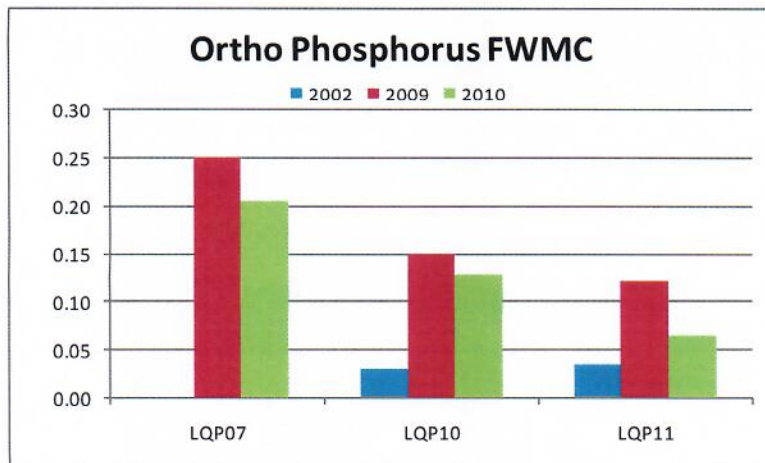
	LQP10			LQP11		
	2002	2009	2010	2002	2009	2010
Peak Sampled Flow (cfs)	100	2,977*	5,147	420	1,107	1,554
Peak Flow (cfs)	330	2,991	5,910	518	1,103	1,630
Total Flow (ft ³)	1,227,090,816	3,058,379,000	7,591,778,000	1,479,398,688	1,644,218,000	7,900,668,000

*TSS peak sampled flow was 1488 cfs.

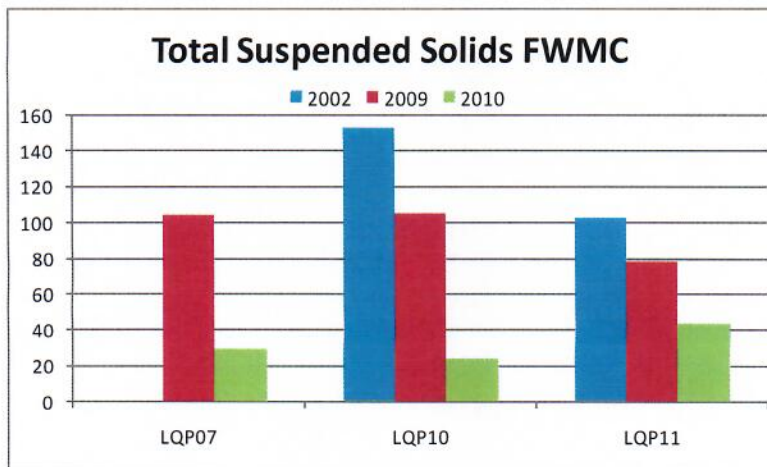
Another product of the FLUX model is flow weighed mean concentrations (FWMC). The FWMC is the concentration of a particular pollutant taking into account the volume of water passing a sampling station over the entire sampling season. Below are four charts showing the results from 2002, 2009, and 2010. LQP7 did not have continuous stage data collected in 2002 therefore only 2009 and 2010 results are shown.



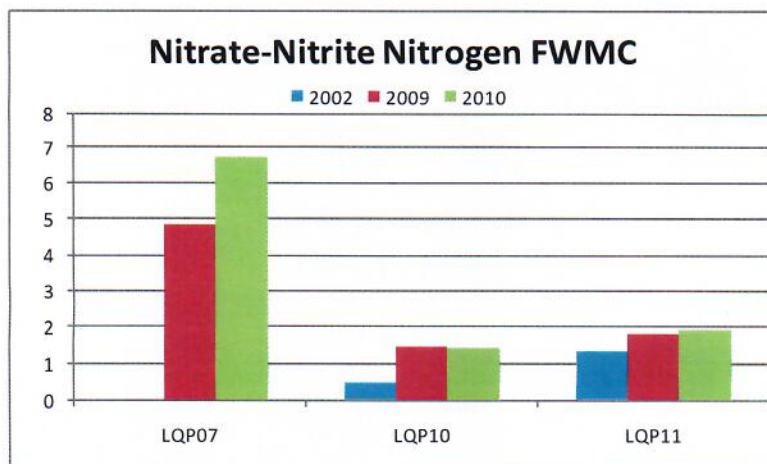
First, all three sites had the highest TP FWMC in 2009. This could be attributed to the high snow melt. Typically, in this watershed, TP values are highest in the spring. Ironically, the flows during snow melt in 2010 were higher than 2009. It appears that LQP10 may be increasing in phosphorus but this is difficult to conclude as the number of samples collected in 2002 versus 2009 and 2010 is quite different.



For ortho phosphorus, similar characteristics are seen as shown above. Ortho phosphorus is the organic component of phosphorus, readily available for plant uptake. LQP7 shows that over half of the phosphorus is readily available for plant uptake shown in both years. This could be a concern as the TSS component may be more organically derived than the other sites.



This chart is encouraging as all three sites show a decreasing trend in TSS from 2002 to the present. What is important to consider is the fact that the differences of flow is accounted for in these charts. Therefore, even though the flow was much higher in 2009 and 2010, there was still a decrease in TSS.



It is obvious in this chart that LQP7 has the highest nitrate-nitrite FWMC among the sites. The average concentrations charts above also portray this trend. Another factor to mention is that LQP10 and LQP11 appear to have increasing trends. This is an important factor to consider as future management of the watershed continues. It should be noted that a comparison of only three years of data is very limited and with a long term dataset, the water quality trends may be realized.

Program Element 4: Fiscal Management and Administration

Project administration was conducted by the Project Coordinator with assistance of the Lac qui Parle-Yellow Bank Watershed District Administrator for accounts payable/receivable and payroll. Activities included preparation and submittal of semi-annual reports and the final report, coordination of TEAM meetings, tracking all BMP projects and budgets, educational presentations and materials, water quality sampling, coordinating citizen monitoring activities. *The Work Plan was completed and approved in April 2009 and amended in December 2010 after the mid-project review recommended including the MN DNR Dawson Dam Removal project because the project became actively involved with plantings and educational events revolving around the project. At this time the budget was amended to include additional BMP practices and educational outreach opportunities. From the mid-project review the SRF Loan program was expanded to include landowner cost share on approved Ag BMP practices. There were 18 TEAM meetings held during the project for partnering agencies. Annual Reports were submitted on January 26, 2010 and January 21, 2011. Semi-Annual Reports were submitted on July 22, 2009 and July 28, 2010. STORET data was submitted annually. Project data was entered into eLINK on an annual basis in January 2010 and January 2011. Final Report submitted on July 29, 2011.*

Program Element 5: SRF Loan Program

The SRF Loan program is for upgrading Sewage Systems and approved Agricultural Best Management Practices throughout the Lac qui Parle-Yellow Bank watershed. The approved Ag BMP's include the following practices: Water and Sediment Control Basins, Livestock Waste Management Practices, Grass Waterways, Streambank Restorations Practices, Terraces, Diversions, and Retention Ponds. *The SRF Loan Program will continue through August 6, 2012. The loan program was expanded to include Ag BMP's but has not been used at this time which may be in part to the recession and the weather changes that has occurred the last few years making them difficult to get constructed. This program also included loan funds from SRF Loan Agreement No. 0141, 0142 and 0143 which ended in August 2009. SRF Loan Agreement No. 0200, 0201 and 0202 began August 2009 and will continue through August 6, 2012.*

- *Lac qui Parle Watershed District Loan Amount-\$ 282,000.00 of which ~~\$87,199.70~~\$143,999.39 has currently been loaned to eleven homeowners plus \$24,338.36 from SRF Loan Agreement No. 0141.*
- *Yellow Medicine County Loan Amount-\$130,000.00 of which ~~\$15,207.39~~\$85,738.79 has currently been loaned to two homeowners plus \$26,783.67 from SRF Loan Agreement No. 0142.*

- *Lincoln County Loan Amount-\$100,000.00 of which ~~\$44,536.36~~\$70,889.34 has currently been loaned out to five homeowners plus \$35,873.00 from SRF Loan Agreement No. 0143.*

Economic factors in our country have impacted the numbers of septic system upgrades residents are doing. The septic system, as long as it is working, will wait until the economy has improved. The loan program was expanded to include Ag BMP's but has not been used at this time which may be in part to the recession and the weather changes that has occurred the last few years making them difficult to get constructed.

Grant Results

3. Measurements

This project enrolled 98.8 acres of filter strips that is estimated to produce an annual savings of 339.3 tons of Total Suspended Solids and 574.4 lbs of Total Phosphorus. Thirty-three open tile intakes were replaced to save 6.6 tons of soil and 16.5 lbs of Total Phosphorus. Constructed practices included eight water and sediment control basins, two terraces, one diversion, one rain garden and one ag waste storage facility which were estimated to reduce 480 tons of soil and 675 lbs. of Total Phosphorus. The estimates were calculated using the BWSR calculator available in *eLINK*.

By using several methods of communication to reach our landowners and citizens of the watershed there appears to be more awareness of the rivers and ways to protect them.

If the water samples collected are indicative of practices on the land then we are moving in the right direction as the averages are near MPCA standards for Turbidity, total Suspended Solids and *E coli* bacteria. It is encouraging to see reduced averages but at this time may be premature during this time of climate change.

4. Products

The following products were produced during this project:

- Administrative Professionals Day 2009 Brochure
- Alternative Tile Intake Brochure
- Blue Thumb Garden Party Posters
- Canoe Cook Camp-A Gal's Getaway on the Lac qui Parle River
- Earth Day cards sent to citizen monitors
- Lake Hendricks Rain Garden Brochure
- Photo Contest Application Form Recycle the Rain Poster
- Recycle the Rain Decorating Pamphlet
- Septic System Maintenance Brochure
- 2011 Anniversary Calender using pictures submitted in Photo contest
- 10 year Anniversary Invitations, Posters, Programs
- River Identification Signs
- Storm Drain Curb markers
- 2010 and 2011 STORET spreadsheets

5. Education and Outreach Programs

Activities included:

Winterfest Story Hour for children with Water Wonders as the theme. There were about 20 young children in attendance. They colored on squares of fabric that were later sewn together into small quilts.

Great Western Minnesota Get Together 2009 and 2010: Booth set up with LqP SWCD to promote Rain Gardens and values of clean water. This is an annual event that attracts 700 to 800 people.

Earth Day 2009 launched a weekly radio program on KLQP-FM. This is weekly program with varied guests visiting with the announcer about environmental topics. This radio program airs mid-April through September or mid October each year. Some of the topics discussed were rain gardens, septic system maintenance and the loan program, canoe trips, incentive programs, citizen monitoring program, workshops and upcoming events.

Girl Scout Day Camp-2009 The theme for the girl scouts day camp was water and presentations were made in Canby and Dawson on cleaning up a river. The girls accidentally allowed pollutants into the water and then had to clean it to the best of their ability. 70 girls were in attendance.

Annual Canoe trips: Annual canoe trips are held to provide an opportunity for local residents to experience the river up close and personal. It is the hope that they will value the river and in turn take care of it as well. Each canoe trip is unique and offers canoers different views, plants, animals and concerns. A local high school teacher takes his students canoeing on the Lac qui Parle River for an overnight adventure. Coordinator will visit and talk to the students about what is being done to improve water quality, opportunities for them, their experiences on the river and things they can look for as they canoe the river.

Dawson Riverfest: An annual event held in Dawson. Water activities, stories and games for young children were held in the park with the quilts made from the Winterfest Story Hour were given away to 3 children. There were about 25 children with parents or grandparents present.

Informational Booths at LqP and YM County Fairs: Booths are set up annually that focus on available programs such as Replacing Open Tile Intakes, septic systems, rain gardens similar to the Great Western Minnesota Get Together that is held in February.

Environmental Fair for 6th Grade-Wetlands were the topic for twenty minute presentations made to approximately 500 6th graders over two days.

Website: A Website has been designed and data continues to be added for the Lac qui Parle-Yellow Bank Watershed District which the CWP has its own page. The website is lqpywatershed.org

River CleanUp: A river cleanup was organized when the West Branch Lac qui Parle River was being drained down to replace an existing dam with a series of rock rapids. Fifty students and chaperones collected about 1100 pounds of trash from the river banks.

Quarterly Environmental Summit Meetings: Meetings are held with LqP SWCD, Environmental Office, LqP-YB Watershed District and CWP. The meetings are instrumental for exchanging ideas and program details.

Manure Management Workshops in 2009 and 2010: Assisted the LqP Environmental office with the workshops. Group presentations were held then followed up with one-on-one training to work on and develop 16 individual plans.

Bioretention Workshop: Staff attended a workshop on rain garden design and construction.

Rain Garden Presentation: A rain garden was completed in Hendricks in 2009 using Clean Water Legacy funds and a presentation was made to a group of 25 women describing purpose, process, plants and maintenance of rain gardens.

Recycle The Rain Workshop: This workshop partnered with LqP SWCD featured the benefits of rain barrels and rain gardens. A rain barrel was constructed during the workshop and given away. 8 men and women attended.

Values of Wetlands: A presentation discussing the many values of wetlands was given to approximately 110 4th graders in Lincoln County.

Maple Seed Mixup: This is a game that 5th graders in Chippewa and LqP Field Day played that helped them learn about conditions needed in nature for a seed to germinate and grow into a tree.

LqP River Bank Tree and Shrub planting: Dawson High School students and Sentence-To-Serve planted 625 trees and shrubs along the river bank of the West Branch LqP River along the construction area of the Dawson Dam replacement.

Water Festival during Dawson Riverfest: Water Wonders was the theme for the Water Festival. Many activities that use water were available for youth to enjoy. They included minnow races, incredible journey of water, water trivia, bubbleology, bus tours to the Dawson Rock Rapids site. This also featured the University of Minnesota Raptor Center making a presentation to about 250 to 300 adults and children. This was a co-sponsored Prairie Country RC&D, LqP SWCD and Water Plan, CWP, and Riverfest.

Watershed Professionals Networking sessions: Spring and Fall meetings are organized by MPCA with interesting topics explored. It is very valuable to share ideas and activities that have worked in other watersheds and how they can be adapted to other areas.

River Geomorphology workshop: This was a series of workshops held to build a deeper understanding of rivers and exploring techniques for determining amount of river bank erosion.

Septic Maintenance Workshop: Attended a workshop discussing proper maintenance of septic systems. Following the workshop a brochure was developed and distributed at fairs and inserted in the Cities of Marietta and Nassau water billing, and a radio show reviewed maintenance tips for septic systems.

Photography Contest: A Photography contest encouraged watershed residents to share photos of nature, water resources, wildlife etc. The watershed managers selected the top three winners. Photos were used in a calendar for 2011 recognizing 10 years of working towards clean water. Calendars were given to managers, TEAM Partners, and citizen monitors.

Household Hazardous Waste Collection: LqP Environmental office sponsors an opportunity to dispose of household hazardous waste and electronics semi-annually. CWP assists with the collection by conducting a survey of individuals that are bringing hazardous waste and electronics for disposal.

Lac qui Parle County Fair 2010: Local schools toured the LqP fair and participated in a session called "Clean A River". About 500 students from LqP county schools attended.

Education Committee Meeting: LqP, Lincoln, and YM SWCD's and CWP met to discuss 10 year Anniversary event, TMDL meetings and spring workshop.

Promotional Items for 10 Year Anniversary: Personalized items included a pocket size book filled with varying sizes of post-its, 4"X6" post-it notepads, and pens. The books had the message "You are the key to Clean Water!"

BWSR Academy: Attended the 2010 BWSR Academy for training.

MAWD Annual Meetings: Attended MAWD's Annual Meeting in 2009 and 2010.

Education and outreach sessions have been incorporated into project brochures, news releases and workshops.

Drainage Forum: Attended a Tri-State drainage forum to increase understanding of drainage and concerns.

10 Year Anniversary of CWP: Invitations were sent to TEAM members, citizen monitors and newspaper advertised the speaker and dinner. All partners and citizen monitors were recognized. A slide show reviewed CWP milestones during the past 10 years. A dinner was served to 62 people followed by a review of CWP milestones during the past 10 years, Outstanding Conservationists from LqP and YM were recognized by LqP and YM SWCD's, and guest speaker was Ashley Shelby, author of "Red River Rising: The Anatomy of a Flood and the Survival of an American City". The evening ended with door prizes given to those in attendance.

Community Clean Up workshop: Attended a workshop on benefits of cleaning streets in spring and fall. This should be completed early spring before rain washes debris down storm drains and late fall before it freezes. A radio show and public service announcements encouraged residents to clean the streets. There were no reports back on how many bags were filled with leaves and other debris.

Annual Township Meetings: Annually make short presentations about opportunities through the CWP and updated water quality information.

Friendship Tour Workshop: Attended a two day workshop that presented several techniques to make meetings more productive.

Blue Thumb Garden Party: An evening workshop held in a park along Canby Creek that focused on landscaping for water quality, rain barrels, rain gardens, and composting. There were 4 speakers and 34 attendees at the workshop. This was co-sponsored with LqP, Lincoln and YM SWCD's.

Minnesota River Documentary Viewing Party: Kare 11 TV aired a documentary on MN River concerns and what has been done to improve the water quality. Twenty-five people attended and watched the documentary together and had a lively discussion following the documentary. In the week following the documentary airing on Kare 11 several people talked about the documentary. A presentation at Madison Kiwanis tied the documentary and LqP River together with 27 members present.

River Signs: Forty-two metal signs were ordered from Newman Signs for identifying rivers and creeks on paved county roads in the watershed. LqP and YM County personnel erected the signs.

Storm Drain Markers: 130 storm drain markers were ordered along with 6 tubes of adhesive to apply the markers to the curb. The storm drain markers are a 4 inch circle with a frog in the center and around the outer circle says "No Dumping Drains to Creek". The New Grove 4-H club applied the markers in Hendricks.

Living Green Loving God: Grace Lutheran Church in Dawson sponsored this event and invited environmental groups to share local Living Green opportunities. A rain barrel was given away at the event. A worship service, songs and the video "The Story of Stuff" were designed to tie it all together into a meaningful evening for the 50 people in attendance.

Canoe, Cook, Camp: A Gal's Getaway on the Lac qui Parle River: This event was planned to be an overnight camping experience with a demonstration of dutch oven

cooking, wildlife photography, wetland and prairie plant identification. There were not enough registrations for this event to be held so those registered were encouraged to attend the annual canoe trip which most did.

Volunteer Citizen Monitors and Rain Gauge Monitors: Both volunteer monitor programs continue. Citizen monitors are mailed their data sheets in the spring and they are returned in the fall with transparency tube readings and precipitation amounts recorded. Rain gauge monitors return their forms monthly. Special recognition of citizen monitors was given during the 10 Year Anniversary event.

The education and outreach element of the project has been rewarding. This project offered new partners to coordinate new learning opportunities. The project has worked diligently with partners to provide quality and an entertaining environment for residents to enhance their knowledge. It has been effective to give presentations to groups that are already established and have guest speakers such as Kiwanis, Rotary, Chamber of Commerce and the Annual Township meetings. The start of a weekly radio show has been an immense asset to educating the public on environmental concerns, water quality, programs available and upcoming events.

6. Long Term Results:

This project, as well as others, continues to build relationships with landowners in the watershed. These relationships are built through trust and respect for each other. The partnering agencies that make up the TEAM work well together and strive to provide accurate information that landowners can trust. With the current economy landowners are actively searching for methods and techniques to improve their bottom line. By offering incentives and piggy backing programs to provide additional cost share for projects we are able to get additional practices on the land that otherwise may not have been completed. This project has increased landowner trust with its unique educational opportunities and low interest loan program.

There has not been new partnerships formed but new working relationships have been formed and stronger relationships with current partners have been created. When projects are successful it reinforces the value of good working relationships and partnering on projects.

As this project sunsets, there are plans to continue working on a smaller scale in a subwatershed called Ten Mile Creek. This project will incorporate lessons learned from this project to enroll filter strips and replace open tile intakes. It will also continue to hold TEAM meetings to develop additional projects. Currently we are waiting for a TMDL Assessment Report that addresses 19 impairments in 11 reaches of the Lac qui Parle and Yellow Bank Rivers to be approved by EPA. An Implementation Plan has been developed which is expected to be approved by MPCA following the EPA approval. We currently know the priority areas and management practices to target that will address the water quality impairments and will be looking for funds to implement them.

The results from this project will be shared with partnering agencies at the next TEAM meeting. At the ten Year Anniversary event, all the accomplishments were reviewed

throughout the history of the Clean Water Partnership. The watershed district is observing 40 years of water management and information will be shared with additional agency people and general public. This report will be used to enhance future projects and the information will also be incorporated in an upcoming radio program.

Personally, I believe other watershed projects may find our educational outreach techniques to be useful especially if they are in an agricultural setting. It is important to build strong relationships built on trust and respect for each other.

Some lessons that my partners and I have learned is that by being creative and thinking out of the traditional box and adding fun into outreach activities we can reach additional people as we strive for cleaner water. It is important to present material in an easy to understand format and to have accurate information. One education workshop I attended discussed using Water Words that Work using 4 steps. Step One: Begin with Behavior-what do you want your audience to do after they hear your message. Step Two: Use Photos- to get your message across use pictures of people working together doing the behavior you have identified and be sure to show their faces. Step Three: Swap the Shoptalk-replace technical talk with plain English when communicating with everyday citizens. Step Four: Insert Words that Work-use words that connect your work to their lives. Use words that will inspire them that they can make a difference.

Final Expenditures

The original grant amount was \$280,150.00 and the final grant amount is \$279,997.97 which leaves \$152.03 of unused grant funds.

The original cash match was \$27,500.00 and the final cash match is \$26,558.52 which left \$941.48 of unused cash match.

The original in-kind match was \$552,808.76 and the final in-kind match is \$382,062.12 which leaves \$170,746.64 of in-kind that was not met. *(These figures do not include the \$700,000.00 in-kind from the Dawson Dam Removal Project).* There is also matching funds from the SRF Loan program of \$228,413.12 which provides \$610,475.24 plus the cash match of \$26,558.52. The total match for the project is 70% of the total project costs. This reflects a 2.28:1 ratio for the grant dollars invested into the Lac qui Parle-Yellow Bank Water Quality Enhancement Project.

Please See Attached Excel file for details.